ЛУЧШИЕ ИНТЕЛЛЕКТУАЛЬНЫЕ ИССЛЕДОВАНИЯ

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COMPLICATIONS ARISING IN THE ORAL CAVITY AFTER POLYCHEMOTHERAPY IN PATIENTS WITH HEMABLASTOSES

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Relevance. Relevance: today it is believed that cancer does not appear immediately, but "is the last link in a long chain of preceding changes that can be call them precancerous or precancerous." This postulate formulates the first law of malignant oncology: every cancer has its own precancer, but not every precancer turns into cancer. Precancerous conditions, the presence of which is now generally recognized, are divided into obligate and facultative (Beck). The former go wrong in 80-85% of cases, the latter in 15-20%. Despite the significant variety of precancerous lesions of the skin and mucous membrane, they are expressed by some common morphological signs. These are parakeratosis, hyperkeratosis and other dyskeratotic phenomena. Using this feature of precancerous (and even more so cancerous tumors), it is possible to identify them at a more or less early date, using appropriate diagnostic methods. Methods of diagnosis of precancerous and malignant tumors: stomatoscopy, cytological examination (by puncture, scraping, flushing) and histological (urgent and planned biopsy). The peculiarity of an urgent biopsy is the minimum period between biopsy and radical surgery. In order to diagnose malignant tumors of the face, oral cavity and jaw bones, methods are used that can be divided into general, private and special. Common methods. During the general examination of the patient, special attention is paid to complaints, anamnesis of vitae and morbi, professional harmfulness and bad habits are revealed. Private ways. When contacting a dentist, it is necessary to perform an examination, which consists of an external examination of the patient and an examination of the oral cavity. During an external examination, attention is paid to the general appearance of the patient, the presence of swelling, asymmetry, formations on the red border of the lips. The examination of the oral cavity begins with the vestibule of the mouth with closed jaws and relaxed lips, lifting the upper and lowering the lower one or pulling the cheek with a dental mirror. First of all, the red border of the lips and the corners of the mouth are examined. Pay attention to the color, the presence of scales, crusts. Then, using a mirror, the mucous membrane of the cheeks is examined. You should pay attention

to infiltrates, ulceration, fistulas, areas of leuko - and dyskeratosis, keratoacanthosis, color, moisture, etc. During the examination, the localization of the pathological process and its extent are determined. Examination of the mucous membrane of the gums is also performed using a mirror, both from the buccal and lingual sides. Normally, it is pale pink, tightly covers the neck of the tooth. Next, the tongue, the mucous membrane of the bottom of the oral cavity, the hard and soft palate are examined. When keratinization sites are detected, which is determined by a grayish-white area, their density, size, solidity with the underlying tissues, and the level of elevation of the hearth above the surrounding tissues are determined. If any changes are detected on the mucous membrane (ulcer, erosion, hyperkeratosis, etc.), it is necessary to exclude or confirm the possibility of a traumatic factor, which is necessary for making a correct diagnosis. During palpation examination of organs, face and oral cavity, the color and turgor of tissues of symmetrical organs and tissues on the diseased and unaffected side are compared. Attention is paid to the identification of possible deformities of organs and related facial asymmetry. When examining the oral cavity, it is advisable to use special devices for sufficient illumination — a frontal reflector, a binocular magnifier, etc. This is necessary for a thorough examination of the mucous membrane of the oral cavity, including the tongue, the floor of the oral cavity, the oral surface of the cheeks, the mouths of the excretory ducts of the large salivary glands, the mucous membrane of the hard and soft palate, the vestibule of the oral cavity, the alveolar processes of the jaws. Palpation should be performed painlessly, without causing tension of the corresponding muscles, as it can mask the true boundaries of the tumor. It is very important to determine the size of the infiltrate around the ulceration, the density and soreness or painlessness of the neoplasm, its displacement relative to the surrounding tissues, the severity of tissue bleeding in the area of the tumor site. In addition, it is necessary to pay attention to the configuration of the ulcer, the condition of the tissues of its bottom and edges, the presence of a boundary infiltration shaft, the nature of the discharge, etc. Very valuable diagnostic signs are the mobility of teeth in one or the other jaw, which is not associated with periodontal disease and other diseases of the dental tissues, which are characterized by a predominance of atrophy and inflammation, the presence of fistulas on toothless areas of the alveolar processes. When examining a patient with a suspected tumor of the lower jaw, the presence of a pathological fracture should be excluded, in addition to deformity of its body or branch. If a neoplasm of the maxillary bone is suspected, attention is paid to the presence or absence of facial asymmetry due to its deformation, the presence

or absence of deformation of the alveolar process and the hard palate or tissues in the region of the lower orbital margin, a change in the shape and size of the ocular slit on the side of the lesion. On the sick and healthy side, the severity of nasal breathing is checked. Examination of regional lymph nodes. The condition of the organs and tissues of the neck, especially the regional lymph nodes, is assessed. When affected by metastases, these nodes are enlarged to one degree or another, more or less mobile, which is taken into account when determining the stage of the disease. The appearance of regional cancer metastases, respectively, in the upper and middle thirds of the lateral surface of the neck, as well as in the submandibular region on the side of the location of the primary tumor is most often noted in cancer of the tongue, the bottom of the oral cavity, the lateral parts of the lower jaw, and in cancer of the upper jaw. The most frequently affected regional lymph nodes include P. jugulodigasticus located on the border of the upper and middle thirds of the lateral surface of the neck. This node adheres to the walls of the common carotid artery and the internal jugular vein. In addition, metastases can affect the nodes of the lower third of the lateral surface of the neck, the supraclavicular region. Palpation should be performed on the entire neck area from the mastoid process to the collarbone, especially along the anterior and posterior edges of the sternocleidomastoid muscle, submandibular and maxillary regions. It should be remembered that metastasis to the lymph nodes of the opposite side is possible, especially in cancers of organs and tissues of the oral cavity. During palpation, it is necessary to tilt the patient's head to the side under study with the help of a hand placed on his head. In this case, relaxation of the cervical muscles of the corresponding side is achieved. Tilting the head anteriorly and posteriorly also helps to reduce or relax different muscle groups, which also improves the conditions for palpation and detection of nodes suspected of being affected by metastases.

The clinical manifestations of mucositis in different parts of the gastrointestinal tract are very diverse, this is primarily due to the specific structure and function of the mucous membranes. Changes in the composition and activity of normal microflora play a significant role in the etiopathogenesis of mucositis. In recent years, there has been an increase in oncohematological pathology worldwide, thanks to modern treatment methods such as polychemotherapy (PCT), radiation therapy and hematopoietic stem cell transplantation (HSCT), the life expectancy of patients with leukemia has increased markedly, however, the use of such drugs in high concentrations is accompanied by toxic effects. The most common complications of antitumor therapy are oral mucositis. Secondary infection in this scheme played a

key role and was a determining factor in the pathogenesis of mucositis, in determining tactics and treatment and prognosis. Currently, the secondary role of infection in the development of mucositis has been proven, and the anti-infectious orientation of the treatment of mucositis vector is no longer considered the main one.

Thus, it is the cessation of the corresponding signals for growth and differentiation from endotheliocytes that causes the thinning of the epithelial layer and the appearance of mucosal ulcers.

Another equally important discovery was the identification of the role of cytokines such as interleukin-6 (IL-6), interleukin-1□(IL-1b), tumor necrosis factor (TNF) in the development of dystrophic changes in the epithelial cover, the content of which increases before morphological changes in the epithelium appear.

Mucositis is manifested by an increase (swelling) of the gums and bleeding, erythema, petechiae, ulceration of the mucous membranes and pain in the oral cavity, and may also predispose to the development of septicemia in patients with neutropenia, which seriously complicates the prognosis of the underlying disease. And also, the development of lesions of the oral mucosa may occur due to primary immunodeficiency.

The clinical manifestations of mucositis in different parts of the gastrointestinal tract are very diverse in nature, which is associated with the specific structure and function of the mucous membranes.

Currently, one of the most pressing problems of modern medicine is malignant neoplasms, the leading place among which is occupied by hemablastoses. Research in the field of hematology is one of the most urgent and important problems of our time.

Acute leukemia is a group of life–threatening substandard blood neoplasms, which is based on the formation of a clone of malignant (blast) cells with a common progenitor cell.

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TO STUDY THE HYGIENIC ASSESSMENT OF THE CONDITION OF THE ORAL MUCOSA DURING ORTHOPEDIC TREATMENT

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Annotation. The most common causes of complications in the mouth and the unsuitability of fixed structures are considered to be inflammatory processes, caries and its complications (16,4–25,2 %) [7,8,12], thermal burns of the pulp (4.3%) [4,6,9], cementation of the supporting crowns (8-21% of all complications). These processes often develop in the area of the edge of artificial crowns and are caused by the destruction of the cement layer that fixes the non-removable prosthesis. One of the typical complications of dental prosthetics, which often develops within the first year after fixation of the artificial crown, is the exposure of the neck of the tooth root due to gum recession [3,5,11].

The occurrence of cervical or secondary caries under an artificial crown was noted in 1.78% of cases. This is above the average level of foreign ones (0.4%), but falls within the range of the given parameters (0-2.7%). The need for endodontic treatment is 4.63% [2,7,13], in foreign literature (0-6%) [1,3,14]. Papillitis, gingivitis and marginal periodontitis occurred in 1.07% of cases, in foreign researchers — 0.6%. In the long term, up to 5 years, the average parameters of the lesion of the marginal periodontium leveled out and amounted to 16.96%. Deep cracks, as well as chipping, and broken cladding were noted in 5.22% of cases [2,8,14].

In the dental practice of the world, there is a high frequency of various orthopedic and orthodontic defects, including forms manifested in the form of various degrees of adentia. The prevalence of adentia has increased significantly and according to the data is 35.4-62.9% [5,8.10]. Despite significant advances in the field of materials science and improvement of the quality of dental prostheses, various authors note complaints of intolerance in patients from 0.6 to 12% [1,8,11]. Many researchers note that patients with removable dentures have different levels of adaptive capabilities, the study of which makes it possible to predict the development of intolerance. When diagnosing and predicting intolerance to dentures, it will allow obtaining objective information about compensatory and adaptive reactions

occurring during the use of removable dentures and developing preventive measures to accelerate the adaptive capabilities of the body [3,6,10].

Thus, there is a need to form a concept that makes it possible to offer modern methods of diagnosis, prevention and treatment of adentia, which have properties of action on oral homeostasis and the general condition of the body.

Material and methods

130 patients who underwent treatment in the polyclinic in 2020-2022, aged from 30 to 65 years, were examined.

The presence of areas of inflammation of the mucous membrane of the prosthetic bed, as well as the dynamics of changes in this indicator, were evaluated using the method of macrohistochemical research proposed by N.I.Lesnykh. This technique is inexpensive and allows you to conduct a study of the SOPR for the presence of inflammation without resorting to instrumental techniques.

Also, in order to determine the functional suitability of prostheses, a questionnaire of 10 questions was used, developed by M.Yu. Ogorodnikov, the questionnaire was conducted 1, 6 and 12 months after undergoing orthopedic treatment:

The clinical evaluation of the effectiveness of orthopedic treatment included the identification of signs of inflammation of the mucous membrane of the prosthetic bed, determining the timing of adaptation of patients to the installed prostheses.

The process of adaptation to complete removable dentures includes three stages: the first phase is the phase of irritation, which takes place on the day of application of the prosthesis and is characterized by the effects of increased salivation, impaired diction, pronounced gag reflex, low chewing efficiency.

The second phase, partial inhibition, is characterized by the restoration of phonation, a decrease in salivation, an increase in the effectiveness of chewing, and the gag reflex fades. This phase lasts from the 1st to the 5th day after the prosthesis is applied.

The third phase, complete inhibition, which occurs between the 5th and 33rd days, is characterized by the fact that the patient does not feel the prosthesis as a foreign body, while its extraction, on the contrary, causes discomfort.

Statistical processing of the obtained data was performed with the calculation of the arithmetic mean, the mean square deviation, and the arithmetic mean error. The reliability of the differences between the two samples was assessed using the Student's parametric criterion.

Results and discussion

Observation of patients with non–removable solid-cast combined denture structures showed that in the 2nd subgroup, where adhesive films were used for preventive purposes, there was no inflammatory process in the marginal periodontium during all observation periods in any case. On the 2nd day after the preparation of the supporting teeth, minor damage to the epithelium of the marginal periodontium was determined when examined under a magnifying glass. The Schiller-Pisarev sample was negative, the toluidine sample was weakly positive. The gingivitis index was 0.42 ± 0.1. In subsequent follow–up periods — on the 3rd, 5th, 7th and 14th days — the absence of an inflammatory process in the marginal periodontium was noted.

On the second day after the start of treatment, there was a decrease in the intensity of the inflammatory process in the affected areas in both study groups, but they were expressed differently, depending on the method of treatment.

In patients of the 1st subgroup, there was a slight decrease in pain and bleeding gums. During the examination, soreness, swelling and hyperemia of the gums were observed in 86.6%. The gingivitis index for intact periodontal disease was 1.5 ± 0.3. The Schiller-Pisarev sample did not change significantly and amounted, respectively, to 3.9 ± 0.32 for intact periodontal disease.

On the third day of follow–up, the inflammatory process in the marginal periodontal was detected in 80.9% of patients of the 1st subgroup, although its intensity was less pronounced compared to the 2nd day, but patients complained of pain and bleeding gums in the area of the prepared teeth. The gingivitis index was 1.32 ± 0.2 (Fig.**). The Shiller-Pisarev test was positive: 3.8 ± 0.28.

On the 5th day of treatment, patients of the 2nd subgroup had no complaints of pain, bleeding, and discomfort in the mouth. Only in the 1st subgroup, the inflammatory process in the marginal periodontal area decreased slightly and was observed in 52% of patients.

On the 7th day of follow–up, there were no clinical manifestations of the inflammatory process in the tissues of the marginal periodontium in patients of the 2nd subgroup. The gum was pale pink in color, dense, without signs of inflammation and bleeding, painless when touched. In patients of the 1st subgroup, the inflammatory process remained at the same level. And only on the 14th day, the inflammatory process subsided in patients of this subgroup, but not completely (by 72.5%).

In the course of treatment, the oral hygiene index significantly improved in patients of both studied subgroups. These observations indicate that at the end of treatment, there was no significant difference in all subgroups of patients. So, in the 1st subgroup, the hygienic index was 2.3 ± 0.2, and in the 2nd group, at the end of treatment, these data corresponded to 1.2 ± 0.1.

All of the above indicates the high therapeutic effectiveness of the method of preventing inflammatory changes in the marginal periodontium in the dental orthopedic treatment of dentition defects with non-removable denture structures.

After the prostheses were installed, patients of all groups were recommended to visit the dentist for the next 3 months with an interval of two weeks.

During the study, the rate of adaptation to the prosthesis was assessed in all groups: the time frame of the irritation phase, the partial inhibition phase and the full inhibition phase. The number of relocations carried out in each of the groups was also estimated.

In each group, the incidence of reflex nausea was assessed in patients with a complete removable upper jaw prosthesis.

The frequency of allergic reactions to acrylates was assessed. The presence of inflammatory sites in patients of the three study groups at various stages of the recovery period was also assessed. When assessing the adaptation to prostheses, the average periods of the irritation phase, primary inhibition and complete inhibition were estimated by groups.

Thus, in the main group (with physiotherapy), the irritation phase lasted 1.12 ± 0.3 days. In the control group, the completion time of the irritation phase was 1.17± 0.2 days. In the primary prosthetics group, this period was up to 1 day in all patients.

The partial inhibition phase in the main group lasted 3.5± 1.2 days. In the control group, the partial braking phase lasted on average 4.4±0.9. In the group after primary prosthetics, the duration of this phase averaged 3 ± 0.3 days.

Patients of the main group reached the end of the complete inhibition phase after an average of 30 ± 0.7 days. In the control group, this indicator was 33.1±0.4 days. And in the group after primary prosthetics 31.1 ± 0.9 days.

Thus, there was a shortening of the time of full adaptation to the prosthesis in the group with the use of physiotherapy by 3 days compared with the control group and, on average, by 1 day compared with the group of primary prosthetics without complications.

Next, the number of relocations of installed prostheses was estimated. In the main group, the number of such requests was 0.4± 0.2, no prosthesis was replaced,

whereas in the control group this indicator was 2.0± 0.1, in this group two prosthesis replacements were performed. In the group, after the initial installation of the prosthesis, the correction was performed on average 0.6 ± 0.3 times (no replacement of the prosthesis was performed).

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ЧИРЧИҚ ШАҲРИДА 2023 ЙИЛ ЯКУНИ БЎЙИЧА ЭНДОКРИН КАСАЛЛИКЛАР СТАТИСТИКАСИ

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Аннатоция:

Текширув мақсади: Чирчиқ шаҳрида 2023 йил якуни бўйича эндокринологик беморлар учрашини статистик таҳлил этиш ва ушбу касалликларни дунё миқёсига нисбатан учрашига солиштириш. Бу орқали шаҳарда эндокринология хизматига баҳо бериш ва ва келгусида қайси эндокринологик касалликлар профилактикасини кучайтиришни аниқлаш.

Кутилаётган натижа: Чирчиқ шаҳрида эндокринологик беморларни соғломлаштириш, профилактикни кучайтириш орқали эндокринологик касалликларни камайтириш .

Калит сўзлар: Эндокринологик каслликлар. Эндокринологик каслликлар статистикаси.

Асосий қисм:

КТМП эндоринолог врач юқламси нормасини ССВ буйруғида белгиланган. КТМПда 1 ставка эндокринолгог штати берилган. (Врач 1 ойда 1 ставкада 144 соат ишлаши, ҳар 20 минутда 1 нафар бемор кўрса, 1 соатда 3та, бир кунда 18 та кўриши лозим, бир ҳафтада (18х6) 108 та кўриши лозим. бир ойда -4 ҳафтада(6 кунлик иш кунида 18х 108х4) 432 та кўриши керак. Бир йил (12 ойда) 5184 нафар беморни қабул қилиши керак.

Чирчиқ КТМП эндокринологик кўригига 2023 йил давомида жами 6831 нафар (100%) беморлар мурожаат этган. Шундан бирламчи қабул **1417** тани, иккиламчи(диспансер назоратидилар) қабули 5414(“Д” назорати) ни ташкил этган. жами қабул эса 5118 тадан кўп бўлмаслиги лозим эди, Жами олдинги йилларни ҳисобга олган ҳолда КТМП эндокрин врач назоратида эса 5414 нафари барча эндокрин касаллик буйича диспансер назоратига турибди. Диспансер назоратига турган ҳар бир беморни камида 3 ойда бир марта кўрилганда ҳам(5414х4) бир йилда 21 656 тани ташкил этади. Бу эса фақат “Д” назоратдаги иккиламчи қабулнинг ўзини (21 656 : 5414) 4 баробар кўплигини кўрсатмокда. Бу врачга бирламчи мурожаатдан кўра, иккиламчи мурожаатнинг (3,8 баробар) кўплигини ва диспансер назорати билан кўпроқ вақт ишлаётгани кўрсатмокда.

Биз кўрсатгичларни ЖССТ кўрсатгичларига солиштирган ҳолатда врач эндокринолог юкласини ўргандик. Агар КТМП даги бир ставка штат бирлигида эндокринолог 5184 нафар беморни кўришга имконияти етса, унда диспансер назоратига турган беморларни 5414 фақат йилига бир марта кўришга имконияти етар экан. Лекин эндокринолог камида 3 ойда бир марта кўриш зарурлигини инобатга олсак. (21 656 : 5414) 4 баробар кўп кўриши ва бунга жисмоний жиҳатдан улгурмаслиги кўринади. Бу ерда яна 3 та қўшимча эндокринолог штати зарурлиги кўрсатмоқда.

Тошкент вилояти Чирчиқ шаҳарининг аҳолиси 2023 йил ҳисобида 171 608 нафар қайд этилган.
Чирчиқ КТМП эндокринологик кўригига 2023 йил давомида жами 1417 нафар (100%) беморлар мурожаат этган.
шундан 554 нафари(39%) стационар даволанган.
Шундан 863 нафари(61%) амбулатор даволанган.
Шундан 22 нафари(1,55%)да асоратланиш (диабетик товон, диабетик ретинопатия, диабетик буйрак...) қайд этилган.
Шундан 54 нафари(3,81%) вафот этган.
Шундан 195 нафари(13,76%)га бугунда ногиронлик нафақаси тайинланган.
ЖАМИ ОЛДИНГИ ЙИЛЛАРНИ ҲИСОБГА ОЛГАН ҲОЛДА КТМП ЭНДОКРИН ВРАЧ НАЗОРАТИДА 5414 НАФАРИ БАРЧА ЭНДОКРИН КАСАЛЛИК БУЙИЧА ДИСПАНСЕР НАЗОРАТИГА ТУРИБДИ. БУ ЖАМИ ҚАБУЛ(1417 ДАН)ДАН 3,8 МАРТА КЎПРОҚДИР.
Шундан энг кўп қандли диабет (МКБ-9: 250; МКБ-10: Е10-Е14) билан 5415 нафари диспансер назоратига олинган.
- - Ундан 143 нафарида 1 – тип қандли диабет кузатилган.
- - Ундан 5272 нафарида 2 – тип қандли диабет кузатилган.
- Турли буқоқ касалликлари 3048 нафарида кузатилган.
- Гипофиз касаллиги 67 нафарида кузатилган.
- Семизлик 308 нафарида кузатилган.
- Буйрак усти бези касаллиги 4 нафарида кузатилган.
- Нанизм 4 нафарида кузатилган.
- Акромегалия 2 нафарида кузатилган.

Шундан энг кўп ҚАНДЛИ ДИАБЕТ (МКБ-9: 250; МКБ-10: Е10-Е14) билан 5415 нафари диспансер назоратига олинган.- БЖССТ нинг 2021йил маълумотига кўра дунёда 537 млн одамда қандли диабет аниқланган. Бу ҳар 10 нафар инсондан биттаси демакдир.

(По данным 2021 года, 537 млн взрослых людей на планете живут с диабетом, это каждый десятый. В 2021 году диабет стал причиной 6,7 млн смертей. Если эта тенденция продолжится, то официальные прогнозы обещают рост числа людей с таким диагнозом в мире до 643 млн к 2030 г. и до 783 млн человек к 2045 г.[1]. В России в 2021 году диабет диагностирован у 7,4 млн

взрослых, за период с 2021 по 2022 годы прирост пациентов с диабетом составил 15%).(1)

Тошкент вилояти Чирчиқ шаҳарининг аҳолиси 2023 йил ҳисобида 171 608 нафар қайд этилган. Агар ундан ҳар ўнтан биттасида қандли диабет бўлганида(171 608: 10=171 60). 171 60 нафарида қайд этилиши лозим эди, лекин 2023йилда Чирчиқ шаҳар КТМП эндокринолог кўригида 5415 нафар қандли диабетли бемор диспансер назоратига олирган. Бу шаҳарда қандли диабет 3,1 баробар ёки 31,55% камлигини кўрсатмоқда, ёки беморлар мурожаат этмагани, ёки ўзида қандли диабет борлигини билмаслиги мумкинлигини кўрсатмоқда.

Шундан турли БУҚОҚ КАСАЛЛИКЛАРИ 3048 нафарида аниқланган. Статистик маълумотларга кўра аҳолининг 10% дан 30%га қалқонсимон без функцияси пасайиши учраши аниқланган.

(По статистике Всемирной организации здравоохранения, от 10 до 30% взрослого населения в мире страдают различными заболеваниями щитовидной железы, связанными как с нарушением функции железы, так и с изменением ее структуры. Глобальной проблемой здравоохранения является дефицит йода. Российская Федерация относится к региону умеренного йодного дефицита, поэтому в нашей стране йоддефицитная патология щитовидной железы не редкость.

Ежедневно организму взрослого человека требуется 100 – 200 мкг йода, хотя по факту россияне получают йода в 2-3 раза меньше нормы! Основная причина этого – недостаточное потребление йода с продуктами питания). (2)

Тошкент вилояти Чирчиқ шаҳарининг аҳолиси 2023 йил ҳисобида 171 608 нафар қайд этилган. Агар ундан 10% дан 30 % гача қалқансимон бези турли касалликлари учраганда (10%=17 160та, 30% =51 482та). 17 160дан 51 482 нафарида қайд этилиши лозим эди, лекин 2023йилда Чирчиқ шаҳар КТМП эндокринолог кўригида **3048** нафар қандли диабетли бемор диспансер назоратига олинган. Бу шаҳарда қалқансимон без касаллигининг 5,6 баробар ёки 17,7% камлигини кўрсатмоқда , ёки беморлар мурожаат этмагани, ёки ўзида қандли диабет борлигини билмаслиги мумкинлигини кўрсатмоқда.

Хулоса: Биз Чирчиқ шаҳрида эндокрин касалликларнинг энг кўп учрайдиган ФАҚАТ 2 та касаллиги қанли диабет ва қалқансимон без касаллигини учрашини ЖССТ статистикасига солиштириб кўрдик. Барча статистик илмий манбаларда эндокрин касалликлар сони юқорилиги қайд этилиб турган вақтда, Чирчиқ шаҳрида (Ўзбекистон қалқансимон без касаллиги буйича эндемик зонага киришига қарамасдан) барча эндокрин касалликларнинг кам қайд этилиши эндокринология хизматининг тўғри йўлга қуйилмаганини кўрсатмоқда. Шаҳардаги эндокринологик беморлар ёки КТМП эндокринолог врачга мурожаат этмагани, ёки беморлар ўзида шу касаллик борлигини билишмаганини кўрсатмоқда. Шаҳарда эндокринологик

касалликларни фаол аниқлаш(тиббий кўрик) тўғри йўлга қуйилмагани, агар тиббий кўрик ўтказилганда ҳам сифатсиз(лабаротор ва УТТ бошқа тиббий аппаратларсиз текширишсиз) ўтказилганини кўрсатмоқда. Шунингдек КТМПда ажратилган битта эндоринолог врач штати етарли эмаслигини кўрсатмоқда.

Лекин тан олиш керак-ки, барча профилактика чоралари кўрилмоқда. Масалан: қалқонсимон без етишмовчилиги олдини олиш мақсадида Республикада ош тузини йодлаш, ҳатто унни йодга бойитиш йўлга қуйилган. Қандли диабетни олдини олиш учун, қандли диабетга олиб келувчи энг катта омил семиришга қарши, оммавий соғлом турмиш тарзи(турли спорт уйин ва турлари, соғлом овқатланиш, зарарли одатларни тарк этиш (чекиш ва спиртли ичимликлар истеъмол қилиш...) кенг тарғиб этилмоқда.

Фойдаланилган адабиётлар:

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KLINIK ART TERAPIYA

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Annotatsiya: ushbu maqolada Art terapiyani insonlarda qo‘llab ko‘rganda sog‘ligiga ijobiy tasir ko‘rsatilishini batafsil yozib o‘tilgan.Art terapiya insonlardagi Qo‘rquv,o‘ziga bo‘gan ishonchsizlikni bartaraf etadi. Mutaxxasislar tadqiqot natijalariga ko‘ra kasal bemorlarning hissiy, ijtimoiy, jismoniy va ruhiy tashvishlarining alomatlarini o'rganish orqali kasal bemorlarni art terapiyadan foydalanishni o'rganib chiqdi. Ular art-terapiyadan foydalanilganda kasaligdan omon qolish bilan bog'liq o'zgarishlar, yo'qotishlar va noaniqliklarga psixologik moslashish jarayonini yaxshilashi mumkinligini aniqladilar. Art terapiya metodlarining samaradorligi ko‘p jihatdan insonlarni o‘zlari tomonidan bildirilgan fikr-mulohazalari,ulaming mashg‘ulotlarga qatnay olish istagi, shuningdek, ishtirokchilarning samimiyligi va ochiqligi darajasi, shaxslararo munosabatlardagi ijobiy o'zgarishlar va boshqa belgilardan dalolat beradi.

Kalit so’zlar: Art terapiya,San‘at,Qobiliyat,Izoterapiya ,Dementia, Rivojlanish.

Аннотация: в данной статье подробно написано, что использование арт-терапии положительно влияет на здоровье. Арт-терапия устраняет у людей страх и неуверенность в себе. Эксперты изучили применение арт-терапии у больных пациентов, изучая симптомы эмоциональных, социальных, физических и психических проблем больных пациентов по результатам исследования. Они обнаружили, что использование арт-терапии может улучшить процесс психологической адаптации к изменениям, потерям и неопределенности, связанным с выживанием после болезни. Об эффективности методов арт-терапии во многом свидетельствуют мнения, высказанные людьми, их готовность участвовать в тренинге, а также уровень искренности и открытости участников, положительные изменения в межличностных отношениях и другие признаки.

Ключевые слова: Арт-терапия, Искусство, Способности, Изотерапия, Деменция, Развитие.

Annotation: in this article, it is written in detail that when people use art therapy, it has a positive effect on their health. Art therapy eliminates fear and self-doubt in people. Experts have studied the use of art therapy in sick patients by studying the symptoms of emotional, social, physical and mental concerns of sick patients according to the results of the research. They found that when art therapy is used, it can improve the process of psychological adjustment to the changes, losses and uncertainties associated with surviving the illness. The effectiveness of art therapy methods is largely evidenced by the opinions expressed by people, their willingness to participate in the training, as well as the level of sincerity and openness of the participants, positive changes in interpersonal relationships and other signs.

Key words: Art therapy, Art, Ability, Isotherapy, Dementia, Development.

KIRISH: san'atning o'zi shifobaxsh ta'sirga ega, art terapiya bu kuchni ma’lum bir muammoga yo‘naltirish va uni to‘g‘ri qo‘llash imkonini beradi.

Art terapiya (inglizcha: art- “ san’at” – terapiya davolash)san’at va ijodkorlikdan foydalanishga asoslangan psixoterapiya va psixologik korreksiyaning yo‘nalishlaridan biri. So‘zning tor ma’nosida art-terapiya odatda mijozning psixo-emotsional holatiga ta’sir ko‘rsatishga qaratilgan vizual art terapiyani anglatadi. Britaniyalik rassom Adrian Xill 1942 yilda "art terapiya" atamasini kiritgan.Sanatoriyda sil kasalligidan tuzalgan Xill tuzalish davrida rasm chizish va chizishning terapevtik afzalliklarini aniqladi. Uning yozishicha, art-terapiyaning ahamiyati "ongni (shuningdek, barmoqlarni) to'liq jalb qilishda tez-tez inhibe qilingan bemorning ijodiy energiyasini bo'shatishda", bu esa bemorga "o'z baxtsizliklariga qarshi kuchli himoyani yaratishga" imkon berdi. U bemor hamkasblariga badiiy ish taklif qildi. Bu uning art-terapiya ishini boshladi, bu 1945 yilda o'zining "Art kasallikka qarshi" kitobida yozib o’tilgan Ikkinchi Jahon Urushidan keyin demobilizatsiya qilingan rassom Edvard Adamson, Xillning ishini Britaniyadagi uzoq muddatli ruhiy kasalxonalarga kengaytirish uchun Adrian Xillga qo'shildi. Adamson Art-terapiyani qo'llash usullaridan biri bemorlarning his-tuyg'ularini ular yaratgan san'atda tasvirlash edi. Ruhiy kasallik ongga qanday ta'sir qilishini chuqurroq tushunish uchun Adamsonning kollektsiyasi bemorlar o'zlarini san'at orqali qulay his qiladigan muhit yaratish usuli sifatida boshlandi. Keyinchalik bu san'at ruhiy salomatlik mutaxassislari tomonidan tahlil qilinadi[1].Britaniyada art-

[1] https://uz.wikipedia.org/wiki/Art-terapiya

terapiyaning boshqa dastlabki tarafdorlari orasida E. M. Liddiatt, Maykl Edvards, Diana Rafael-Xalliday va Rita Simons bor. Britaniya Art-Terapevtlar Assotsiatsiyasi 1964 yilda tashkil etiladi.Art-terapiyaning asosiy maqsadi o‘zini namoyon qilish va o‘zini o‘zi bilish qobiliyatini rivojlantirish orqali ruhiy holatni uyg‘unlashtirishdir. San’atdan terapevtik maqsadlarda foydalanishning ahamiyati shundaki, u turli xilhistuyg‘ularni,sevgi, nafrat, xafagarchilik, g‘azab, qo‘rquv, quvonch va boshqalarni ramziy ravishda ifodalash va o‘rganish uchun ishlatilishi mumkin.Art-terapiya texnikasi insonning ichki meni mazmuni u chizgan rasm yoki haykaltaroshlik qilganda vizual tasvirlarida aks etadi, degan xulosaga asoslangan. 1969-yilda Amerikada AmerikaArt Terapiya uyishmasi tashkil etiladi. Art-terapiya milliy professional uyushmalari Braziliya, Kanada, Finlyandiya, Livan, Isroil, Yaponiya, Niderlandiya, Ruminiya, Janubiy Koreya, Shvetsiya va Misr kabi ko‘plab mamlakatlarda mavjud Bu uyishmada Mutaxassislar bemorlarning o‘z idrokiga ishonishlariga va ijod maxsullarini mustaqil ravishda, shuningdek, guruh bilan birgalikda o‘rganishlariga yordam beradi. Terapevtik maqsadlar birinchi o‘rinda turadi, ijodiy maqsadlar ikkinchi darajali ahamiyatga ega bo‘ladi hamda psixoterapiyaning asosiy usullariga qo‘shimcha sifatida qabul qilinadi. Art terapiya usullaridan biri transfer deb ataladi – bemor asta-sekin vizualizatsiya orqali ichki dunyosim bilishga o‘tadi.Mashqlarning ba'zilari guruhda birgalikda ishlashni o‘z ichiga olib,mutaxassis amalga oshirishga ko‘maklashadi. Art terapiyaning maqsadlariga kelsak, ular juda xilma-xildir: o’zini bilish, o‘z-o’zini ifodalash, shaxsning ichki integratsiyasi, tashqi haqiqat bilan imegratsiva, shaxsiy tajribani kengaytirish. Spontan modellashtirish voki rasm chizish art terapiyaning asosiy vositalari bo’lib, ular muzey ishlarida ham qo’llaniladi Tasviriy ijod - fantaziva va voqelikning ta'minlovchi eng yaxshi vosita bo’lib, kattalar yoki bolalarda bunga san'at yordamisiz erishishi qiyin.Psixoterapiyaning bu sohasidagi ikkinchi muhim tushuncha sublimatsiyadir. Ongsiz instinktlar va tushunchalarni san'at orqali lfodalashdan iborat:- art terapiya turli his-tuyg‘u va hissiyotlarni, asosan, ijtimoiy jihatdan maqbul tarzda ifodalash imkoniyatini beradi. Rangtasvir yoki modellashtirish - bu maqsad uchun eng xavfsiz va mos variantlardir;- art terapiya davolash jarayonini tezlashtirish uchun qo‘shimcha vosita sifatida ishlatiladi. Ichki his -tuyg’ular fikrlarini og‘zaki psixoterapiya paytida suhbatga qaraganda vizual tasvirlar orqali osonroq ifodalanadi. Noverbal shakllar barcha cheklovlarm va ongli senzurani olib tashlaydi;- art terapiyada davolash jarayonida terpretatsiya va diagnostic ishlar uchun asos yaratiladi. Ish mazmuni va uslubi terapevtga bemor haqida ko‘p ma'lumot olish imkonini beradi, bundan tashqari, bemor o‘z ishini talqin

qilish paytida ichki nizolar haqida gapirishi mumkin. art terapiya yo'qotish, travma, qo‘rquv va boshqalar kabi hayotdagi baxtiz hodisalar bilan ifodalangan his-tuyg‘ular va fikrlar bilan ishlash imkonini beradi. Ba'zan noverbal vositalar kuchli his-tuyg‘ular va e'tiqodlami ochib beradigan hamda aniqlashtiradigan yagona samaralidir usuldir Art terapiya his-tuyg‘ulami, zehnlilikni mustahkamlash va rivojlantirishga xizmat qiladi;- o‘z-o‘zini nazora qilish va ichki tartib hissini targ‘ib qiladi va iste'dod va qobiliyatini oshkor qilishga vordam beradi. Bundan tashqari, art terapiyada quyidagi psixoterapevtik ta'sir omillari ta'kidlangan:- badiiy ifoda omili - mijozning o‘z asandagi his-tuyg‘ulari, ehtiyojlari va fikrlarmi mujassamlashtirish, turli badiiy materiallar hamda badiiy tasvir bilan o‘zaro aloqa qilish tajribasi;- psixoterapiya munosabatlari omili - mijoz-terapevt-guruh munosabatlan dinamikasi (o‘tkazuvchanlik va kontrtransferensiya),proyeksiya, shaxsiy tajriba tasiri talqin va og‘zaki fikr-mulohazalar omili - materialni (ijod jarayoni va natijasi) hissiy darajadan anglash darajasiga, ma'nolarni shakllantirish darajasiga o‘zgartirish, tarjima qilish. Art-terapiyaning uchta asosiy usuli mavjud. Birinchisi analitik art terapiya deb ataladi. Analitik art-terapiya analitik psixologiyadan va ko'proq hollarda psixoanalizdan kelib chiqadigan nazariyalarga asoslanadi. Analitik art-terapiya mijoz, terapevt va san'at orqali ikkalasi o'rtasida uzatiladigan g'oyalarga qaratilgan. Art-terapiyadan foydalanishning yana bir usuli - bu badiiy psixoterapiya. Bu yondashuv ko'proq psixoterapevtlarga va ularning o'z mijozlarining san'at asarlarini og'zaki tahlil qilishlariga qaratilgan. Art-terapiyaga qarashning oxirgi usuli - bu terapiya sifatida san'at ob'ektivi. Terapiya sifatida san'at bilan shug'ullanadigan ba'zi art-terapevtlar mijozning san'at asarini og'zaki tahlil qilish muhim emas deb hisoblashadi, shuning uchun ular o'rniga san'atni yaratish jarayoniga urg'u berishadi. Art-terapiyaga barcha yondashuvlarda art-terapevt mijozi his-tuyg'ularini tushunish va ifodalash uchun bo'yoq, qog'oz va qalam, loy, qum, mato yoki boshqa vositalardan foydalanadi. Art-terapiya odamlarga kognitiv va sensorli vosita funktsiyasini, o'z-o'zini hurmat qilish, o'zini o'zi anglash va hissiy barqarorlikni yaxshilashga yordam berish uchun ishlatilishi mumkin.Shuningdek, u nizolarni hal qilishda yordam berishi va qayg'uni kamaytirishi mumkin.Hozirgi art-terapiya ko'plab boshqa yondashuvlarni o'z ichiga oladi, masalan, shaxsga yo'naltirilgan, kognitiv, xulq-atvor, gestalt, hikoya, Adlerian va oila. Art-terapiya tamoyillari insonparvarlik, ijodkorlik, hissiy ziddiyatlarni yarashtirish, o‘z-o‘zini anglashni rivojlantirish va shaxsiy o‘sishni o‘z ichiga oladi. Ruhiy salomatlikni davolash tarixida art terapiya (psixologiya va san'atni o'rganishni birlashtiradigan) hali ham nisbatan yangi sohadir. Ushbu turdagi noan'anaviy terapiya o'z-o'zini hurmat qilish va ongni

rivojlantirish, kognitiv va vosita qobiliyatlarini yaxshilash, mojarolar yoki stresslarni hal qilish va bemorlarda chidamlilikni ilhomlantirish uchun ishlatiladi. U og'zaki psixoterapiya erisha olmaydigan muammolarni hal qilish uchun hissiy, kinestetik, pertseptiv va hissiy simvolizatsiyani taklif qiladi. Art-terapiya nisbatan yosh terapevtik intizom bo'lsa-da, uning ildizlari 18-asr oxirida psixiatrik bemorlarni "axloqiy davolashda" san'atdan foydalanishgan Art-terapiya kasb sifatida 20-asrning o'rtalarida ingliz tilida so'zlashadigan va Evropa mamlakatlarida mustaqil ravishda paydo bo'lgan. O'sha paytda san'at turli sabablarga ko'ra ishlatilgan: muloqot qilish, bolalarda ijodkorlikni rag'batlantirish va diniy kontekstlarda. O'z ishlari haqida hisobotlarni nashr etgan dastlabki art-terapevtlar estetika, psixiatriya, psixoanaliz, reabilitatsiya, erta bolalik ta'limi va badiiy ta'limning turli darajada ularning amaliyotiga ta'sirini tan oldilar. BIZ. Art-terapiya kashshoflari Margaret Naumburg va Edit Kramer Xill bilan bir vaqtda mashq qila boshladilar. Pedagog Naumburgning ta'kidlashicha, "art-terapiya psixoanalitik yo'naltirilgan" va erkin badiiy ifoda "ramzli nutq shakliga aylanadi, bu terapiya jarayonida verbalizatsiyaning kuchayishiga olib keladi. Edit Kramer, rassom ijodiy jarayon, psixologik himoya va badiiy sifatning muhimligini ta'kidlab,sublimatsiyaga g'azab, tashvish yoki og'riqni o'z ichiga olgan shakllar muvaffaqiyatli yaratilganda erishiladi" deb yozgan edi. Qo'shma Shtatlardagi terapiya Elinor Ulman, Robert "Bob" Ault va Judit Rubinni o'z ichiga oladi. Art-terapiyani bemor insonlar qo’llaganda Tadqiqotlar shuni ko'rsatdiki, shifoxona xonasida faqat manzara suratini ko'rish narkotik og'riq qoldiruvchi vositalarga bo'lgan ehtiyojni va kasalxonada tiklanish vaqtini kamaytirgan. Bundan tashqari, shifoxonalarda san'atni ko'rish yoki yaratish hayotiy belgilarni barqarorlashtirishga, shifo jarayonini tezlashtirishga va bemorlarda optimizmni oshirishga yordam berdi. Saraton bilan og'rigan bemorlarga art-terapiyaning afzalliklari haqida ko'plab tadqiqotlar o'tkazildi. Art-terapiya jarrohlik, radiatsiya va kimyoterapiya bilan og'rigan bemorlarni qo'llab-quvvatlash uchun foydali deb topildi.Qo'rquv, og'riq va ijtimoiy munosabatlarning o'zgarishi kabi saraton bilan bog'liq qiyinchiliklarga duch kelgan ayollar ishtirokidagi tadqiqotda quyidagilar aniqlandi,Tasviriy san'atning turli turlari bilan shug'ullanish (to'qimachilik, kartochkalar, kollaj, kulolchilik, akvarel, akril) bu ayollarga 4 ta asosiy yo'nalishda yordam berdi. Birinchidan, bu ularga ijobiy hayotiy tajribalarga e'tibor qaratishga yordam berdi, ularning saraton kasalligi bilan doimiy mashg'ulligini engillashtirdi. Ikkinchidan, bu ularga davomiylik, qiyinchilik va yutuqlarni namoyish qilish imkoniyatini berish orqali ularning o'ziga xosligi va o'ziga xosligini oshirdi. Uchinchidan, bu ularga saraton kasalligiga qarshi bo'lgan

ijtimoiy o'ziga xoslikni saqlab qolishga imkon berdi. Nihoyat, bu ularga o'z his-tuyg'ularini ramziy tarzda ifodalash imkonini berdi, ayniqsa kimyoterapiya paytida.Boshqa bir tadqiqot shuni ko'rsatdiki, ushbu turdagi tadbirlarda qatnashganlar qatnashmaganlarga qaraganda ertaroq shifo topgan. Hatto nisbatan qisqa muddatli art-terapiya aralashuvlari ham bemorlarning emotsional holati va alomatlarini sezilarli darajada oshirishi mumkin.

Tadqiqot metodologiyasi.

O'n ikkita tadqiqotni ko'rib chiqish saraton bilan og'rigan bemorlarning hissiy, ijtimoiy, jismoniy va ruhiy tashvishlarining alomatlarini o'rganish orqali saraton kasalligida art terapiyadan foydalanishni o'rganib chiqdi. Ular art-terapiya saraton kasalligidan omon qolish bilan bog'liq o'zgarishlar, yo'qotishlar va noaniqliklarga psixologik moslashish jarayonini yaxshilashi mumkinligini aniqladilar.Art-terapiya san'atni yaratishning jismoniy harakati orqali "ma'no yaratish" tuyg'usini ta'minlashi mumkinligi taklif qilindi. Haftada bir marta beshta individual art-terapiya mashg'ulotlari o'tkazilganda, art-terapiya saraton kasalligiga chalinganlarga boshqa odamlarning ehtiyojlariga nisbatan o'z chegaralarini tushunishga yordam berish orqali shaxsiy imkoniyatlarni oshirish uchun foydali ekanligi ko'rsatildi. O'z navbatida, art-terapiya davosidan o'tganlar boshqalar bilan ko'proq bog'langanligini his qilishdi va art-terapiya davosidan o'tmaganlarga qaraganda ijtimoiy o'zaro ta'sirni yanada yoqimli deb topishdi. Bundan tashqari, art terapiya motivatsiya darajasini, hissiy va jismoniy salomatlik, umumiy farovonlik va saraton kasalliklarida hayot sifatini muhokama qilish qobiliyatini yaxshiladi.**Dementia:** Art-terapiya demans bilan og'rigan bemorlarga ijobiy ta'sir ko'rsatishi kuzatilgan taxminiy dalillar hayot sifatiga nisbatan foydalarni qo'llab-quvvatlaydi. Art-terapiya xulq-atvor muammolarini hal qilishda yordam bersa-da,degeneratsiyaga uchragan aqliy qobiliyatlarni qaytarmaydi. Badiiy vositalardan foydalanish oson va tushunarli bo‘lishi juda muhim.Art-terapiya xotiraga yoki hissiy farovonlikka ta'sir qilish bo'yicha aniq natijalarga erishmadi. Biroq, Altsgeymer assotsiatsiyasining ta'kidlashicha, san'at va musiqa odamlarning hayotini boyitib, o'zini namoyon qilish imkonini beradi. D.V. VAGA tadqiqotchisi va terapevti Zaidelning ta'kid Art-terapiya autizmli odamlarning muammolarini hal qilishda yordam berish uchun tobora ko'proq e'tirof etilmoqda.Art terapiya hissiy tartibga solish, psixomotor rivojlanishni qo'llab-quvvatlash va muloqotni osonlashtirish orqali autizm spektrining buzilishining asosiy belgilarini hal qilishi mumkin.Art-terapiya, shuningdek, o'z-o'zini ifoda etish, vizual aloqa va ijodkorlikka imkon berish orqali hissiy va aqliy o'sishni rag'batlantiradi. Eng muhimi, tadqiqotlar shuni ko'rsatdiki,

rasm chizish, chizish yoki musiqa terapiyasi autizmli odamlarga nutqdan ko'ra qulayroq tarzda muloqot qilish imkonini beradi. Misrda Misr autizm jamiyati bolalarda o'zini o'zi qadrlash va hayot sifatini oshirish usuli sifatida Art-terapiyani amalga oshirdi. Ular umumiy madaniy san'at faoliyati bo'lgan savat to'qishni art terapiya dasturlariga kiritdilar. Ushbu art-terapiya mashg'ulotlari o'z-o'zini hurmat qilishga qaratilgan tadqiqotlarning bir qismi bo'lib, art-terapiya sezilarli darajada ichki kuch va kundalik hayot ko'nikmalarini oshiradi va hissiy kasalliklar alomatlarini kamaytiradi.Terapiyaning boshqa shakllari autizm bilan og'rigan odamlarga o'yin terapiyasi va ABA terapiyasi

kiradi.Hindistonda autizm bilan kasallangan to'qqiz kishida ham nazorat ostida, ham eksperimental guruhdan foydalangan holda art-terapiya samaradorligini ko'rsatish uchun tadqiqot o'tkazildi.Tadqiqotchilardan biri Koo shunday dedi: "Ijobiy o'zgarishlar ishtirokchilarning kognitiv, ijtimoiy va motorli ko'nikmalarida sezilarli bo'ldi.Shizofreniya2005 yilda shizofreniya uchun qo'shimcha davolash sifatida art terapiyani tizimli ko'rib chiqish noaniq ta'sirlarni topdi. Guruh art-terapiyasi shizofreniyaning ayrim belgilarini yaxshilashi ko'rsatilgan. Tadqiqotlar art-terapiya klinik global taassurotni yoki funktsiyani global baholashni yaxshilamagan degan xulosaga kelgan bo'lsa-da, ular guruh sharoitida o'z his-tuyg'ularini, idroklarini va hislarini ifodalash uchun haptik san'at materiallaridan foydalanish tushkun mavzularni pasaytiradi va o'z-o'zini hurmat qilishni yaxshilashi mumkinligini ko'rsatdi. ijodkorlikni kuchaytirish va shizofreniya bilan og'rigan odamlar uchun integrativ terapevtik jarayonni

osonlashtirish.Shikastlanishdan keyingi stress buzilishi Art-terapiya uyat va g'azab kabi travmadan kelib chiqqan his-tuyg'ularni engillashtirishi mumkin. Bu shuningdek, bolalarni san'at asarlarida tanlov qilishga undash orqali travmadan omon qolganlarning imkoniyatlarini kengaytirish va nazorat qilish hissini oshirishi mumkin. Psixoterapiyaga qo'shimcha ravishda art-terapiya faqat psixoterapiyadan ko'ra travma belgilarini ko'proq kamaytirdi.Art-terapiya mijozlarda vizual tarzda kodlangan travmatik xotiralarga kirish va qayta ishlashning samarali usuli bo'lishi mumkin.Art-terapiya orqali odamlar o'zlarining travmatik tajribalarini ko'proq tushunishlari va aniq travma hikoyalarini shakllantirishlari mumkin. Ushbu rivoyatlarga asta-sekin ta'sir qilish, esdalik va dahshatli tushlar kabi travmadan kelib chiqadigan alomatlarni kamaytirishi mumkin.Ko'rsatmalarni takrorlash tashvishlarni kamaytiradi va vizual tarzda rivoyatlarni yaratish mijozlarga engish qobiliyatini va muvozanatli asab tizimining javoblarini shakllantirishga yordam beradi.Bu faqat uzoq muddatli art-terapiya aralashuvlarida samarali ekanligi isbotlangan.San'at bilan

shug'ullanish o'ziga xos narsalarni rag'batlantiradi. Art-terapiya autizmli odamlarning muammolarini hal qilishda yordam berish uchun tobora ko'proq e'tirof etilmoqda.Art terapiya hissiy tartibga solish psixomotor rivojlanishni qo'llab-quvvatlash va muloqotni osonlashtirish orqali autizm spektrining buzilishining asosiy belgilarini hal qilishi mumkin.

Kundalik qiyinchiliklar: Ruhiy yoki jismoniy kasalliklari bo'lmagan sog'lom shaxslar ham art terapiya bilan davolanadi bu bemorlarda ko'pincha yuqori intensiv ishlar moliyaviy cheklovlar va boshqa shikast bo'lmagan shaxsiy muammolar kabi doimiy muammolar mavjud. Topilmalar shuni ko'rsatdiki, art terapiya bemorlarning kasblari bilan bog'liq stress va charchash darajasini pasaytiradi. Art terapevtlar o'z mijozlarining ehtiyojlariga mos keladigan materiallar va aralashuvlarni tanlaydilar va terapevtik maqsadlarga erishish uchun seanslarni loyihalashtiradilar. Ular o'z mijozlariga tushunchani oshirish, stressni yengish, travmatik tajribalar orqali ishlash, kognitiv, xotira va neyrosensor qobiliyatlarini oshirish, shaxslararo munosabatlarni yaxshilash va o'zini ko'proq bajarishga erishish uchun ijodiy jarayondan foydalanishi mumkin. Art-terapevtning mijozlar bilan qilishni tanlagan faoliyati ularning ruhiy holati yoki yoshi kabi turli omillarga bog'liq. Art-terapevtlar bemorlar bilan ishlashda tarixiy san'at va ramzlarni qo'shish uchun Arxetipal ramzlarni tadqiq qilish arxivi kabi manbalardan rasmlardan foydalanishlari mumkin.Bolalar tomonidan qo'llaniladigan art-terapiya usuli tasvirlangan rasm.Art-terapiya turli xil sharoitlarda amalga oshirilishi mumkin. Art-terapevtlar muassasa yoki mijozning ehtiyojlariga qarab art-terapiya maqsadlarini va ular art-terapiyani taqdim etish usullarini o'zgartirishi mumkin. Mijozning kuchli tomonlari va ehtiyojlarini baholashdan so'ng, art-terapiya individual yoki guruh formatida taklif qilinishi mumkin, unga ko'ra shaxsga ko'proq mos keladi. Art-terapevt doktor Ellen G. Xorovitz shunday deb yozgan edi: "Mening mas'uliyatlarim ishdan farq qiladi. Agar xususiy amaliyotdan farqli o'laroq, maslahatchi yoki agentlikda ishlagan bo'lsa, bu butunlay boshqacha bo'ladi. Xususiy amaliyotda bu yanada murakkab va keng qamrovli bo'ladi. Agar siz asosiy terapevt bo'lsangiz, u holda sizning mas'uliyatingiz shifokorlar, sudyalar, oila a'zolari va ba'zan parvarishlashda muhim bo'lishi mumkin bo'lgan birlamchi tibbiy yordamni o'z ichiga oladi. shaxsning San'at terapevtlari va boshqa mutaxassislar hissiy, kognitiv va rivojlanish sharoitlarini baholash uchun san'atga asoslangan baholashdan foydalanadilar. Psixologik maqsadlar uchun birinchi chizma baholash 1906 yilda nemis psixiatri Fritz Mohr tomonidan yaratilgan.1926-yilda tadqiqotchi Florens Gudenof bolalarning aql-zakovatini o‘lchash uchun chizmachilik testini yaratdi, unda chizilgan rasmga ko‘proq tafsilotlarni kiritgan bola qilmagan boladan

ko‘ra aqlliroq bo‘ladi, degan fikrni ilgari surdi. tadqiqotchilar, test aql bilan bog'liq bo'lgani kabi, shaxsiyat bilan ham bog'liq degan xulosaga kelishdi.1940-yillarda yana bir qancha psixiatrik san’at baholari yaratilgan va hozir ham qo‘llanilmoqda.Biroq, ko'plab san'at terapevtlari diagnostik testlardan qochishadi va ba'zi yozuvchilar terapevtlarning sharhlovchi taxminlarini asosliligiga shubha qilishadi. Quyida mashhur art-terapiya baholashlarining ba'zi misollari keltirilgan.

Tahlillar va natijalar.

TASHQI SAN‘AT: Art-terapiya sohalari va autsayder san'ati o'rtasidagi bog'liqlik kim tomonidan keng muhokama qilingan. Art brut atamasi birinchi marta frantsuz rassomi Jan Dubuffet tomonidan "rasmiy madaniyat chegaralaridan tashqarida yaratilgan san'at" ni tavsiflash uchun kiritilgan. Dubuffet art brut atamasini aqldan ozgan bemorlarning badiiy amaliyotiga e'tibor qaratish uchun ishlatgan. Ingliz tilidagi "outsider art" tarjimasi birinchi marta 1972 yilda san'atshunos Rojer Kardinal tomonidan ishlatilgan. Autsayder san'ati ruhiy kasal yoki rivojlanishida nuqsoni bo'lgan shaxslar bilan bog'lanishda davom etmoqda.

AMALIY SAN’AT TURLARI BO‘YICHA ART TERAPIYA METODLARI : Plastik materiallar g'azab, tajovuz, qo'rquv, tashvish, izolyatsiya san'at yordamida davolash samarali vositasi hisoblanadi Individual ijodiy ish subyektning shaxsiy o‘zligi va mustaqilligini saqlab qolish ehtiyojlarini qondiradi. Bu san'at davolash texnikasi barcha yosh guruhlari bilan ishlash uchun javob beradi. N. Matveyevaning ta'kidlashicha, plastilin va loy nafaqat ijodiy ifoda vositasi, balki mukammal psixoterapevtik vositadir. Plastilinning afzalliklari aniq: yaratilgan tasvirni qayta-qayta tuzatishingiz mumkin. Biroq plastilinning kamchiiiklari aniq plastiklikda yotadi: tasvir muallifning istaklariga qarshi y'o‘q qilinishi mumkin. Muzlatilgan gil tarkibi uzoq vaqt davomida o‘z shaklini saqlab qoladi. Bundan tashqari, loy shakl bo‘yalgan bo'lishi mumkin. Plastik materiallar bilan ishlash g ‘azab va tajovuzga javob berishni osonlashtiradi va shuning uchun haqiqiy hayotda zo‘ravonlik harakatlari ehtimolini kamaytiradi. Plastilin yuzasida boiadigan shikastli vaziyatlami boshdan kechirgan bolalar bilan ishlashda, ularning aqliy sezgirligini tiklash maqsadida qoilaniladi. 0‘z his-tuyg‘ularmi shu tarzda ifoda etib, bola asta-sekin qo'rquvdan ozod bo‘ladi va tajriba ruhiy travmaga aylanmaydi. Umuman, art terapiya faoliyati turli tasavvurni rivojlantirish oddiy ulami modellashtirish orqali narsalar dunyoni harakat qilish uchun yordam, ichki rejasida harakat qilish ishtirokchilarining qobiliyatini shakllantirish, motor ko nikmalarini rivojlantirish, faoliyatm tartibga solish shakllanishiga hissa qo‘shadi. Tasviriy faoliyat bilan birgalikda plastilin va gil bilan ishlash ta'limga oid, davolash, korreksiyani

ko‘ngilochar, ijodiy jarayonga aylantirishga yordam beradi. So'z va ramzlar, jonli taassurotlar va o‘z-o‘zini tartibga solishning tabiiy mexamzmlarim boshlashi mumkin real his-tuyg‘ularini jonlantiradi. Bezovtalik hissi (hissiy komponent), albatta, tashvish (motor komponent), shuningdek, bolaning fikrlari (ruhiy komponent) ava tabiatidagi o‘zgarishlariga sabab bo'ladi. Shuning uchun ijobiy tasvirni chizish, xayol, 93 yuz ifodalari, imo-ishoralar, harakatlar, o'zingiz va boshqalarga munosabat aks etadi zavq hissini sezishingiz mumkin. Bu potensial ijobiy mavzular bilan davolash maqsadlari uchun. ayniqsa, foydalidir. «Men yaxshi emasman»; «Mening eng yoqimli (yorqin, mehribon, baxtli) bolalik taassurotlarim»; «Quvonch». Art terapiya metodlarining samaradorligi ko‘p jihatdan ishtirokchilarning o‘zlari tomonidan bildirilgan fikr-mulohazalari, ulaming mashg‘ulotlarga qatnay olish istagi, shuningdek, ishtirokchilarning samimiyligi va ochiqligi darajasi, shaxslararo munosabatlardagi ijobiy o'zgarishlar va boshqa belgilardan dalolat beradi. Umuman olganda, taqdim etilgan mashqlar juda ko‘p qirralidir. Ular real hayotda inson xulq-atvori modelini aks ettiruvchi ko‘zguga o‘xshaydi[2].

RANGTASVIR BO‘Y1CHA ART TERAPIYA METODLARI: Izoterapiya - art-terapiyaning eng mashxur va samarali usullaridan biridir. Bunda tasviriy san'atdan turli darajadagi ruhiy kasalliklarni davolash yoki shunchaki pedagogik maqsadlar uchun foydalaniladi. Izoterapiyada ko pincha rasm chiziiadi, lekin loydan turli shakllar yasash, loto suratga olish, narsalarga bezak berish ham unga tegishli. Ushbu uslub bolalar bilan ishlashda keng tarqalgan bo'lib, kattalar uchun ham samaralidir. Mashg4ilotlar ham individual, ham guruhli bo‘lishi mumkin. Usui psixorrektsiya, psixiatriya, terapiya, tibbiy psixologiya va ijtimoiy psixologiya amaliyotida keng qoTlaniladi. Izoterapiya - bu art terapiyaning eng keng tarqalgan va qo‘llaniladigan turlaridan biridir. Tasviriy san'at yordamida davolash va turli xil muammolarni hal qilish juda mashxur hamda ko‘pchilik uchun qulaydir. Inson (mijoz) o‘zini, o ‘z fikrlarini, tajribalarini, hissiyotlari va histuyg‘ularini - uning ichki dunyosida yashiringan barcha narsalarni - qog‘oz yoki chiziqlar, shakllar va ranglar yordamida ifoda etishi mumkin. Chizish uchun turli xil materiallar qollam ladi: (guash, akvarel, akril va boshqalar). Izoterapiya - bu odamga salbiy his-tuyg‘ulami

[2] G.Orifjanova . Art terapiya T. «Lesson-press» nashriyoti. 2020-y

yengishga yordam beradigan samarali usuldir. Uning samaradorligiga qaramay, izoterapiya alohida davolash usuli va psixologik yordam sifatida yarim asr oldin paydo bolgan. Izoterapivaga bo‘lgan talab shuni anglatadiki, bunday chizish jarayoni stressni yengillashtirish, tinchlanish va o‘z faoliyatidan qoniqish his qilish imkoniyatini beradi. Maktabgacha yoshdagi bolalar uchun rasm chizish - bu o ‘zlarining yangi tajribalarini aks ettirish va tushunish uchun o‘zlarini ifoda etish bilan tanishish usuli hisoblanadi. Bola bilan ishlashda izoterapiya bola va uning ichki dunyosi haqida juda ko‘p ma’lumot beradi. u nimani o ‘ylaydi, nimani Ins qiladi, nimadan qo‘rqadi, kimni va nimani sevadi va hokazo. Bolalar o'zlarining rasmlari orqali boshqalar bilan solzma-so‘z «suhbatlashadilar». Psixolog va kattalar bolani tezroq va osonroq 67 tushinishlari va izoterapiya bilimlaridan foydalanib unga yordam berishlari mumkin. His-tuyg‘ularingizni o‘zingiz va boshqalar uchun xavfsiz tarzda ifoda eting. Izoterapiya psixologik tanglik, tajovuzkorlik, asabiylashish, muvozanatsizlik, hasad, qo'rquv va hokazolardan xalos bo‘lishingiz kerak bo‘lgan hollarda samarali bo‘ladi. 0 ‘ziga past baho berish. Statistik ma'lumotlarga ko'ra, odamlarning 70 % dan ko'proqi o ‘zini past baholash va o ‘ziga ishonmaslikdan aziyat chekmoqda Amaliy izoterapiya mashqlari orqali har kim o ‘z qadr-qimmatini sezilarli darajada oshirishi va o ‘ziga ishonishi mumkin. Bundan mshqari quyidagi muammolari bilan ishlashi mumkin. Xatti-harakatlar bilan muammolar, Munosabatlar muammolari yoki oilaviy muammolar,Surunkali stress va psixosomatik kasalliklar. Bundan tashqari izoterapiya mashg'ulotlari ijodiy salohiyatni ochib berishga yordam beradi va insonda yangi resurslar va imkoniyatlarni ochadi. Izoterapiya darslari ham individual konsultatsiyalarda, ham guruh mashg‘ulotlarida, seminarlarda o‘tkaziladi. Mijozning talabiga (yoki mashg‘ulot mavzusiga) qarab, psixolog izoterapiya sohasidagi maxsus mashqlar va topshiriqlami beradi. Barcha vazifalar bajarilgandan so‘ng, ikkinchi muhim bosqichga - ong osti tortib olishga muvaffaq bo‘lgan material va ma'lumotlami tahlil qilish va tushunishga o‘tadilar. Ushbu bosqichda mijozlar ko‘pincha o‘zlarining shaxsiy tushunchalarini izohlaydilar. Ushbu bosqichda mijozlar o‘zlarining shaxsiy tushunchalariga ega bo‘lib o‘z muammolarini tushunib boshlashadi, bu esa ularga eng katta yordam qo‘lini cho‘zadi. Psixolog yordamida mijoz o ‘z muammolarini hal qilish yo‘llarini ko‘rishni va tushunishni boshlaydi, ba'zan esa rasmlami yaratish jarayonida o‘z muammolarini osonlik bilan hal qilishi ham mumkin. Izoterapiya mashgbulotlaridan so‘ng mijozlar o‘zlarining chizilgan rasmlarini saqlashlari kerak bo‘ladi. Izoterapiya bo‘yicha bitta mashg‘ulot yoki maslahat ham yangi ijobiy tajriba berishi va bilmagan odamga nimanidir ochib berishi mumkin. 68 Izoterapiyaning

boshqa psixoterapiya ishlaridan afzalliklari: deyarli har bir kishi (yoshidan qat'iy nazar) izoterapevtik ishda ishtirok etishi mumkin, bu undan hech qanday vizual yoki badiiy mahorat talab qilmaydi. Izoterapiya bu asosan og‘zaki boMmagan aloqa vositasidir. Bu, aymqsa, nutqi yaxshi bo‘lmaganlar, o‘z tajribalarini og‘zaki tasvirlash qiyin boiganlar uchun juda qimmatlidir. Vizual faoliyat odamlarni yaqinlashtirishning kuchli vositasidir. Aloqalarni o'rnatish qiyin bo‘lgan, o‘zaro begonalashgan vaziyatlarda juda inuhimdir. Tasviriy san'at mahsulotlari insonning kayfiyati va fikrlarining obyektiv dalilidir, bu ularning holatini baholash, tegishli tadqiqotlar o4kazish uchun foydalanishga imkon beradi. Izoterapiya - bu o‘zirn erkin ifoda etish vositasidir, insonning ichki dunyosiga ishonch, bag'rikenglik va e'tibor muhiti nazarda tutiladi Izoterapiya ishlari ko‘p hoilarda odamlarda ijobiy his-tuyg^ularrh uyg‘otadi, befarqlik va tashabbus yetishmovchiligini yengishga, faol hayotiy pozitsiyani shakllantirishga yordam beradi. Izoterapiya mashg'ulotlari quyidagi muhim pedagogik muammolarni hal qilishga imkon beradi. Ta'limiy Tuzatish Psixoterapevtik Diagnostik o’zaro munosabatlar bolalar to‘g‘ri muloqot,hamdardlik va lengdoshlari va kattalar bilan hurmatli munosabatlarni o‘rganadigan tarzda quriladi. Bu shaxsning axloqiy rivojlanishiga hissa qo‘shadi. 0‘qituvchi bilan ochiq, ishonchli, xayrixoh munosabatlar rivojlanadi. Ilgari deformatsiyaga uchragan bo‘lishi mumkin boigan «men» imidji muvaffaqiyatli tuzatiladi, o ‘zini o‘zi qadrlash yaxshilanadi, xattiliarakatlarnmg yetarli boMmagan shakllari yo‘qoladi va boshqa odamlar bilan o'zaro aloqa usullari o'rnatiladi. Shaxsiyatning emotsional-irodaviy sohasini rivojlantirishda ba’zi oqishlar bilan ishlashda yaxshi natijalarga erishiladi. Sog‘aytiruvchi effekt ijodiy faoliyat jarayonida hissiy iliqlik va xayrixohlik muhiti yaratilishi tufayli erishiladi. Psixologik qulavlik, xavfsizlik, quvonch, muvaffaqiyat hissi vujudga keladi. Nalijada hissiyotlaming davolovchi salohiyati safarbar qilinadi. Art terapiya bolaning rivojlanishi va individual xususiyatlari haqida ma'lumot olishga imkon beradi. Bu uni mustaqil faoliyatda kuzatish, uning qiziqishlari va qadriyatlarini yaxshiroq bilish, ichki dunyosini ko‘rish, shuningdek, maxsus tuzatishga to‘g‘ri keladigan muammolarm aniqlashning to‘g‘ri usuli. Sinflar davomida shaxslararo munosabatlaming tabiati va jamoadagi har binning haqiqiy mavqei, shuningdek, oilaviv vaziyatning o‘ziga xos xususiyatlari osongina namoyon boMadi. Izoterapiya ko‘p tomonlama diagnostika qobiliyatiga ega, uni proeksion testiar deb tasniflash mumkin. Izoterapiya 3 ta fan - psixologiya, psixiatriya va san’atshunoslikni o‘z ichiga oladi. 1872-yilda ruhiy kasallammg ahvoli yomonlashganda ularda ushbu usulni qollashni boshlashdi. Ammo ahvollari barqarorlashishi bilanoq, bemorlar

darhol bo‘yashni to‘xtatdilar. Psixiatr M. Simon va shifokor A. Arde usul asoschilari hisoblanadi.

Xulosa: xulosa o’rnida shuni takidlash mumkinki art terapiyani bemor insonlarda va yosh bolalarda ham qo’llash ruhiy steressni kamaytiradi,o’ziga ishonch ortadi. Art-terapiya uyat va g'azab kabi travmadan kelib chiqqan his-tuyg'ularni yengillashtiradi.shuningdek, bolalarni san'at asarlarida tanlov qilishga undash orqali travmadan omon qolganlarning imkoniyatlarini kengaytirish va nazorat qilish hissini oshirishi mumkin. bu ularga o'z his-tuyg'ularini ramziy tarzda ifodalash imkonini beradi. tadqiqotlar shuni ko'rsatdiki, art terapiya tadbirlarda qatnashganlar qatnashmaganlarga qaraganda ertaroq shifo topgan. Hatto nisbatan qisqa muddatli art-terapiya aralashuvlari ham bemorlarning emotsional holati va alomatlarini sezilarli darajada oshirishi mumkin. Qo'rquv, og'riq va ijtimoiy munosabatlarning o'zgarishi kabi saraton bilan bog'liq qiyinchiliklarga duch kelgan ayollar ishtirokidagi tadqiqotda quyidagilar aniqlandi,Tasviriy san'atning turli turlari bilan shug'ullanish (to'qimachilik, kartochkalar, kollaj, kulolchilik, akvarel, akril) bu ayollarga 4 ta asosiy yo'nalishda yordam berdi.

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“MAN” RUSUMLI AVTOMOBIL DVIGATELI YONILG‘I NASOSINING DETALLARINI TA’MIRLASH

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Annotatsiya.1915 yildan beri radiator panjarasida uchta harfli nemis yuk mashinalari - MAN Evropa yo'llari bo'ylab harakatlanmoqda. Bir asr oldin ham, hozir ham bu mashinalar kuch, ishonchlilik va tezlikni ifodalaydi. Afsonaviy avtogigant bugungi kunda nimani taklif qilmoqda? Ushbu maqolada yangi ishlanmalar, hozirgi dvigatel modellari va MAN yuk mashinalaridir.

Kalit so‘zlar:Damper prujina, bypass vana,Raf pnevmatik tsilindri, Common Rail yonilg'i tizimi,

YOQILG'I NOSOSI

Dvigatelning har bir tsilindri alohida VIT (o'zgaruvchan in'ektsiya vaqti) yonilg'i pompasi bilan jihozlangan bo'lib, u mos keladigan silindrning eksantrik mili qismi ustidagi musluk korpusiga o'rnatiladi[1].Yoqilg'i pompasi korpusining kvadrat asosi oqayotgan yoqilg'ini to'playdigan truba bilan jihozlangan, u erdan drenaj trubasiga tushadiTokchalar uchun taglikda ikkita teshik ham mavjud. Yuqori stend aylanma avansli vtulka yordamida inyeksiya vaqtini tartibga solishga xizmat qiladi, pastki stend esa nasos tomonidan etkazib beriladigan yonilg'i miqdorini moslashtiruvchi aylanma vtulka yordamida tartibga soladi.

Yuqori qismida yonilg'i quyish pompasi korpusi aylanma valfi qurilgan yuqori qopqoq bilan yopiladi. Qopqoq nasos korpusiga o'rnatilgan yong'oq va tirgaklar bilan mahkamlanadi. Yuqori qopqoqning pastki qismida assimilyatsiya valfi o'rnatilgan bo'lib, u nasos gilzasi uchun ham qo'llanma bo'lib xizmat qiladi. Shlangi va assimilyatsiya valfi o'rtasida muhrlanish uchun assimilyatsiya klapanining pastki qismida O-ring o'rnatilgan[2-4].

Yoqilg'i nasos korpusining old tomonidagi gardishli ulanishlar orqali ta'minlanadi. Nasosning orqa tomonidagi mos keladigan gardishga damper (kompensator) biriktirilgan bo'lib, u har bir tushirish zarbasi oxirida o'chirish teshiklarini ochish paytida yuzaga keladigan zarbalarni qoplaydi.Damper prujinali pistonli silindrdan iborat bo'lib, bosim kamerasidan ortiqcha yoqilg'i bosim ostida vtulka atrofidagi kirish bo'shlig'iga majburan kiritilganda bosim o'chiriladiVulkaning kesilgan teshiklari qarshisida ikkita vintli vilka (vilkalar) o'rnatilgan. Bo'shatish zarbasi oxirida o'chirish portlari orqali chiqarilgan yoqilg'i oqimlari bu vilkalarga kuch bilan uriladi, agar ular eroziyalangan bo'lsa, ularni almashtirish mumkin. Nasosi korpusining yuqori qismida birlashtiruvchi qismlarning to'g'ri joylashishini ta'minlaydigan pin mavjud[3-5].

PLONGER VURTALARI VA OLGAN SOZLASH AYLANMA VURTALARI

Piston juft vtulkasi nasos korpusining yuqori va pastki qismlarida boshqariladi. Ushbu vtulkada yivlarda uchta past ishqalanishli O-halqalar mavjud bo'lib, bu vata va korpus o'rtasida muhrni ta'minlaydi. Vtulkada, pastki qismida ikkita o-ringlar orasidagi drenaj teshigi mavjud.

Plunger juft vtulkasining pastki uchida avansni sozlash uchun aylanma vtulkaning ichki ipiga mos keladigan ip kesiladi.Aylanadigan avansli vtulka tishli halqaga ega bo'lib, u bilan yonilg'i quyish pompasi korpusining tagida joylashgan ustki tishli tokcha ulanadi. Tishli halqa va tokchalar demontaj qilinganidan keyin birlashtiruvchi qismlarning to'g'ri joylashishini ta'minlash uchun belgilar bilan

belgilanadi. Raf pnevmatik tsilindrga ulangan, uning holati boshqaruv rolikining holati bilan belgilanadi. Yuqori rafning holati tishli ulanish orqali pistonga nisbatan butaning vertikal holatini aniqlaydi.Xuddi shu tarzda, silindrga yonilg'i quyishning boshlanishi (avans) pnevmatik servo tsilindr (pozitsioner) tomonidan sozlanishi mumkin. Piston jufti vtulkasining aylanishi qarshi pompasi korpusining old tomoniga o'rnatilgan yo'natiruvchi vint bilan oldini oladi[6-7].

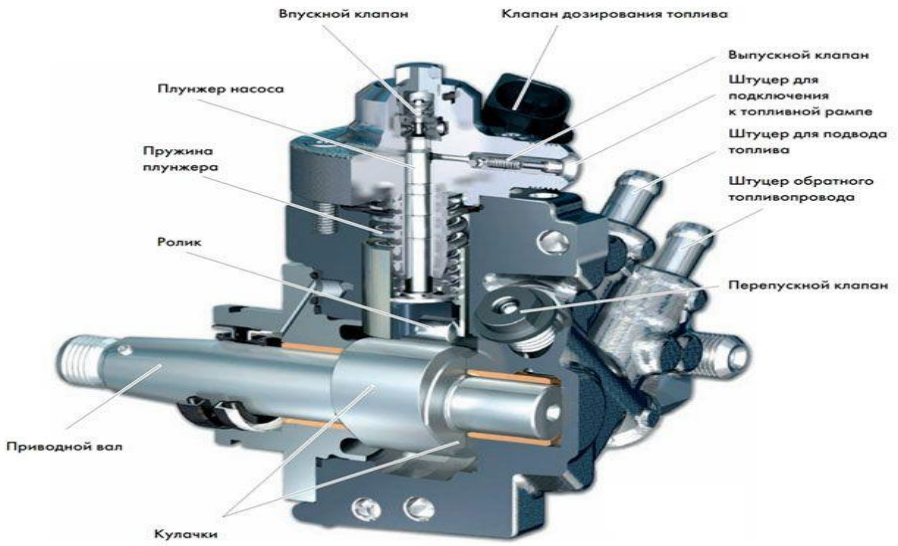
NASOS PLUNGERI VA AYLANILGAN SOZLASH VTUKASI

Piston vtulkaga aniq o'rnatiladi va aniq tor juftlikni hosil qiladi. Vulka va piston har doim birga bo'lishi kerak va ularni alohida almashtirib bo'lmaydi.Piston harakatlanayotganda, yengdagi ikkita o'chirish teshigi ochiladi va yopiladi. Bu funksiya pistonning boshqaruv mexanizmi tomonidan aylanishi bilan birgalikda vosita tsilindriga AOK qilingan yoqilg'i miqdorini tartibga soladi.Pistonda aylanma rostlash ushlagichining uyasiga kiradigan yo'naltiruvchi yoqaga ega. Pastki qismida uning asosi mavjud bo'lib, u itargichning halqali chuqurchasining nayzali ulanishida tovonga tayanadi. Tozalash taxminan. Pistonning tagligi va itargich orasidagi 0,1 mm pistonning itargichda aylanishini ta'minlaydi.Aylanadigan rostlash ushlagichi tishli halqaga ega bo'lib, u inyeksiya pompasi korpusining tagidagi pastki tokchaga tutashadi. Tishli halqa va tokchalar demontaj qilingandan so'ng birlashtiruvchi qismlarning to'g'ri joylashishini ta'minlash uchun belgilar bilan belgilanadi. Raf nazorat mexanizmiga prujinali ulanish orqali ulanadi. Shunday qilib, agar piston tiqilib qolsa (tiqilib qolsa), qolgan qarshi nasoslarining tartibga solish mexanizmi bloklanmaydi.

BYPASS VANA

Bypass valfi yonilg'i quyish pompasi qopqog'ining yuqori qismiga o'rnatiladi. Bypass klapan dvigatelning boshqaruv havo tizimiga ulanadigan pistondan iborat. O'chirishdan himoya qilish tizimi yoki Yoqilg'i oqishi APS tizimi (qo'shimcha) faollashtirilganda yoki To'xtatish buyrug'i bajarilganda, yuqoridan pistonga siqilgan havo etkazib beriladi, bu esa pistonning novda bilan harakatlanishiga olib keladi va yoqilg'i oqimini to'xtatadi. injektorga. Bypass klapanining ishlashi paytida yoqilg'i

teshiklar orqali inyeksiya pompasi korpusiga qaytadi va in'ektsiya sodir bo'lmaydi.



YONILG‘I TIZIMI

Yoqilg'i quyish pompasi korpusining old tomonidagi quvur liniyasi orqali elektr bilan boshqariladigan aylanma nasosdan etkazib beriladi. Yoqilg'i bosimi aylanma valfi tomonidan doimiy ravishda saqlanadi, rasm. 90915, asosiy yonilg'i liniyasi qarshi nasosi va qaytib yonilg'i quvuri o'rtasida joylashgan. Inyeksiya pompasi va injektorlar isitiladigan yoqilg'ining aylanishi uchun mo'ljallangan, shu bilan to'xtash vaqtida va yonilg'i quyish oralig'ida ularning isitilishini ta'minlaydi[8-10].

Yangi avlod MAN dvigatellarining xususiyatlari

2004 yilda MAN D20 seriyali dizel dvigatellarini taqdim etdi, bu uzoq vaqt davomida Evropada dvigatel qurilishining rivojlanish vektorini aniqladi. Ushbu dvigatellar o'sha vaqt uchun yangi Common Rail yonilg'i tizimi bilan jihozlangan va mukammal texnik xususiyatlarga ega edi[8]. Yaqinda MAN o'z dvigatellarini yana yangiladi va eng so'nggi talablarga javob beradigan D20 asosida bir nechta yangi dvigatellar seriyasi yaratildi. MAN hozirda beshta dvigatel seriyasini taklif qiladi:

- Inline to'rt silindrli D0834;
- Inline olti silindrli D0836;
- Inline olti silindrli D2066;
- Inline olti silindrli D2676;
- V shaklidagi sakkiz silindrli D2868.

1090705_0.jpgBarcha dvigatellar Common Rail yonilg'i tizimi va turbokompressor, shuningdek dvigatelning asosiy parametrlarini o'rnatadigan elektron boshqaruv bloki bilan jihozlangan (aytmoqchi, qurilmadagi mikrosxemalarni oddiy miltillash yoki almashtirish xususiyatlarni o'zgartirishi mumkin). ko'plab avtomobil egalari tomonidan faol foydalaniladigan dvigatel, lekin MAN rasman bunday manipulyatsiyani amalga oshirishni taqiqlaydi). MAN dvigatellarida ekologik xavfsizlikka katta e'tibor beriladi - barcha dvigatel seriyalari Evro-5 va EEV (2015 yilda kuchga kiradigan Evro-5 va Evro-6 o'rtasidagi oraliq sinf) standartlariga mos keladigan modifikatsiyaga ega[11-12]. Va faqat eski D20 va D26 dvigatellarining ba'zi modifikatsiyalari Evro-2 standartlariga mos keladi.

Yangi MAN dvigatellarining butun qatori 150 dan 680 ot kuchigacha quvvatni qamrab oladi, shuning uchun D08 va B2x dvigatellari turli toifadagi yuk mashinalarida ishlatilishi mumkin.

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KORRUPSIYA -KELAJAGIMIZ KUSHANDASI

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Annotatsiya: Ushbu maqolada korrupsiya haqida tariximizga nazar soladigan bo’lsak, yozma manbalarda korrupsiya haqida eramizdan avvalgi Shumer podsholigi davrida eslatib o‘tiladi. Korrupsiya bizning kunlargacha yetib kelganligi shundan dalolat beradiki, boshqa illatlar kabi, uni ham tag-tugi bilan yo‘qotib bo‘lmaydi. Hatto rivojlangan o‘arb davlatlari ham korrupsiyadan butkul xalos bo‘lolmagan. Biroq jamiyat rivojiga xavf soluvchi korrupsiyaning oldini olish, unga qarshi kurashish Yer yuzidagi barcha davlatlarda hamisha va hamma zamonda davom etgan.

Kalit so’zlar: Korrupsiya, jamiyat, davlat, surushtiruv, jinoyatchi, adolatsizlik, daromad, jamoatchilik, huquq, idora, boshqarma, illati, muammo, yechim, taklif.

Аннотация: В этой статье мы рассмотрим историю коррупции. В письменных источниках упоминается коррупция во времена Шумерского царства до нашей эры. Тот факт, что коррупция дошла до наших дней, показывает, что, как и другие пороки, ее невозможно полностью искоренить. Даже развитые западные страны не смогли полностью избавиться от коррупции. Однако предотвращение коррупции, угрожающей развитию общества, и борьба с ней всегда продолжались во всех странах Земли.

Ключевые слова: Коррупция, общество, государство, дознание, преступник, несправедливость, доход, общественность, закон, должность, управление, порок, проблема, решение, предложение.

Abstract: In this article, we will look at the history of corruption. Written sources mention corruption during the Sumerian kingdom before Christ. The fact that corruption has reached our days shows that, like other vices, it cannot be completely eradicated. Even the developed western countries could not completely get rid of corruption. However, the prevention of corruption, which threatens the development of society, and the fight against it, have always continued in all countries on Earth.

Key words: Corruption, society, state, inquiry, criminal, injustice, revenue, public, law, office, administration, vice, problem, solution, proposal.

Kirish. Korrupsiya masalasi dunyo miqyosida hal etilishi lozim bo‘lgan eng asosiy global muammolardan biridir. Bu muammo har qanday davlat va jamiyatning ijtimoiy-siyosiy va iqtisodiy rivojlanishiga jiddiy putur yetkazadigan, inson huquq va erkinliklarining poymol bo‘lishiga olib keladigan salbiy illatdir. Shuning uchun ham bugungi kunda korrupsiyaga qarshi kurash masalasi xalqaro ahamiyat kasb etib, jahon siyosatining muhim masalalari qatoridan joy oldi.

Korrupsiyaning eng keng tarqalgan turlariga davlat mulkini talon-taroj qilishlik, poraxo‘rlik, firibgarlik, tovlamachilik kabi bir qator jinoyatlar kiradi. Bunday jinoyatlar iqtisodiyotni zaiflashtirib, siyosiy boshqaruvni izdan chiqarishi va fuqarolarning davlat tizimi va siyosiy tizimlarga nisbatan ishonchsizligini hamda noroziligini keltirib chiqaruvchi omillar deyishimiz mumkin [1].

Masalaning qo‘yilishi va tadqiqot usuli. Korrupsiya — bu jamiyatni turli yo‘llar bilan iskanjaga oladigan dahshatli illatdir. U demokratiya va huquq ustuvorligi asoslariga putur yetkazadi, inson huquqlari buzilishiga olib keladi, bozorlar faoliyatiga to‘sqinlik qiladi, hayot sifatini yomonlashtiradi va odamlar xavfsizligiga tahdid soladigan uyushgan jinoyatchilik, terrorizm va boshqa hodisalar ildiz otib, gullashi uchun sharoit yaratib beradi [2].

Nazariyotchi olimlar, siyosatchilar va amaliyotchilar o‘rtasida korrupsiya tushunchasi to‘g‘risida turli-tuman fikr va mulohazalar mavjud bo‘lib, ko‘pchilik uni kengroq ma’noda ifodalashga harakat qiladi. Ba’zi olimlar pora evaziga sotilishning o‘zini korrupsiya desa, ba’zilar korrupsiya bu keng ko‘rinishdagi jinoiy uyushma, deb ta’riflaydi [3]. Nazariy talqin etganda korrupsiya – davlat funksiyasini bajarish topshirilgan xizmatchilarning o‘z xizmat mavqyei va egallab turgan mansabi hamda u bilan bog‘liq bo‘lgan obro‘sidan shaxsiy boylik orttirish maqsadida yoki bir guruh shaxslarning manfaatlari yo‘lida g‘araz maqsadlarda foydalanishdan iborat bo‘lgan hokimiyatga putur yetkazishda ifodalangan jamiyat uchun xavfli hodisadir. Shuning uchun ham adabiyotlarda “Davlat funksiyalarini bajarish vakolatiga ega bo‘lgan shaxslarning g‘ayriqonuniy tarzda moddiy va boshqa boyliklar, imtiyozlarni olishda o‘z maqomi va u bilan bog‘liq imkoniyatlardan foydalanishi”, deb ta’kidlanadi [4].

Korrupsiyaga aralashgan, bu jirkanch illatga qo‘l urgan odam uchun aziz narsalar, mo‘’tabar tuyg‘ularning qadri yo‘qoladi. Bunday odamlar hayotda hamma narsani sotib olish va sotish mumkin, deb o‘ylaydi. Ular uchun hayot faqat puldan iborat, deb qarash fikri ustunlik qiladi. Imon-e’tiqod, or-nomus, vijdon, xullas,

umuminsoniy qadriyatlar, ular uchun xuddiki ertakdir. Shu bois ham ular ota-onasi, qarindosh-urug‘lari, yoru birodarlari, mahalla-ko‘yning yuzini yerga qaratishdan, boshini egishdan uyalmaydi [5].

Tadqiqot natijalari va ularning muhokamasi. So‘nggi yillarda korrupsiyaga qarshi kurashish borasidagi ishlar mutlaqo yangi bosqichga ko‘tarildi. Prezidentimiz tashabbusi bilan butun mamlakatda tom ma’noda korrupsiyaga qarshi urush e’lon qilindi. Shu sababli loqaydlik, befarqlik, ikkiyuzlamachilik, tovlamachilik, firibgarlik, urug‘-aymoqchilik, tanish-bilishchilik, poraxo‘rlik kabi illatlarning sodir etilishiga qarshi kurashda barchaning faolligi yaqqol ko‘zga tashlanmoqda. Shu ma’noda joylarda va ta’lim muassasalarida korrupsiyaga oid tadbirlar, turli tanlovlar har yili o‘tkazilib kelinmoqda [6]. Mamlakatimizning kelajagini va obro‘-e’tiborini qadrlaydigan har bir vijdonli fuqaro bu kabi tahdidlarni esda tutmog‘i darkor. Halol mehnat qilish, o‘z bilimi, kuch-g‘ayrati va ijodiy qobiliyatini sarflash uchun barqaror shart-sharoit bo‘lishini istaydigan, farzandlari va yaqin kishilari kelajakda ham demokratik, fuqarolik jamiyatida sivilizatsiyalashgan bozor munosabatlarining samaralaridan to‘la-to‘kis foydalanishni orzu qiladigan har bir fuqaro, korrupsiya yo‘liga o‘z vaqtida zarur to‘siq qo‘yilmasa, bu illatlar qanday ayanchli oqibatlarga olib kelishini anglash qiyin emas. Biz korrupsiya balosiga birgalikda, ahillik bilan, dadil qadamlar ila kurashmog‘imiz zarur [7].

– Bugungi kunda keng xalq ommasiga korrupsiya bilan qo‘lga olingan jinoyatchilarning keyingi qismatlari haqida yetarlicha axborot berilmayotir. Bu boradagi taklifim, ular jazoga tortilgach, vaqti-vaqti bilan jazoni o‘tash jarayonlari, qanchalik ko‘zlari ochilayotgani, pushmon-u armonga to‘la «dil so‘zlari», bola-chaqalarining anduhli intervyulari ham namoyish etib borilsa, bu boradagi huquqiy-ma’rifiy ishlar samaradorligi yanada ortgan bo‘lar edi [8].

– Antikorrupsion qonunchilikni yanada rivojlantirish;

– Korrupsiyaga aniq ta’rif ishlab chiqish va qonunchilikka joriy qilish;

– Milliy qonunchiligimizni BMT Korrupsiyaga qarshi konvensiyasi talablari bilan hamohangligini ta’minlash;

-Davlat xizmatchilarining “Hulq-atvor Kodeksi”ni ishlab chiqish;

– Respublikamizning markaziy telekanalida jamiyatimizdagi korrupsion holatlar, shuningdek, har xil jinoyatchilik va huquqbuzarlik holatlarini fosh etishga qaratilgan «Adolat mezoni-24» nomli telekanal tashkil etish maqsadga muvofiqdir. Korrupsiyani yengishning turli yechimlari taklif qilinadi. Ba'zilar avvalo tizimni raqamlashtirish zarurligini aytsa, boshqalar ishchilar maoshini ko‘tarish, qonuniy

jazoni kuchaytirish va korrupsiya holatlarini aniqlash bo‘yicha alohida tekshiruvlarni amalga oshirish kerakligini ta'kidlaydi [9-11].

Korrupsiya nima? Faraz qiling, siz tansoqchi yolladingiz va sizni himoya qilishi uchun qurol berdingiz. Endi unda sizga nisbatan ustunlik mavjud: uning quroli bor, sizda esa yo‘q. Bu qurolni u ertaga o‘zingizga qarshi ishlatmasligiga kim kafolat beradi?

Xulosa. XX asrning ikkinchi yarmida kam rivojlangan davlatlarda korrupsiya jamiyatning rivojlanishi uchun yaxshi, degan fikr keng tarqalgan (Leff, 1964; Hantington, 1968; Lui, 1985). Chunki bu davlatlarda qonunlar to‘g‘ri ishlab chiqilmagan, mansabdor shaxslar lavozimiga tushunarsiz usullarda tayinlangan. Bunday holatda odamlarning biznesni rivojlantirish va sun'iy to‘siqlarni bartaraf etish uchun pora berishdan boshqa iloji qolmaydi. Lekin XXI asrga kelib ko‘pchilik olimlar korrupsiyaning foydalaridan ko‘ra zararlari ko‘pligini tan olishdi. Uning ustiga korrupsiya holatini yaxshi deyish aslida davlat sektorini yaxshilash, rivojlantirish vazifasi keyinga surilishiga olib keldi. Jumladan, iqtisodiy sohada korrupsiyaning mavjudligi quyidagi jarayonlarga doimiy ravishda salbiy ta'sir o‘tkazadi:

- davlat mablag‘lari va resurslarining samarasiz taqsimlanishi va sarflanishiga,
- biznesni yuritishda vaqt va moddiy xarajatlarning oshishiga,
- narxlarning o‘sishiga,
- raqobat muhiti yomonlashishi va hamma uchun o‘yin qoidalarining bir xil bo‘lmasligiga,
- xufiyona iqtisodiyot o‘sishi va soliq tushumlarining kamayishiga,
- investitsion muhit yomonlashishiga, investitsiyalar kamayishi va umuman mamlakat iqtisodiyoti samaradorligining pasayishiga olib keladi.

Demak, korrupsiyani kamaytirish uchun undan foydani kamaytirib zararni ko‘paytirish kerak. Buning uchun quyidagi ishlarni bajarish kifoya:

- qonuniy jazoni kuchaytirish va uning muqarrarligini ta'minlash;
- korrupsiya holatlari va keltirib chiqaruvchi omillarni aniqlash bo‘yicha alohida tekshiruvlarni kuchaytirish;
- ishchi maoshini oshirish.

Demak, biz ishni birinchi navbatda o‘zimizni va bolalarimizni to‘g‘ri tarbiyalash, qonunlarga amal qilib yashashni o‘rgatishdan boshlashimiz kerak. Maktabda yoshlarga qonunga amal qilib yashash o‘zlari uchun yaxshiligini

tushuntirishimiz kerak. Shunda ancha pul va vaqtni tejaymiz. Korrupsiya balosidan bir qadar qutulamiz[12-14].

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PROVIDING NORMAL WORKING CONDITIONS FOR EMPLOYEES IN SERVICE ENTERPRISES

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Abstract. This article analyzes the cases of ensuring the operation of technical means that ensure human life and safety and serve to create normal working conditions. Studies were conducted on the electricity supply of lighting, ventilation, heating and cooling systems of buildings and rooms. The method of connection of the station to the external power grid, its necessary electricity capacity, and the technical condition and load of the utility network have been resolved.

Keywords: technical support; selection of technological equipment; equipment standards; methods of determining requirements; rules of safe operation; prohibited conditions; types of services; equipment requirements; repair works; rules of operation; technical inspections; steam boilers; economizer.

Аннотация. В данной статье анализируются случаи обеспечения эксплуатации технических средств, обеспечивающих жизнь и безопасность человека и служащих для создания нормальных условий труда. Проведены исследования по электроснабжению систем освещения, вентиляции, отопления и охлаждения зданий и помещений. Решены способ подключения станции к внешней электросети, ее необходимая электрическая мощность, техническое состояние и загрузка инженерной сети.

Ключевые слова: техническая поддержка; подбор технологического оборудования; стандарты оборудования; методы определения требований; правила безопасной эксплуатации; запрещенные условия; виды услуг; требования к оборудованию; ремонтные работы.

Electricity supply. Car service enterprises belong to the third category of electricity consumers (that is, interruptions in energy transmission to them can last up to a day).

Electricity is used for the following purposes:

• moving technological equipment, electric motors;

• power supply of heating devices (vulcanization device, car painting, drying chambers, etc.), electrowelding devices and lighting system accessories;

• ensuring the operation of technical means (electric fans, air conditioners, computers, etc.) that ensure human life and safety and create normal working conditions [1-3].

127, 220, 380 volt alternating current and 6, 12, 24, 36 volt direct current are used in the electric power system. Low-voltage direct currents (mainly 12, 24 V) are used to charge batteries, to illuminate the pits of service stations and repair stations [8]. The power of connection to the external power grid is aggregated through the following coefficients, which take into account the specified capacities of consumers in the enterprise and the probability of their simultaneous connection:

Interior and exterior lighting fixtures ev=0,9÷1,0

Sanitary and water management equipment eg=0,6÷0,7

Technological equipment et=0,3÷0,4

136 [4-6]

Low values of the coefficients are accepted for small power stations, and high values are accepted for large and medium power stations. Required connection power

N = 0,8 (evN1 + egN2 + etN3), kvt .

here:

N1 – specified capacity of internal and external lighting lamps, kW;

N2 – power used for sanitation and water management equipment, kW;

N3 – power consumed by technological equipment, kW.

The average connection power can be assumed to be the following amounts for stations of different sizes:

For the smallest stations (with 2-4 posts).....30 - 40 kvt

For small stations.....60 – 80 kw

For medium stations.....100 – 150 kw

For large stations.....150 – 250 kw

The method of connecting the station to the external power grid depends on its required power and the technical condition and load of the utility network. If the substation is located outside the city and the required connection power does not exceed 50 kW, then it can be connected directly to the municipal utility network of low voltage (380 V) [7-9].

The installation of the internal electrical equipment of the station and the pulling of electrical conductors to them are required to be carried out on the basis of special

documents "Rules for installing electrical equipment" and "Rules for technical operation of electrical equipment" [10-13].

First of all, workshops and other auxiliary rooms in production buildings should be illuminated and supplied with electricity based on the description of the work to be performed .

Car maintenance, diagnostic and repair sections are illuminated using aesthetic gas lamps installed on the ceiling of the building. Since the viewing channels are located below the floor of the room, the electricity supply to their lighting system is carried out together with the ventilation system separate from the general lighting system . Electrical energy is supplied to the technological equipment through plug sockets installed on the walls, supplied by the main connector [14-15].

Heat supply. When designing the heating of the enterprise's facilities, the calculated parameters of the air in the rooms are accepted in the amounts in table.

In order to maintain a warm temperature in all rooms during non-working hours, a duty heater should be provided. It is necessary to automate the transition of the heating system to on-duty heating during non-working hours as much as possible.

An air heater compatible with ventilation should be used in the maintenance and storage rooms for vehicles. This system is implemented using centralized or decentralized placement of air heating equipment 137.

In the centralized steam-air heating method, the air is heated in the central chamber and distributed to the rooms by means of a centrifugal fan and a metal air handler and ducts under the floor. Decentralized heating uses a heater, fan and electric motor installed in a single block.

Air transfer units should be placed on columns or walls.

A low-pressure or high-pressure (local heating devices) steam heating system is used for heating repair-preparation and warehouses.

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AVTOMOBILLARNING DVIGATELINI TARKIBIY QISMLARIGA TASHXIS QO'YISH

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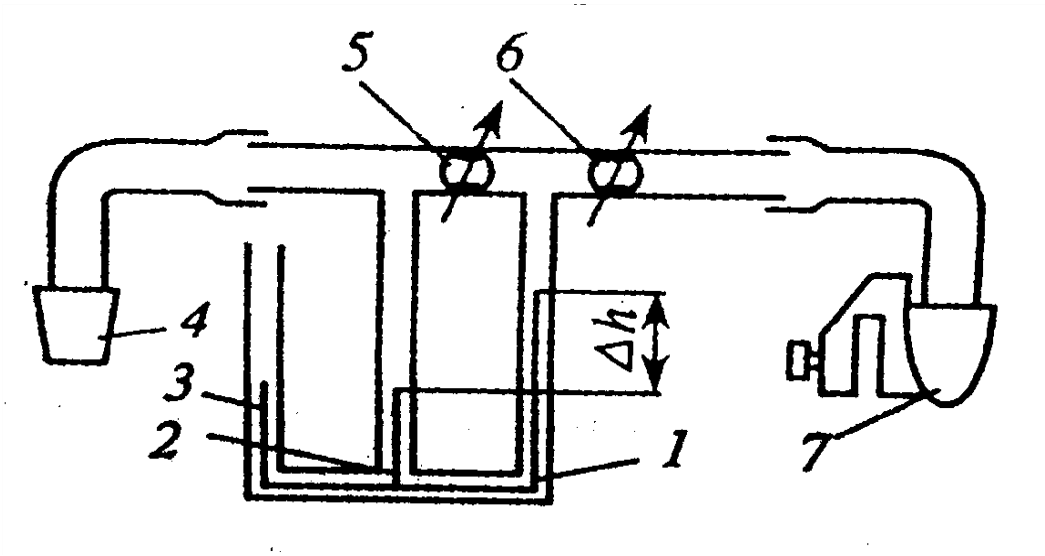
Annotatsiya: Agregatlarni ta'mirlash uchun ketgan barcha vaqt mobaynida avtomobil ishlamasdan turadi.

Ta'mirlash agregat usulining mohiyati shundan iboratki, avtomobildan nosoz agregatlar yechib olinadi va ular o'rniga ta'mirlanganlari yoki aylanma fonddagi yangilari kutiladi. Agregat usulida avtomobillarni ta'mirlashda, turib qolishi vaqti sezilarli darajada qisqaradi, tehnik tayorgarlik koeffisenti ortadi va avtomobillarni saroydan foydalanishi yaxshilanadi.

Kalit so'zlar: Porshen, I – 4887 – 1 sarf o'lchagichi, manometr, kompressiya, porshin barmog'i.

Porshen – porshin halqalari – slindr gilzasidan iborat birikmaning ahvolini ya'ni holatini karterga yorib kiradigan gazlar miqdoriga qarab baholash munkin. Mazkur tashxis parametri KI – 4887 – 1 sarf o'lchagichi (1- rasm) yordamida o'lchanadi. Bundan oldin dvigatel me'yoridagi issiqlik rejimigacha qizdiriladi. Asbob kirish 5 va chiqish 6 drossel jumraklari bo'lgan quviriga ega. Kirish patrubogi 4 dvigatelning moy quyish bo'g'ziga ulanadi, gazlarni surib oladigan ejektor 7 chiqarish quvurining ichiga o'rnatiladi yoki vakkumqurilmasiga ulanadi. Ejektordagi siyraklanish natijasida karter gazlari sarf o'lchagichga keladi. Jumrak 5 va 6 yordamida manometrlar 2 hamda 3 ustunchalardagi suyuqlikni bir sathga keltirib karter bo'shlig'idagi bosim atmosfera bosimidagi farq Δh barcha o'lchashlar uchun bir xil bo'lgan manometer 1 bo'yicha jumrak 5 yordamida aniqlanadi. Asbob shkalsiga qarab karterga yorib kirayotgan gazlar miqdori aniqlanadi va u nominal miqdor bilan taqqsimlanadi. (l/min). Dvgatelni quvvati va tejamliligi slindirdagi kompressiyaga bog'liq. Slindr – porshinli guruh detallari ancha yeyilganda yoki buzilganda kompressiya pasayadi. Kompressiyani o'lchashdan oldin havo sozg'ichi yuvib tozalanadi, gaz taqsimlash fazalari nazariy qilinadi va klapanlarning issiqlik tirqishlari rostlanadi [1-4].



1 – rasm. KI – 4887 – 1 sarf o'lchagichning sxemasi:

1-3- manometrlar; 4- kirish potrubogi; 5-6-kirish va chiqish drossel jumraklari; 7- ejektor.

Kompressiya siqish taktida dvigatelning yonish kameralaridagi bosimga qarab baholanadi va KH-1125 (dizel dvigatellari uchun) kompresometrlari bilan o'lchanadi [5-7].

Dizel dvigatelining silindrdagi kompressiyasini tekshirishdan oldin u me'yordagi issiqlik rejimigacha qizdiriladi, yuqori bosimli yonilg'i o'tgazgich tekshirilayotgan silindr forsunkasidan ajratiladi va yonilg'i o'tkazkichning uchiga yonil'ini maxsus idishga bo'shashish uchun shlang kiydiriladi, forsunka olinadi va u uchun mo'ljallangan teshikka kompressometr uchligi kiritiladi. Kompressiya tirsakli valni 450 – 550 min^{-1} chastota bilan aylantirib o'lchanadi [8-10].

- Porshen guruhidagi nosozliklarni aniqlash.

Porshen – slindr gilzasidan iborat birikmaning ishlashi tirsakli valni kichik chastota bilan aylantirib keyin o'rtacha chastotaga o'tkazib, slindrning bor balandligi bo'yicha eshitib ko'riladi. Qo'ng'iroqning zirillagan tovushini eshitadigan va dvigatelning nagruskasi ortib borishi bilan kuchayadigan hamda dvigatel qizib brogan sari pasayadigan tovushning paydo bo'lishi porshen bilan slindr o'rtasidagi tirqish kattalashgani, shatun ekilgani, shatun o'zak bo'yin o'qining yoxud porshin barmog'ining qiyshayganini, ayniqsa, dvigatelda moy va yonilg'ini oriqcha sarf bo'lishiga olib keladi.

Porshin barmog'i – shatun kallagining vtulkasidan iborat birikmaning ahvoli tirsakli valni kichik chastotada aylantirib, keyin o'rtacha chastotaga keskin o'tkazib, slindrlar blokining yuqorigi qismini eshitib ko'rgan holda tekshiriladi. Bolg'ani sandonga tez – tez urganda chiqadigan tovushni eslatuvchi va o't oldirish svichalari yoki forsunkalar uzulganda yo'qaluvchi keskin taqillashlar porshen barmog'i bilan vtulga o'rtasidagi tirqish kattalashganini, moylash yetarni emasligini yoki yonilg'i ancha ilgari berilayotganini ko'rsatadi [11-13].

•Porshen, porshen barmoqlari va halqalarini ta'mirlash moduli.

Avtomobillar matorlarini resursi xususan krivoshib – shatunli mexanizmning asosiy detallarining yeyilishi bilan cheklanadi. Bu mexanizma tutashmalardagi zazorlarning kattalashishi matorlarni ta'mirlashga asos bo'ladi.

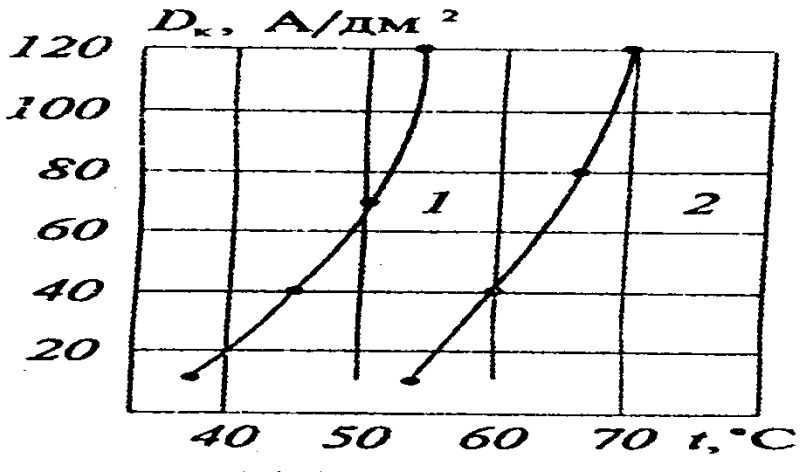
Shuning uchun slindr – porshen guruhi, tirsakli val podshipniklari va shatuning porshen bilan birikishining texnik holatini aniqlash juda muhim ahamiyatga ega. Chunki bu ta'mirlashga qadar ishlatish muddatlarini bilish imkonini beradi [14].

MAN rusumli avtomobillarning matorlarini porshinlari alyuminiy qotishmalaridan tayyorlangan bo'lib, ishlatish davrida ularga quydagi nuqsonlar: porshen yo'nalturuvchi qismi; porshen halqalari ariqchalari va porshen halqasi bobishkalaridagi teshiklarning yeyilishi, darslar; tirnalishi va sinishlar sodir bo'ladi. Porshin xalqalari qalinligi bo'yicha va eniga yeyilib, eguluvchanligini yo'qotadi [8].

Yo'l qo'yilgan o'lchamlardan ortiq yeyilgan porshen va porshen halqalari tiklanmaydi. Joriy ta'mirlash vaqtida porshin bobishkalaridagi yeyilgan teshiklar kattalashgan barmoqqa moslab razvertkalanadi [9]. Razvertkalab bo'lingach, teshikm diametric indikatorli nutrometr yordamida va maxsus moslamalarda esa teshik o'qlarining o'qlariga (yoki porshen yasovchilarga) perpendikulyarligi tekshiriladi. Dars ketgan porshen halqalari yoroqsizga chiqariladi, diometri bo'yicha yeyilganlari esa press ostida kengaytirilib, po'latlash, xromlash yo'li bilan tiklanadi va mustahkamlanadi. Barmoqlar kengaytirib va po'latlab bo'lingach, normal o'lchamgacha jilvirlanadi [10]. Ushbu bo'limda MAN rusumli avtomobilning dvigateli porshin guruhini ta'mirlash modulini texnologik xaritasi keltirilgan [15-17].

•Porshen guruhi detallarni xromlash

Xromlash detallarni tiklash va yeyilishgacha chidamliyligini oshirish uchun ham, pardozlash hamda korroziyaga qarshi kurashish maqsadlarida keng qo'llaniladi. Xromning turiga qarab elektrolit tarkibi tanlanadi va qoplama qoplash rejimibelgilanadi. Xromlash orqali yaltiroq, sutrang yoki kulrang qoplamalar xosil qilinadi(2–rasm).



2 – rasm . Xrom qoplamalar mintaqalarining taqsimlanishi:
1 – yaltiroq xrom; 2 – sutrang xrom.

Yaltiroq xrom mikroqattiqligining yuqorigi (600 – 900 mN/m^2) darslar turining maydaligi (mikraskob orqali ko'riladi) bilan ajralib turadi [18-19].

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AVTOMOBILLARNI SOVUTISH TIZIMIGA TEXNIK XIZMAT KO‘RSATISH VA TA’MIRLASH ISHLARI TEXNALOGIYASI

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Annotatsiya: Ekspluatastion xususiyatlar ko‘rsatkichlari maxsus ilmiy-tekshirish tadqiqotlari hamda avtomobillardan foydalanish tajribasini umumlashtirish va tahlil etish natijasida aniqlanadi. Ekspluatastion xususiyatlarni bilish avtomobil konstrukstiyasini takomilashtirish borasida texnik foydalanish tajribasidan foydalanish imkonini beradi.

Sovitish tizimining texnik holatini boholash TXK va nosozliklarini bartaraf etish hozirgi kunda muhim hisoblanadi.

Kalit so‘zlar: Avtomobil transporti, sovitish tizimini, shututserli va patrubkali sovutish tizmi.

Kirish. Zamonaviy texnika taraqqiyoti darajasiga mos keladigan buyum konstruksiyasini, turli – tuman xalqaro me’yorlarini qoniqtradigan avtotransport vositalarini undan foydalanish faqat jiddiy nazariy va ekspremental ishlar asosida yaratiladi.

Endilikda milliy iqsodiyoimizning turli yo’nalishlarining tarkibiy qismlari jahon bozori bilan qiyosiy o’rganish muhim ahamyat kasb etadi. O’zbekiston milliy iqtsodiyoti – jami sohalar, assotsatsiyalar, korxonalar, tashkilotlarning yig’indisi bo’lib, ular iqtsodiy tizimga umumiy qonunlar va rivojlanish maqsadlariga asoslangan holda birlashgan [1].

Hozirgi zamon taraqqiyot asri ishlab chiqarilgan avtomobil modellarini mutasil o’zgartirib, sifatini yaxshilab borishini taqozo etadi. Chunki kuchli raqobat sharoitida muayyan mamlakat bozoriga kirib borish, joy egallash va uni saqlab turish oson emas.

Asosiy qism. Bizga ma’lumki dvigatelning juda qizib ketishi yoki xaddan tashqari sovib qolishi uning foydali quvvatini kamaytirib, tejamkorligini yomonlashtiradi. Sovitish tarmog’i esa dvigatelning ishlashi uchun qulay bo’lgan issiqlik maromini belgilangan holda saqlab turadi.

Sovitish tizimini nosozliklarini quydagi alamatlari mavjud: sovitish suyuqligini oqishi, dvigatelning qizib ketishi yoki sovub ketishi hamda suv nasos podshiniklari shikastlanganda suv nasosi ishlaganda shovqin chiqishi.

Shututserli va patrubkali sovutish tizmidagi ichakli birikmalarni germetiksizlanganligi (nosozligi) potrubka flanets birikmalari zich emasligi, suv to'kish tiqinlarini va isitgich jo'mraklarini nozichlgi, ichaklarini shikastlanishi, radiatorda dars paydo bo'lishi va suv nasosi o'zi siljuvchi salnigini yeyilishi tufayli sovitish suyqligi oqib ketadi [2].

Avtomobil dvigatellarida, asosan, suyuqlik yoki havo bilan sovitish tarmoqlari qo'llaniladi. Suyuqlik bilan sovitish tarmog'i havo bilan sovitishga nisbatan quyidagi afzalliklarga ega:

1) qo'llaniladigan suyuqlikning qaynash harorati 370...3800K (100...1100 C) bo'lganligi sababli dvigatelning detallari qattiq qizib ketmaydi:

2) sovutuvchi suyuqlik dvigateldan chiqayotgan shovqin tovushini qisman yo'tadi;

3) yurgizish davrida dvigatelning qizishi tezlashadi;

4) bu turdagi dvigatelni sovitish qovurg'alari bo'lmaganligi sababli u silliq va ixcham bo'ladi.

Havo bilan sovitish tarmog'ining afzalliklari quyidagilar:

1) tarmoqda suv nasosi, radiator, suv quvurcha, termostat yo'qligi sababli u oddiy va yengil ishlangan;

2) dvigatelda suv g'ilofi bo'lmaganligi sababli u muzlab qolmaydi;

3) suv yo'q joylarda ham dvigatelni ishlatish mumkin.

Ushbulardan shunday xulosaga kelish kerakki har ikki tizimda yutuq va kamchilik mavjud. Ushbu tizimdagi dvigatellarni ishlatishda tuzilishni va ishlash tamoyillarini bilish nazariy hamda amaliy jihatdan zarur shuningdek dolzarbdir [3].

Suyuqlikning harakatlanish usuli bo'yicha termosifon, aralash va majburiy tarmoqlar mavjud .

Termosifon usulida suyuqlikning harakati issiq va sovuq suyuqliklar zichligining farqi tufayli tabiiy ravishda o'tadi. Aralash usulda esa radiatordagi sovitilgan suv nasos yordamida silindrlarning yuqori qismiga yuboriladi, pastki qismiga esa suv o'z tabiiy oqimi bilan oqib tushadi. Majburiy usulda tarmoqdagi suyuqlik nasos yordamida uzluksiz harakat qiladi [4].

Zamonaviy avtomobil dvigatellarida aralash (bir qatorli dvigatellarda) yoki majburiy (V-simon dvigatellarda) usul bilan ishlaydigan sovitish tarmoqlari qo'llaniladi. 2-rasmda aralash usul bilan ishlaydigan sovitish tarmog'ining

soddalashgan chizmasi keltirilgan. Bu turdagi sovitish tarmog‘i aniq va puxta ishlaydi. Odatda, bunday turdagi tarmoq sovitish g‘ilofi, radiator, nasos, termostat, birlashtiruvchi shlang va kalta oraliq naychalaridan iborat bo‘lib, quyidagicha ishlaydi. Dvigatel ishlash jarayonida radiator 20 da sovitilgan suv oraliq naycha 16 va shlang 15 orqali nasos 14 yordamida silindrlar blokining suv tarqatuvchi kanali 10 teshikchasi 8 orqali silindrlar blokining sovitish g‘ilofi 9 ga kiritiladi [5].

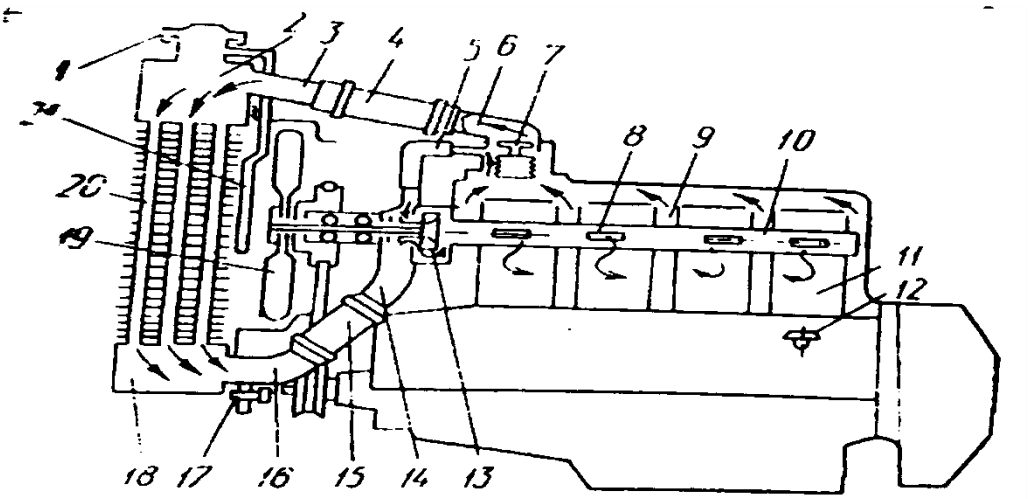
Blokdagi suyuqlikning tabiiy aylanishi natijasida radiator oraliq naychasi 6 va 4 hamda 3 orqali radiatorning yuqori bakchasi 2ga o‘tadi. Keyinchalik, radiator 20 da ventilyator 19 yordamida sovitilgan suv uning pastki bakchasi 18 ga oqib tushadi. Silindrlarning katta haroratda kuchli qizigan yuqori qismini yaxshi sovitish uchun sovuq suv avval blokning yuqori qismidagi kanal 10 ning teshiklari 8 orqali kiradi. Suyuqlik sovitish tarmog‘iga radiatorning yuqorigi bo‘g‘zidan quyiladi, so‘ngra bo‘g‘iz qopqoq 1 bilan zich berkitiladi [6].

Tarmoqni suyuqlikdan bo‘shatish uchun sovutish tarmog‘ining eng pastki qismiga va radiatorning pastki bakchasiga ikkita jo‘mrak 12 va 17 o‘rnatilgan. Tarmoqdagi suyuqlik haroratini bilish uchun oraliq termometr va talafot daraklagichi bor. Dvigatelning belgilangan issiqlik maromida ishlashi uchun suv g‘ilofida harakatlanuvchi suyuqlikning harorati 80...95°C bo‘lishi kerak. Bunday harorat termostat 7 yordamida o‘z-o‘zidan rostlanadi [7].

Sovitish suyuqligi sifatida asosan suv ishlatiladi, chunki u issiqlikni o‘ziga tez qabul qiladi va tarqatadi, arzon va yetarli miqdorda bo‘ladi. Lekin sovitish tarmog‘ida qaynagan suvning quyqasi (nakip) cho‘kib, suv g‘ilofi, devorlarida tuz qatlami paydo bo‘ladi. Natijada silindrlar blokgining issiqlik o‘tkazish qobiliyati sustlashadi, suv g‘iloflarining devorlarni zanglanishi natijasida yemiriladi. Suv qishda muzlab, dvigatelning devorlarini darz ketkazishi siqib yorib yuborishi mumkin. Shuning uchun sovituvchi suyuqlik sifatida yuqorida aytib o‘tilgan kamchiliklardan xoli bo‘lgan antifrizlardan qo‘llanilmoqda [8].

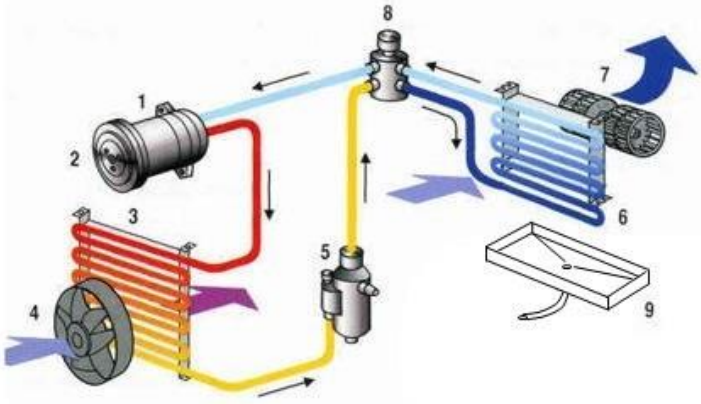
Antifrizning ikki xili ishlab chiqariladi. Antifriz M-40: 47 foiz suv, 53 foiz etilengilikol (muzlash harorati 233K) (-40° C); antifriz M-65: 34 foiz suv, 66 foiz etilengilikol (muzlash harorati 207K) (66°C). Antifriz kishi organizmi uchun zaharli. Uning issiqlik sig‘imi suvnikiga nisbatan ancha kam. SHuning uchun sovituvchi suyuqlik sifatida antfriz qo‘llanilganda tarmoqning issiqlik tarqatish qobiliyatl suv bilan sovitilgandagiga nisbatan past, natijada silindrlar devorining harorati 15 ... 20°C ga ortiqroq qiziydi. SHu sababli antifrizning issiq kunda qo‘llanilishi ba’zan dvigatelni haddan tashqari qizdirib yuboradi. Yuqorida aytilgan sabablarga ko‘ra

sovituvchi suyuqlik sifatida qish davrida antifriz va yoz kunlarida toza yumshoq suv ishlatish maqsadga muovofiq [9].



1-rasm. Suyuqlik bilan sovutish tarmog'ining ishlash tasviri.

Tarmoqda ishlatish uchun yomg‘ir yoki qor suvi tavsiya qilinadi, chunki bu suv yumshoqlik xususiyatiga ega. Bu maqsadda quduq, buloq yoki dengiz suvini ishlatish yaramaydi. Daryo va ko‘l suvlarini yumshatish uchun uni 30. ..40 minut qaynatiladi va sovitish tarmog‘iga quyishdan avval besh-olti qavat dokadan o‘tkazib tozalanadi [10].



2-rasm. Nexi R 3 avtomobilini sovitish tizimining umumiy ko'rinishi.

1-kompressor nas; 2-g'ilof; 3-radiator; 4-parrak; 5-filtr; 6-saloning isitgich radiatori; 7-havo xaydeydigan parrak; 8- barqarorlashtigich; 9- paddon

Sovitish tarmog‘ida suyuqlikning majburiy harakatanishi nasos yordamida amalga oshiriladi, Odatda, past bosimli 40…100 KPa (0.4 – 1.0 kg/sm) markazdan qochma suv nasosi ishlatiladi [11].

Markazdan qochma suyuqlik nasosi 1-rasmda sovitish tizimidagi suyuqlikning aylanishini ta’minlaydi. Unga shkiv 1 va ventilyatorning parragi 18 biriktirilgan. Valning keyingi uchi 4 ga suv nasosining parragi 6 o‘tkazilgan bo‘lib, o‘zaro siljishdan bolt yordamida cheklab turiladi. Parrak alyuminiy korpus 5 ga joylashtirilib, korpus 2 va 5 qistirma 4 yodamida jipslashtirilgan. Val 14 ga suv qaytargich 10 o‘rnatilgan bo‘lib, u suvning podshipnik bo‘shlig‘iga o‘tishdan saqlaydi. Nasos korpusi 2 dan val 14 ning ichi chiqib turadigan joyga o‘rnatilgan salnik bu erdan suvning sizib chiqishiga yo‘l qo‘ymaydi, 9 bu salnik rezina manjet 7, prujina 8 orqali korpus 2 ning ishlaydigan yonaki qismiga siqiladi. Suv nasosi ventilyator bilan birga silindrlar blokining oldingi devoriga mahkamlangan bo‘lib, ponasimon tasma orqali tirsakli val shkividan harakatga keltiriladi [12].

Xulosa. Demak, dvigatelning juda qizib ketishi haddan tashqari sovib qolishi uning foydali quvvatini kamaytirib, tejamkorligini yomonlashtiradi. Sovitish tarmog‘i esa dvigatelning ishlashi uchun qulay bo‘lgan issiqlik maromini belgilangan holda saqlab turadi.

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YEYILGAN DETALLARNI PAYVANDLAB QOPLASHDA QO'LLANILADIGAN KOMPOZITSION MATERIALLAR TAHLILI

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Annotatsiya. Ushbu maqolada yeyilgan detallarni qayta tiklashda foydalaniladigan kompozitsion materiallar tahlili keltirilgan bo’lib, kompozitsion materiallarning bugungi kundagi ahamiyati yoritilgan.

Kalit so’zlar. Kompozitsion material, qayta tiklash, yeyilish, texnologik jihoz, yeyilgan yuza, kukunsimon material.

Dunyo miqyosida bo'layotgan siyosiy va iqtisodiy o'zgarishlar mashinasozlik va boshqa ishlab chiqarish sohalalariga ham o'z ta'sirini ko'rsatmoqda. O'zgarishlar sanoatning turli sohalarida energiya va resurstejamkorlikning, texnologik jihozlar, qo'llanilayotgan material va texnologiyalarga bo'lgan talablarning eng samarali usullaridan foydalanishni taqozo etadi. Bu sohada asosiy muammolardan biri qo'llanilayotgan mexanizm, mashinalarning ishlash davrini oshirishdan iboradir[1-3].

Muammoni ayni paytda yechilishi mumkin bo'lgan uchta yo'nalishini qo'llash mumkin:

• mukammal bo'lgan yangi texnologik jihoz va materiallardan foydalanish;

• qo'llanilayotgan materiallarning texnologik va mexanik xossalarini qo'shimcha ishlov berish bilan oshirish (mustahkamligi, yeyilishga va korroziyaga chidamliligi, qattiqligi va boshqalar);

• ishlash paytida yeyilgan detallarning o'lchamlarini qayta tiklash, ishlovchi sirtlarni mustahkamlash.

Bu yo'nalishlarning uchinchisi, ya'ni yeyilgan detallarning o'lchamlarini qayta tiklash va ishlovchi sirtlarni mustahkamlash turli texnologiyalarni qo'llash bilan mustahkamligini oshirish ko'p mablag' talab qilmaydi.

Yeyilgan o'lchamlarni qayta tiklashda qilinadigan xarajatlar ko'p hollarda yangi detal tayyorlashga sarf qilinadigan xarajatlarga qaraganda 30-70% ni tashkil etadi. O'lchamlarni qayta tiklash usullarining turlari va imkoniyatlari sanoatning barcha sohalarida qo'llanilayotgan po'lat va boshqa materiallardan yasalgan detallarni ta'mirlabgina qolmay, ularning ishlash resursini ham oshirishi mumkin. Keyingi paytlarda elektrod ishlab chiqarish hajmi va qo'lda payvandlash va eritib qoplash usulining dunyo miqyosida qo'llanilish ko'lami kamayib bormoqda. Usulning o'rniga mexanizatsiyalangan, avtomatlashtirilgan va robototexnik qurilmalar ulushi ortib bormoqda. Qo'llanilayotgan usullarning deyarli barcha holatlarda o'lchamlarini qayta tiklash va mustahkamlash imkoniyatiga ega bo'lishiga qaramay, sanoati rivojlangan mamlakatlarda ishlab chiqarish sohalarida detallarni ta'mirlash va mustahkamlash ishlarining hajmi kamayib, o'z funktsiyasini bajarmay qolgan detal yangisi bilan almashtiriladi[4-7]. Ammo hozirgi paytda qo'llanilishi mumkin bo'lgan texnologiya va jihozlar, yangi materiallar tiklash va mustahkamlashning iqtisodiy tomondan maqsadga muvofiqligini ko'rsatadi.

Ishlovchi sirtlarning yeyilgan o'lchamlarining geometrik kattaliklarini qoplash usuli bilan tiklash mumkin, mustahkamlovchi qoplama esa geometrik o'lchamlarni tiklash bilan birga maxsus xossalarga ega bo'lgan material bilan qoplab, detalning ishlash resursini uzaytiradi.

Bugungi kunda qo'llanilayotgan qayta tiklash usullarida bir qator kamchiliklar mavjud: yoy yordamida payvandlanganda ko'p issiqlik ta'sirida tiklanayotgan detallarda deformatsiyalar hosil bo'lishi, struktura o'zgarishi; gazotermik usullardan foydalanilganda qoplamaning birikish mustahkamligi past bo'lishi;ayniqsa yupqa qalinlik qoplamalada yoriqlar paydo bo'lishi, cho'zuvchi kuchlanishlar paydo bo'lishi; qoplama materialining o'ziga hos xususiyatlari yo'qolishi[8-10].

Ammo ko'p korxonalarda talablarga kompleks javob beradigan usullar sustkashlik bilan amalga oshirilmoqda. Buning birinchi sababi hozirgi zamon usullarining jihozlari va materiallari narxi nisbatan qimmatligi, ularning imkoniyatlaridan to'liq foydalana olmaslik.Bu iqtisodiy omil bo'lsa yana biri inson omilidir. Murakkab jihozlar ma'lum darajada mutaxassis malakaga ega bo'lishini talabqiladi. Malakali mutaxassisni tayyorlash va unga maosh berish oddiy mutaxassisga qaraganda qimmatga tushadi.

Birinchi kompozitsion material frantsuz bog’boni J.Mone 1867 yilda patentlangan (hovli gul tuvaklari, sim va sementdan yasalgan). Samolyot konstruktsiyasida oynaplastik “stekloplastik” poliefir materiali oyna tolasi bilan sinchlangan (“armirovan”) kompozitsion material 1942 yilda qo’llanilgan. Kompozitsion materiallar mashinasozlik apparati konstruktsiyalariga qo’yilgan quyidagi talablarga javob beradi: yengil bo’lishligi, maksimal mustahkamlik va bikirlik, ishlash davrida maksimal ishlash resursi. Shular uchun kompozitsion materiallar samolyotsozlikda ko’p qo’llanilgan. Kompozitsion materiallarga quyidagi xususiyatlar yig’indisi xos: a) Komponentlarning tarkibi, formasi va

taqsimlanishi oldindananiqlangan; b) Ikki va undan ortiq kimyoviy har xil materiallardan tarkib topgan va bir birlari bilan ajralib turadilar; v) Kompozitsion materialning xossalari har bir tashkil etuvchining xossalari bilan aniqlanadi; g) Kompozitsion materialning xossalari, tashkil etuvchilarning xossalaridan farq qiladi; d) Kompozitsion material makromasshtab miqyosida bir tanli, mikromasshtabda bir tanli emas; e) Bu material tabiyatda uchramaydi va insonlaring ixtirosidir[11-14].

Yeyilgan detallarni tiklashda payvandlab qoplash usullari bilan bir qatorda sim, lenta, kukunsimon va kompozitsion material kabi turli payvandlash materiallari ham qo‘llaniladi.

Yeyilgan detallarni qayta tiklashda po‘lat lenta va simdan foydalanish detallarning yeyilishga chidamliligini va u orqali ta’mirlashlararo resursini yuqori darajada ortishini ta’minlay olmaydi.Bunga po‘lat lenta yoki sim o‘rniga kukunsimon kompozitsion materiallardan foydalanib erishish mumkin. Buni kompozitsion materialning geterogen strukturasini po‘latlarning konstruksion material sifatidagi gomogen strukturasidan farq qilishi orqali izoxlash mumkin. Tribologiya sohasining taniqli olimlari olingan qatlamning yuqori yeyilishga chidamliligi kompozitsion materiallarning aynan shunday makro va mikrostrukturasi natijasida yuzaga keluvchi bebaho xossalari va xususiyatlarida ekanligini isbotlashgan.

.1-jadval. Yeyilgan detallarni qayta tiklashda qo‘llaniladigan usullar bo‘yicha qayta tiklash hajmining taqsimlanishi.

№	Qayta tiklash usullari	Qayta tiklash hajmi, %
1	Elektr-yoy yordamida qoplash, Shu jumladan: flyus qatlami ostida tebranma-yoy yordamida himoya gazlari muhitidakukunsimon sim bilan boshqalar	74 32 19 14 4 5
2	Metall qatlamini kontakt payvandlab qoplash	7
3	Elektr-yoy yordamida metallash, plazma yordamida qoplash, elektrofizik usullar	6
4	Galvanik qoplash	3
5	Polimer materiallar bilan qoplash	5
6	Plastik deformatsiyalab qayta tiklash	2
7	Suyuq metall quyib qoplash	1

8	Ta’mirlash o‘lchamidan va qo‘shimcha detallardan foydalanib tiklash	2

Yuqori ishonchlilikka ega bo‘lgan yangi texnika yaratish muammosi - yangi materiallar izlab topish va ulardan detallar tayyorlash, hamda ularni detallarning ishchi yuzalariga qoplash usullarini yaratish kabi ishlar bilan birga yechiladi. Shunday materiallardan biri kompozitsion materiallar hisoblanadi va ulardan xalq xo‘jaligida, ayniqsa, mashinasozlikda foydalanish ko‘lami kundan-kunga ortib bormoqda[15-18].

Hozirgi kunda biz "temir" asridan kompozitsion materiallar asriga o‘ta boshladik,- deb ishonch bilan aytishimiz mumkin.

Kompozitsion materiallar – bu shakli va xossalari bilan bir-biridantubdan farq qiluvchi ikki yoki undan ortiq materiallarning mexanik aralashmasi bo‘lib, tashkil etuvchilarning orasi aniq chegarasi bilan ajralib turuvchi, hamda ularning har bir afzalligini o‘zida namoyon qiluvchi materialdir.

Kompozitsion materiallarning asosiy turlari matritsa materialiga qarab metall, polimer, keramik deb nomlanadi. Puxtalovchining shakli va taqsimlanishiga qarab esa dispersion-zarrali, tolasimon va hajmiy deb nomlanadi.

Dispersion-zarrali kompozitsion materiallarda kukunsimon materiallar qo‘llaniladi. Kukunsimon kompozitsion materiallardan turli mashina detallari tayyorlanadi. Bunday detallar konstruksion materiallardan tayyorlangan shunday detallardan ba’zi texnologik va ishchi ko‘rsatkichlari bo‘yicha afzalliklarga ega. Masalan, kukunsimon koipozitsion materiallardan metalllarga ishlov beradigan keskichlarning kesuvchi qirralari uchun plastinalar tayyorlanadi. Bunday detallardan ishqalanish sharoitida qo‘llanishdagi ijobiy natijalar kukunsimon kompozitsion materiallarni yeyilgan detallarni qayta tiklashda ham qo‘llanishiga olib keldi.

Keyingi yillarda kompozitsion materiallardan, mashina detallarini qayta tiklash va puxtaligini oshirishda juda muhim bo‘lgan, qatlam olishda foydalana boshlandi. Kompozison materiallarning qishloq xo‘jalik texnikalarining yeyilgan detallarini qayta tiklash texnologik jarayonida qo‘llanilishi qayta tiklangan detallarning sifatini oshirishdagi yangi yo‘nalishlardan biri xisoblanadi.

Bir qator adabiyotlarda berilgan ma’lumotlarda Yaponiya, Kanada, AQSh, Rossiya, Ukraina, Avstriya, Germaniya, Bolgariya, Belorussiya kabi davlatlarda olimlar metall kukunlaridan foydalanib kompozitsion qatlam hosil qilingani haqida xabarlar berilgan.

Bunga sabab bugungi kunda detallarning ishchi yuzalarini qatlam bilan qoplashda kukunsimon materiallardan foydalanish jadal rivojlanib borayotgan yo‘nalishlardan biri hisoblanadi. Ular asosan qatlam bilan qoplashning payvandlab qoplash, gazotermik purkash, metallash kabi usullarida qo‘llanilmoqda. Ularda kukunsimon kompozitsion materiallarning bebaho xossalari va xususiyatlaridan foydalanilmoqda.

Shunday qilib, xulosa qilish mumkinki, bugungi kunda detallarning ishchi yuzalarini qoplash uchun keng doiradagi kukunsimon materiallar yaratilgan. Ularning ko‘plari seriyalab ishlab chiqariladi.

Detallarni qayta tiklashda qattiq qotishmali materiallardan foydalanish qattiqligi abraziv kvars donachalari qattiqligidan ortiq bo‘lgan qoplam olishni ta’minlab, detalning yeyilishga chidamliligini keskin orttirish imkonini beradi.

Shu maqsadni amalga oshirish uchun Rossiya, Ukraina va Belorussiyaning qator ilmiy tadqiqot institutlari va oliy o‘quv yurtlarida yangi turdagi yeyilishga chidamli kukunsimon materiallar yaratish va ularni detallarning yeyilgan yuzalarga qoplash usullari ustida faol ish olib bormoqdalar[19-20].

Yeyilgan detallarning ishchi yuzalariga payvandlab qoplash uchun qator «Castolin+Eutectic», “Tulachermet”, “Torez”, “Brovari”, “Vyksa” kabi metallurgiya zavodlari va birlashmalarida turli markadagi kukunsimon kompozitsion materiallar, sim va lentalar ishlab chiqarish yo‘lga qo‘yilgan.

Hozirgi kunda ko‘plab metall kukun materiallari va ularni detallarning ishchi yuzalariga qoplash uchun maxsus jihozlar ishlab chiqarishyo‘lga qo‘yilgan. Ammo qattiq qotishmalarning nisbatan qimmatbaholigi (1.5-jadval), ulardan bir xil o‘lchamda va bir tekis qatlam olishning qiyinligi va ularga mexanik ishlov berishda qo‘yimning kattaligi yeyilgan detallarni qayta tiklashda ularni qo‘llashni samarasiz qilib qo‘ymoqda.

Detallarning yeyilgan yuzalarini qayta tiklashda kompozitsion materiallardan foydalanish payvandlab qoplash usullarining imkoniyatlarini yanada kengaytiradi.

2-jadval. Kukunsimon materiallarning qisqacha tavsifnomasi

Qotishma guruxi	Ba’zi markalar misolida	Maksimal qattiqligi, NRS	Taxminiy narxi, dol/kg
Metallidlar kukunlari	PN70Yu30 PN55T45	60 gacha	9...16
O‘zi flyuslanadigan metall kukunlari	PR-N80X13S2R PR-N77X15S3R2 SNGN	65 gacha	7...15
Yuqori legirlangan cho‘yan kukunlari (sormayt kabilar)	PG-S27, PG-S1 PG-FBX-6-2, PG-US25	55-60	0,7...4,0
PTJ markali qattiq qotishmali metall kukuni	PTJ23N6	91 NRA gacha	18

Temir kukunlari	PJ-1S, PJ-2S, PJ-3S, PJ-4S	45 gacha	0,3...1,0
Volframkobaltli qattiq qotishma	VKZ, VK6, VK8.	92NRA gacha	20...25
Volframtitankobaltli qattiq qotishma	T3OK4 , TN - 20. TN-40	93 NRA gacha	7...20

Izoh: Kukunning xarid bahosi uni tayyorlash usuli, kimyoviy tarkibi va zarralarining o'lchamlariga bog'li.

Yuqorida keltirilgan payvandlab qoplashning mavjud usullari qoplangan metallning har qanday tarkibda olish imkoni mavjudligini ko'rsatdi. Ammo, ularda qattiq qotishmaning olingan qatlam hajmi bo'ylab (ayniqsa, qalinligi bo'yicha) bir tekis taqsimlanishi va strukturasini boshqarish chegaralangan. Shuning uchun keyingi yillarda kukunsimon materiallardan payvand qatlam olish uchun ularni shakllantirilgan holga keltirish ustida qator izlanishlar olib borildi. Bular qatoriga kukunsimon-polimer lenta, metall-setkali lenta va qizdirib-prokatlab shakllantirilgan kukunsimon lentadan foydalanish kabilarni misol keltirish mumkin. Ushbu materiallar olingan payvand qatlamning mikro va makrostrukturasini boshqarish muammosini hal qilish orqali yangi ajoyib va bebaho xossalarga ega bo'lgan kompozitsion qatlam olish mumkinligini ko'rsatib berdi. Buning asosida esa, shu kungacha hal qilinmagan, qayta tiklangan detallarning resursini boshqarish muammosi bartaraf etiladi[21-24].

Xulosa. Shuning uchun ushbu ish oldiga kerakli qalinlikdagi va talab etilgan tarkibdagi kompozitsion payvand qatlamlar olish istiqbollarini aniqlash, ularni detallarning yeyilgan yuzalariga qoplash usullarini tadqiq qilish, yangi texnologiya va jihozlar ishlab chiqish kabi vazifalar qo'yildi.

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ANDIJON TUMANIDA PIYODALAR ISHTIROKIDAGI YO‘L TRANSPORT HODISALARINI TAHLIL QILISH

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Annotatsiya: Yo‘l harakatining muammolari va maxsus tomonlari, eng avvalo, «Avtomobil-haydovchi-yo‘l-piyoda» tizimi orqali belgilanadi. Ularo‘z navbatida atrof-muhitda faoliyat ko‘rsatadilar. Bu tizimni tadqiq etish hozirgi kunda dolzarb masalalardan biri xisoblanadi.

Kalit so'zlar: Avtomobil; haydovchi; yo‘l; piyoda; avtomobil - haydovchi; haydovchi -yo ‘1; avtomobil — piyoda;yo ‘l - piyoda; harakat - muhit.

KIRISH

Avtomobil yo‘llarida harakat xavfsizligini tashkil etish bugungi kundagi muhim muammolardan biriga aylanib bormoqda. Andijon viloyatida 2022-yilning o‘tgan davri mobaynida 125 ta yo‘l-transport hodisasi sodir etilgan bo‘lib, oqibatda 23 nafar fuqaro vafot etgan. [1-2]. Andijon viloyatida 2021-yilda sodir bo‘lgan 848 ta yo‘l-transport hodisasi oqibatida 163 kishi vafot etgan, 685 nafar fuqaro esa turli darajada tan jarohati olgan. Viloyat yo‘l harakati xavfsizligi boshqarmasi boshlig‘i o‘rinbosari Doniyor Turg‘unovning ma’lum qilishicha, 2021-yilda yo‘l-transport hodisalari va ularning oqibatida jabrlanganlar soni 2020-yilga nisbatan oshgan. 2021-yilda 848 ta yo‘l-transport hodisasi sodir etilgan bo‘lib, oqibatda 163 kishi vafot etgan, shuningdek, 685 nafar fuqaro turli xil og‘ir tan jarohati olib, shifoxonaga yotqizilgan. Natijada YTHlar 26 foizga, vafot etganlar 22,5 foizga, turli tan jarohatlari olganlar esa 26,8 foizga ortgan. Sodir etilgan hodisalarning katta qismi viloyat markazi, shuningdek Andijon, Shahrixon hamda Oltinko‘l tumanlariga to‘g‘ri keladi[3-4].

“Misol uchun, Andijon shahrida o‘tgan yili jami 195 ta yo‘l-transport hodisasi sodir etilgan bo‘lib, 16 kishi vafot etgan, 179 kishi turli darajadagi tan jarohati olgan. Raqamlar qiyoslanganda viloyat bo‘yicha sodir etilgan jami yo‘l-transport hodisalarining 21,1 foizini tashkil etgan ihaqid (1-jadval). Buning uchun yo‘l harakati xavfsizligi bo‘yicha biz mutaxassislar yo‘l harakatining asosiy ko‘rsatkichlarini, yo‘llardagi sharoitlarning transport oqimlari harakatlariga qanday

ta’sir ko‘rsatishlarini, transport oqimlarini boshqarishning texnik vositalari orqali yo‘l harakatini boshqarish bo‘yicha bilimlarga ega bo‘lishimiz zarur[5-6].

NATIJALAR VA MUHOKAMA

1-jadval

Xududlar	Davr	Piyodani urib yuborish			Piyodalar aybi bilan		
		YTX	xalok bulgan	jaroxat olgan	YTX	xalok bulgan	jaroxat olgan
Toshkent shaxri	2019	558	76	516	296	48	264
	2018	691	95	640	329	55	293
	%	-19,2	-20,0	-19,4	-10,0	-12,7	-9,9
Toshkent viloyati	2019	362	119	258	23	6	17
	2018	504	138	402	35	9	27
	%	-28,2	-13,8	-35,8	-34,3	-33,3	-37,0
Samarqand viloyati	2019	247	93	160	34	19	15
	2018	408	134	304	70	24	50
	%	-39,5	-30,6	-47,4	-51,4	-20,8	-70,0
Sirdaryo viloyati	2019	80	20	66	29	11	22
	2018	98	30	70	13	4	10
	%	-18,4	-33,3	-5,7	123,1	175,0	120,0
Jizzax viloyati	2019	144	28	122	34	9	27
	2018	144	36	112	25	8	17
	%	0,0	-22,2	8,9	36,0	12,5	58,8
Buxoro viloyati	2019	94	15	87	22	6	18
	2018	119	18	113	28	7	24
	%	-21,0	-16,7	-23,0	-21,4	-14,3	-25,0
Navoiy viloyati	2019	73	22	53	6	4	2
	2018	83	20	64	12	2	10
	%	-12,0	10,0	-17,2	-50,0	100,0	-80,0
Farg‘ona viloyati	2019	348	71	281	140	31	110
	2018	412	90	331	119	24	95
	%	-15,5	-21,1	-15,1	17,6	29,2	15,8
Andijon viloyati	2019	336	60	281	41	8	33
	2018	379	69	313	41	9	32
	%	-11,3	-13,0	-10,2	0,0	-11,1	3,1

Andijon viloyatini tumanlar kesimida ko‘rib chiqamiz (2-jadval.) Andijon shahrida qatnov ko‘p bo‘lganligi sababli yo‘l-transport hodisasi ham ko‘p kuzatilgan. Ammo achinarlisi 2021 yilda ham 2022 yilda ham o‘lim bilan bog‘liq hodisalar soni o‘zgarmagan. Buni kamaytirish yo‘llarini aniqrog‘i o‘lim holati

bo‘lmasligiga erishishimiz kerak, ya’ni chora-tadbirlarini ishlab chiqishimiz darkor[7-8].

ANDIJON VILOYATI HUDUDIDA QAYD ETILGAN YO‘L-TRANSPORT HODISALARI BO‘YICHA MA’LUMOT (2022-yil 10 oy)

2-jadval

Hudud	Umumiy				O‘lim bilan bog‘liq (266 m. 2-3 k.)				Tan jarohati bilan bog‘liq (266 m. 1 k.)			
	2021	2022	+, -	%	2021	2022	+, -	%	2021	2022	+, -	%
Andijon sh.	152	139	-13	8,00	14	14	0	0,0	138	125	-13	-9,4
Andijon t.	71	57	-14	-19,7	15	15	0	0,0	56	42	-14	-25,0
Oltinko‘l	44	48	4	9,09	10	9	-1	-10,0	34	39	5	14,7
Ulug‘nor	16	11	-5	-31,2	1	3	2	200,0	15	8	-7	-46,7
Baliqchi	47	42	-5	-10,6	16	12	-4	-25,0	31	30	-1	-3,2
Izboskan	45	42	-3	-6,7	9	11	2	22,2	36	31	-5	-13,9
Paxtaobod	32	42	10	31,2	5	5	0	0,0	27	37	10	37,0
Asaka	55	64	9	16,4	10	10	0	0,0	45	54	9	20,0
Bo‘ston	15	20	5	33,3	7	6	-1	-14,3	8	14	6	75,0
Marxamat	25	31	6	24,0	5	6	1	20,0	20	25	5	25,0

Avtomobil yo‘llarida yo‘l to‘siqlari transport yositalarining, piyodalaming harakatini tartibga solish va yo‘l-transport hodisalarining oldini olish hamda ularning og‘rilik darajasini pasaytirish uchun o‘rnatiladi. Yo‘l to‘siqlariga qo‘yiladigan talablar GOST 26804-86 "Ограждения дорожные, металлические барьерного типа. Технические условия" da keltirilgan. Yo‘l sharoitining o‘zgarishiga qarab yo‘l to‘siqlarini qanday vaqtlarda ishlatish shartlari GOST 23457-86 Технические средства организации дорожного движения»da keltirilgan[9-10].

Yo‘l to‘siqlari qoMlanish sharoitlariga qarab ikki guruhga bo‘linadi. Birinchi guruhga «barer» konstruksiyali (balandligi 0,75 m dan kam bo‘lmagan) va

devorsimon («parapet» shaklidagi balandligi 0,6 m dan kam bo‘lmagan) yo‘l to‘siqlari kiradi. Bu guruhdagi to'siqlar transport vositalarini yo‘l poyida, ko‘priklarda, yo‘ll o'tkazgich joylarida ushlab qolish va qarama-qarshi tomondan harakatlanayotgan transport vositalari to ‘qnashuvining oldini olish hamda yo‘ll mintaqasida joylashgan har xil predmetlarga **(yoritgich, ko‘prik tayanchlari, daraxtlar va h.k.)** kelib urilishidan saqlash uchun o‘rnatilad[11].

Ikkinchi guruh to‘siqlariga setkalar, **har xil panjaralar (balandligi 0,8-1.5 m) kiradi.** Ulardan piyodalaming harakatini tartibga solish va hayvonlarning yo‘l qatnov qismiga chiqishining oldini olish maqsadida foydalaniladi. Yo‘l to‘siqlari YTH vujudga kelish ehtimolini kamaytirish va ogMrlik darajalarini pasaytirish bilan birgalikda, to‘siqlami o‘ziga kelib urilishi natijasida transport vositalarining ishdan chiqishiga, hatto odamlaming o‘limiga ham sababchi bo‘lishi mumkin. Shuning uchun iloji boricha yo‘l to‘siqlari o‘miga xavfsizlikni ta’minlashning boshqa yo‘llarini o‘ylash kerak. Masalan, egrilik radiusini kattalashtirish, ko'tarma balandligini pasaytirish, yo‘l poyining yon qiyaliklarini yotiq qilish, piyodalar uchun yer osti yoki usti yo‘lakchalarini qurish, yo‘l mintaqasidan har xil katta predmetlami chetlashtirish[12]

Konsepsiya qoidalariga muvofiq yo‘l tarmog‘ining rivojlanishi mamlakatning ijtimoiyiqtisodiy rivojlanish sur’atlariga mos kelishi va avtoulovlarning o‘sishiga muvofiq transport ehtiyojlarini ta’minlashi kerak. Ma’lumki, professional haydovchilar avtohalokatni 5-6 baravar kamroq sodir etishadi[13].

Yo‘l transport hodisalarini turlari bo‘yicha 2022 yilgi statistikani olsak ko‘proq piyodani urib yuborish (45%) va avtomobillar to‘qnashuvi (31%) ga to‘g‘ri kelmoqda[14-18].

XULOSA

Avtomobil yo‘llarida yo‘l harakati xavfsizligini oshirish muammosini hal qilish uchun fan va texnikaning turli sohalaridagi ko‘plab mutaxassislarni jalb qilgan holda kompleks yondashuv zarur va tizimli yondashuv asosida ko‘proq tadqiqot ishlarini talab qiladi. Shu bilan birga, quyidagi yo‘nalishlar bo‘yicha muammoni hal qilish muhimdir: mahalliy sharoitga nisbatan baxtsiz hodisa sabablarini tahlil qilishni takomillashtirish; yo‘l harakati xavfsizligi texnik auditini amaliy qo‘llash;

haydovchilarning malakasi, javobgarligi va intizomini oshirish; qatnov qismining yuzasiga qo‘yiladigan me'yoriy talablarni ulanish sifati va ularni oshirish yo‘nalishi bo‘yicha tengligi bo‘yicha qayta ko‘rib chiqish ishlarini olib borish kerak.

Yuqoridagilarga haydovchilar, piyodalar va piyoda bolalar amal qilishsa har xil baxtsiz hodisalarni oldini olgan bo‘lamiz. Harakatni tashkil qilishda bajariladigan ishlar quyidagi talablarni qondirish kerak:

- Harakat tezligini yo‘l uchastkalari bo‘ylab asta-sekin o‘zgarishini %;
- Haydovchiga sutkaning har qanday vaqtida harakatlanishi uchun yo‘lning oldingi uchastkalarini yo‘nalishi aniq va ravshan bo‘lishini;
- Transport vositalarini tez va xavfsiz harakatlanishi;
- Transport vositalarini maksimal darajada o‘tkazishni;
- Ekologik jihatidan qulay bo‘lishini;
- Piyodalarni qulay va xavfsiz harakatlanishi;
- Iqtisodiy jihatdan tejamkor bo‘lishini.

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ASOSIY VA KARDANLI UZATMALAR, DIFFERENSIAL, YARIM O'QLAR VA TENG BURCHAK TEZLIGIGA EGA BO'LGAN SHARNIRLARDAGI NOSOZLIKLAR

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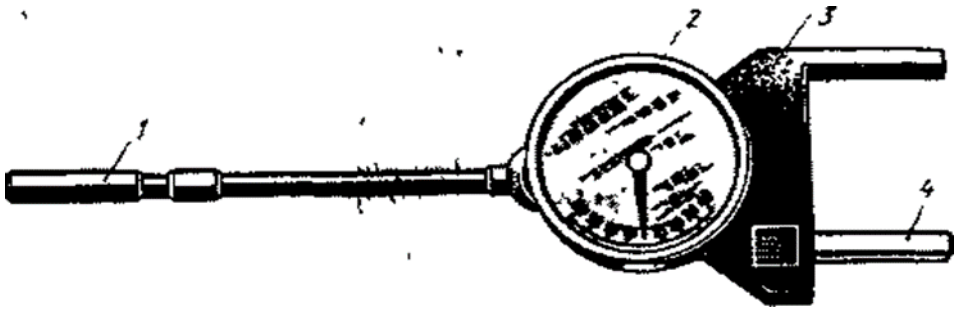
Annotatsiya. Nosozliklar ularga vaqtida texnik xizmat ko'rsatmasdan uzoq muddat ishlatish yoki sifatsiz TXK oqibatida yuzaga keladi. Asosiy uzatma va differensialdagi nosozliklarga shesternya tishlari, differensial krestovinasi va podshipniklarning yeyilishi yoki sinishi, shuningdek, asosiy uzat¬ma salniklari jipsligining buzilishi misol bo'ladi.

Kalit so‘zlar: *Lyuft, K-428 asbobi, differensial krestovinasi,transmissiya agregatlari,qamrovchi skoba.*

Asosiy qism: Asosiy uzatmalarning hammasi harakatlanish chog'ida orqa ko'prik karterida shovqinning kuchayib ketishi bilan namoyon bo`ladi. Avtomobil o'rni¬dan qo'zg'alayotganda, burilayotganda yoki harakatlanayotganda taqillashlar hamda zarblarning mavjudligi kardanli uzatmalar yoki teng burchak tezligiga ega bo'lgan sharnirlardagi nosozliklardan darak beradi. Bu nosozliklar krestovina o'qlari va sharnir kosachalarining ko'p yeyilishidan yuzaga keladi, Kardan valining muvozanati buzilsa, transmissiyada kuchli titrash va shovqinlar hosil bo'ladi. Yarim o'qlardagi asosiy nosozliklar esa ularning shlitsalarini yeyilishidan kelib chiqadi.

Transmissiya agregatlarini diagnostikalash. Diagnostikalash agregatlarning texnik holati xaqida hamda zarur rostlash ishlarini bajargandan so'ng ularni yana ishlatish mumkinligi to'g'risida hulosa chiqarishga imkon beradi. Transmissiya agregatlarini avtomobil harakatlanganda, shuningdek, maxsus jihozda tekshirish mumkin. Diagnostikalash jihozining konstruksiyasiga qarab, ilashma to'liq qo'shilmasligi, uzatmalar qutisi, kardanli uzatma va orqa ko'prik shovqin bilan ishlashi, tishli ilashmalarni esa yeyilganlik darajasi aniqlanishi mumkin.



Transmissiyadagi aylana lyuftini aniqlaydigan K-428 asbobi.

Transmissiyani diagnostika qilishning oddiy usuli K-428 asbobi yordamida yetaklovchi ko'prik, kardan vali va uzatmalar qutisidagi aylana lyuftlar yig'indisi hisoblanadi. Asbob qamrovchi skobali dinamometrik qurilmadan(2) va uni tashkil etuvchi qo'zg'aluvchan(4) hamda qo'zg'almas(3) jag'lardan iborat. Qamrovchi skoba tekshirilayotgan yarim o'qqa yoki kardan valiga kiydiriladi, so'ng qo'zg'aluvchan jag'ni chervyak yordamida surib agregat detaliga maxkamlanadi[1-3].

Lyuftni aniqlash uchun dasta(1) kuch bilan buraladi va prujinali tovush daraklagich ovoz chiqargach, o'lchagich strelkasi tomonidan lyuft qayd qilinadi. O'lchagich shkalasini ixtiyoriy burchakka burish mumkin. Shuning uchun, o'lchash ishlarini bajarishdan avval, tekshirilayotgan agregatga o'rnatilgan asbob strelkasi no'lga keltirilishi zarur.

Transmissiya agregatlariga TXK. Transmissiya agregatlariga xizmat ko'rsatish navbatdagi KXK, 1-TXK, 2-TXK jarayonida amalga oshiriladi.

KXK da transmissiya agregatlari, avtomobilni o'rnidan jildirib va harakatlanish vaqtida uzatmalarni almashlab ulab tekshiriladi. Yetaklovchi ko'prikning holati va jipsligi nazorat qilinadi.

1-TXK da KXK dagi ishlarga qo'shimcha ravishda ilashish muftasi tepkisining erkin yurish yo'li tekshriladi va zarur bo'lsa, rostlanadi, yuritma detallari plastik materiallar bilan moylanadi. Uzatmalar qutisi, kardanli uzatma, taqsimlash qutisi, orqa ko'prik karterining maxkamlanishi, zichlagichlarning holati tekshiriladi, agregatlardagi moy satxlari me'yoriga keltiriladi[4-6].

2-TXK da transmissiya agregatlari bo'yicha KXK va 1-TXK dagi barcha ishlar bajariladi, moylash xaritasiga mos ravishda agregatlardagi moylar almashtiriladi. Agar agregatlarda nosozliklar aniqlansa, ularni ishchi holatiga keltirish uchun ta'mirlanadi.

Qo'shimcha ravishda, har bir transmissiya agregatlari bo'yicha bajariladigan ishlarni alohida-alohida ko'rib chiqamiz.

Ilashish muftasiga texnik xizmat ko'rsatish. Ekspluatatsiya jarayonida ilashma rostlab turiladi, ammo bundan oldin ilashma tepkisining erkin yo'li tekshiriladi. Buning uchun ikkita surilgichi bo'lgan chizg'ichdan foydalaniladi. Chizg'ichning bir uchi kabina poliga tiraladi, surilgich esa tepki maydonchasiga to'g'rilanadi. Ilashma tepkisi, harakatlanishga qarshilik keskin ortgunga qadar bosiladi va shu vaziyat ikkinchi surilgich yor¬damida qayd qilinadi. Chizg'ichning ikkala surilgichi orasidagi masofa tepkining erkin yo'lini aniqlaydi.

Zamonaviy Neksiya, Espero va shunga o'xshash avtomobillarda ko'pincha ilashish muftasi uchun gidravlik yuritma ishlatiladi. Bunday mufta yuritmasi tepkisining to'liq harakatlanish va erkin yurish yo'li me'yoriga keltiriladi. To'liq harakatlanish yo'lini aniqlash uchun ilashish muftasining tepkisi bilan rul chambaragining pastki qismigacha bo'lgan masofa (NEKSIYA avtomobilida) aniqlanadi, so'ngra tepki to'liq bosilib yana masofa aniqlanadi. Bu ikki masofalar orasidagi farq 130-136 mm bo'lishi kerak. Agar bu masofa me'yoridan farq qilsa, u holda sozlash ishlari bajariladi. Tepkining erkin yurish yo'li 8-15 mm oralig'ida bo'lishi kerak.

VAZ, Moskvich va GAZ rusumli yengil avtomobillarda, ilashish muftasi tepkisining erkin yurish yo'li ishchi silindr shtogining uzunligini o'zgartirish yo'li bilan sozlanadi[7].

Monjeta, porshen yoki silindrlarning yeyilishi natijasida me'yoridan ortiq miqdorda tirqishlar yuzaga keladi. Ular orqali ilashish muftasining yuritmasiga havo kirib qoladi, Uni ishchi silindrning havo chiqarish trubkasi orqali chiqarib tashlanadi.

Buning uchun ishchi silindr chang va kirliklardan tozalanadi. Ilashish muftasi yuritmasidagi suyuqlik quyish idishining qopqog'ini ochib, suyuqlik satxi tekshiriladi. U rezbali qismidan 15-20 mm. dan pastda yoki ”min” belgisidan past bo'lmasligi kerak. Ishchi silindrning chiqarish klapani(1) rezina qopqog'i olinib, o'rniga rezina shlanga tiqiladi va bir uchi 1□3...1□2 hajmda tormoz suyuqligi to'ldirilgan shisha idishga tushiriladi. Yuritma tepkisi qarshilik sezilguncha, ya'ni tepkining yurish yo'li o'zgarmagunga qadar, tez-tez bosib harakatlantiriladi, so'ngra tepkini bosib turib, klapan 1□2...3□4 aylanaga buraladi va tepki oxirigacha bosilgach, klapan maxkamlanadi hamda tepki sekin qo'yib yuboriladi. Bu holat shisha idishda havo pufakchalari chiqmay qolguncha davom ettiriladi. Operatsiya vaqtida vaqti-vaqti bilan idishdagi tormoz suyuqligining sathi tekshirilib va me'yoriga keltirib turiladi. Nihoyat, klapan qotirilib, shlanga yechib olinadi[8].

Uzatmalar qutisi va taqsimlash qutisiga TXK. Qutilarning qanday ishlashi kundalik ko'rikda hamda avtomobilning harakatlanishida tekshirib turiladi. Zichlagichlarning jipsligi, uzatmalarning oson va shovqinsiz ulanishiga alohida e'tibor beriladi. Tekshirilayotgan agregatlarning ishlash vaqtida begona taqillashlar va shovqinlar bo'lmasligi kerak. Uzatmalarning shesternyalari to'liq ulanishi lo¬zim, o'z-o'zidan ajralib qolishiga yo'l qo'yilmaydi.

Uzatmalar qutisi korpusining qizishi, avtomobil to'xtatilganda qo'lni kuydirmaydigan darajada bo'lishi kerak.

KXK va 1-TXK da nazorat qilib, eshitib, hamda haroratga qarab tekshirishdan tashqari, qutilar korpusi kirlardan tozalanadi, maxkamlangan joylar tekshiriladi va tortib qo'yiladi, moy sathi me'yoriga keltiriladi. 2-TXK da yuqorida qayd etilgan ishlarga qo'shimcha ravishda, qutilardagi moylar xarita bo'yicha almashtiriladi. Bu ish ko'targich yoki ko'rish ariqchalariga ega bo'lgan maxsus ishchi postlarida bajariladi. Qutidagi moy dvigatel to'xtagan zahotiyoq, quti sovib ulgurmasdan to'kiladi.

Agregatlardagi moy sathi shchup yordamida yoki nazorat teshigi orqali tekshiriladi. Agar moy sathi pasaygan bo'lsa, toza moy quyib me'yoriga keltiriladi va sapun kanallari tozalab qo'yiladi. Moy almashtirish quyidagicha bajariladi: qutidagi eski moy to'kib tashlangandan so'ng, o'rniga 1□2 l miqdorda yuvish moyi quyiladi. Avtomobil orqa ko'prigining birorta g'ildiragi ko'tarib qo'yiladi, dvigatel ishga tushiriladi va birinchi uzatma ulanadi. Transmissiya ishlay boshlaydi, shu alfozda qutining ichki bo'shlig'i yuviladi va chiqindilardan tozalanadi. Bir necha daqiqadan so'ng yuvish moyi to'kib tashlanadi, toza moy quyiladi. Moy almashtirilayotgan paytda to'kish teshigi tiqinining magniti ham tozalanadi.

Taqsimlash qutisi boshqarish richaglarining zarur vaziyati, tortqilar uzunligini rostlash orqali ta'minlanadi. Shu maqsadda tortqi barmoqlari shplintlardan ozod qilinadi va ayridan ajra¬tiladi. Fiksatorlar aniq ishlagan vaqtda, shtoklar to'liq ulangan holatga o'rnatiladi. Richaglar uzatmalar ulangan vaziyatga qo'yi¬ladi va ayrini aylantirib, tortqining kerakli uzunligi o'rnati¬ladi. So'ng tortqi o'z joyiga qo'yiladi, barmoq shplintlanadi va kontrgayka qotirib maxkamlanadi[10-12].

Uzatmalar qutisini ta'mirlash. Avtomobilning oldinga yurish uzatmasi shovqin bilan ishlab, uzatmalar yaxshi qo'shilmay qolganda (bu sinxronizator halqasining ishga yaroqsiz bo'lib qolishidan kelib chiqadi), sinxronizator muftasi tishlarining tashqi, yonbosh sirtlari, podshipniklar, vallar yeyilganda, shesternya tishlari singanda joriy ta'mirlanadi. Yeyilgan detallar holatiga qarab, (birikish jufti bilan) almashtirilib, ta'mirlanadi. Detallarni almashtirish uzatmalar qutisi uzoq muddat

shikastlanmay ishlashini ta'minlaydi va natijada ta'mirlashga kam mehnat sarf etiladi. Uzatma shesternyasining sinxronizator gupchagi va boshqa detallarini yechib (chiqarib) olishda maxsus asboblardan foydalaniladi.

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IJRO HOKIMIYATI ORGANLARI USTIDAN SUD NAZORATI INSTITUTINING NAZARIY-HUQUQIY ASOSLARI

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ANNOTATSIYA

"Sud nazorati" tushunchasi, ijro hokimiyati organlari ustida qaror qabul qilish, moliyaviy tuzilma yo'qotish va boshqa faoliyatlar amalga oshirishda sud tizimi tomonidan o'zgartirilishi yoki nazorat qilinishi maqsadida foydalaniladi. Bu nazorat shakli davlat tizimining bir qismidir va umumiy ravishda davlat va jamoat tashkilotlarini nazorat qilish uchun o'z ichiga oladi. Sud nazorati tushunchasi davlat va jamoat tashkilotlarining faoliyatlarini va moliyaviy amaliyotini nazorat qilishni o'z ichiga olgan tizimdir. Bu tizim, hukumatlar, mahkamalar, auditorlik organlari, korrupsiyaga qarshi kurash va boshqa tashkilotlar orqali amalga oshiriladi. Sud nazorati, qonunchilikni saqlash, huquqni himoya qilish, moliyaviy huquqlarni himoya qilish, tartibni saqlash va sodiqlikni ta'minlash uchun kritik ahamiyatga ega. Sud nazorati organlari, qonunchilikni buzish va moliyaviy qonunlarini buzishga qarshi kurashadi va davlat bujeti va moliya mablag'larini masofaviy xarajatlar, moliyaviy xalqaro qarzlar, zahmatli hisob-kitob, korrupsiya va boshqa risklardan himoya qiladi.

Kalit so`zlar: Sud nazorati, ijro hokimiyati organlari, huquqiy nazorat, adolat nazorati, qonun nazorati, huquqiy tartibot, faoliyat nazorati, o'zaro nazorat, qonunlariga rioya qilish, fuqarolar huquqlarini himoya qilish, ijro hokimiyati, umumiy yurisdiksiya sudlari, qonun ustuvorligini ta'minlash, mansabdor shaxslar.

ABSTRACT

The concept of "judicial review" is used for the purpose of being modified or controlled by the judicial system when making decisions on executive authorities, losing financial structure and other activities. This form of control is a part of the state system and includes in general for the control of state and public organizations. The concept of judicial review is a system that involves the control of the activities and financial practices of state and public organizations. This is done through the system, governments, courts, audit bodies, anti-corruption and other organizations. Judicial review is critical to maintaining legislation, protecting law, protecting financial rights, maintaining order, and ensuring loyalty. Judicial review bodies fight

against violations of legislation and violations of their financial laws, and protect government bujet and finance from remote spending, Financial international debt, laborious accounting, corruption, and other risks.

Keywords: judicial control, executive authorities, legal control, Justice control, law control, legal order, activity control, mutual control, compliance with laws, protection of citizens ' rights, executive power, courts of general jurisdiction, ensuring the rule of law, officials.

АННОТАЦИЯ

Понятие "судебный надзор" используется для того, чтобы органы исполнительной власти, принимающие решения, изменяли или контролировали финансовую структуру судебной системы при осуществлении убытков и других видов деятельности. Эта форма контроля является частью государственной системы и включает в себя контроль за государственными и общественными организациями в целом. Понятие судебного контроля представляет собой систему, включающую контроль за деятельностью и финансовой практикой государственных и общественных организаций. Это делается через систему, правительства, суды, аудиторские органы, антикоррупционные и другие организации. Судебный надзор имеет решающее значение для обеспечения соблюдения законодательства, правоприменения, защиты финансовых прав, поддержания порядка и лояльности. Органы судебного надзора, борются с нарушениями законодательства и финансового законодательства и защищают государственный бюджет и финансы от удаленных расходов, финансового международного долга, трудоемких расчетов, коррупции и других рисков.

Ключевые слова: судебный надзор, органы исполнительной власти, правовой контроль, контроль правосудия, надзор за законом, правопорядок, контроль деятельности, взаимный контроль, соблюдение законов, защита прав граждан, исполнительная власть, суды общей юрисдикции, обеспечение верховенства закона, должностные лица.

I.KIRISH

Demokratik huquqiy davlatning muhim tarkibiy qismi bo‘lgan sud-huquq tizimini chuqur isloh etish va inson huquqlarini ta’minlash davlat siyosatining ustuvor yo‘nalishi sifatida belgilanib, uning qonunchilik asoslari ham Konstitutsiyamiz tamoyillari va qoidalari asosida tubdan qayta ko‘rib chiqilib, ijtimoiy adolat va qonuniylik prinsipi, insonparvarlik g‘oyalariga tayangan holda

ishlab chiqildi. Konstitutsiyamizda sud alohida hokimiyat, sud hokimiyati qonun chiqaruvchi va ijro etuvchi hokimiyatlardan, siyosiy partiyalardan, boshqa jamoat birlashmalaridan mustaqil holda ish yuritadi, sudyalar mustaqildirlar, ular faqat qonunga bo‘ysunadilar, sudyalarning odil sudlovni amalga oshirish borasidagi faoliyatiga biron-bir tarzda aralashishga yo‘l qo‘yilmaydi. Har bir shaxsga o‘z huquq va erkinliklarini sud orqali himoya qilish, davlat organlari, mansabdor shaxslar, jamoat birlashmalarining g‘ayriqonuniy xatti-harakatlari ustidan sudga shikoyat qilish huquqi kafolatlanadi, deb qat’iy belgilab qo‘yilgan.

II. METODOLOGIYA

Ushbu maqolani tahlil qilish ijro hokimiyati sohasida qonun ustuvorligini mustahkamlashda sud nazoratining o‘rni, sud nazoratining asosiy xususiyatlari ko‘rib chiqiladi. Ushbu nazoratning mazmuni, mohiyati va huquqiy shakli masalalari tahlil qilinadi. O`zbekistonda ijro etuvchi hokimiyat sohasida sud nazoratini takomillashtirish zarurati, shuningdek uning huquqiy ahamiyati to'g'risida xulosalar chiqariladi. Sud nazoratining huquqiy shakli, nazorat jarayonining qonuniy asoslariga asoslanadi. Ijro hokimiyati qarorlariga qarshi shikoyat qilish imkoniyati, bu jarayonning bir qismidir va sudlar bu qarorlar ustidan nazorat o'rnatish imkoniyatiga ega. Bu, ijro hokimiyati qarorlarini, amallarini va hujjatlarini qonuniylik jihatidan ko'rib chiqishni anglatadi. Sud nazorati ijro hokimiyati faoliyatini qonunga muvofiqligini ta'minlashda davlat organlarining o'z vakolatlarini suiiste'mol qilishini oldini oladi va fuqarolarning huquqlarini himoya qilishga yordam berishini ko`rishimiz mumkin bo`ladi.

II.NATIJA

Ma’lumki, Konstitutsiyamizning 11-moddasiga asosan O’zbekiston Respublikasi davlat hokimiyatining tizimi hokimiyatning qonun chiqaruvchi, ijro etuvchi va sud hokimiyatiga bo’linadi. Hokimiyatning bo’linishi prinsipi adolatli, demokratik, huquqiy davlatning eng muhim belgilaridan biri hisoblanadi. Konstitutsiyaga muvofiq O‘zbekiston Respublikasida Oliy Majlis, Prezident, Vazirlar Mahkamasi, sud hokimiyati organlari davlat hokimiyatini amalga oshiradilar. Davlat hokimiyat organlari o‘zaro hamkorlik qila turib bir-biriga ta’sir o‘tkazadilar, jamiyatda tartibotni ta’minlaydilar va kishilarni birlashtiruvchi g‘oyalarni ro‘yobga chiqaradilar. Har bir hokimiyat organining vakolatlari hokimiyat vakolatlari doirasidan chetga chiqish, uni suiste’mol qilish va davlat hokimiyatining boshqa organlari faoliyat sohasiga aralashishning oldini olish maqsadida nihoyatda aniq-ravshan belgilab beriladi. O‘zbekiston Respublikasi Konstitutsiyasining 11-moddasida mustahkamlab qo‘yilganidek, hokimiyatlarning bo‘linish prinsipi

qonunchilik, ijro va sud hokimiyati o‘z faoliyatlarini mustaqil, bir-birlariga xalal bermasdan amalga oshirishni nazarda tutadi.[1]

Sud nazorati qonun ustuvorligini ta'minlash, fuqarolar va tashkilotlarning huquq va qonuniy manfaatlarini himoya qilish usullaridan biridir. Ijro hokimiyati faoliyatining o'ziga xos xususiyati uning qonuniyligi ustidan sud nazoratini taqozo etadi. Ijro hokimiyati sohasida qonun ustuvorligini mustahkamlashda sud nazoratining roli yildan-yilga ortib bormoqda. Shu munosabat bilan fuqarolar va tashkilotlar tomonidan ijro hokimiyati organlari va mansabdor shaxslar tomonidan qonunga xilof qaror va xatti-harakatlar yuzasidan ko‘plab murojaatlar tushmoqda.

O‘zbekiston Respublikasida sud ishlarini yuritish o‘zbek, qoraqalpoq tillarida yoki o‘sha hududdagi ko‘pchilik aholi so‘zlashadigan tilda olib boriladi. Sud olib borilayotgan tilni bilmaydigan sud ishtirokchisi uchun tarjimon orqali sud materiallari bilan to‘liq tanishish, sud harakatlarida qatnashish va o‘z ona tilida so‘zga chiqish huquqi ta’minlanadi.[2]

Aytish joizki, hozirgi vaqtda ijro hokimiyati sohasida sud nazoratining mazmuni va ahamiyati masalasiga yetarlicha e'tibor berilmayapti. Qoida tariqasida, faqat sudlarning ommaviy xarakterdagi nizolarni hal qilish vakolatlari ko'rib chiqiladi. Ushbu maqolada biz ijro hokimiyati sohasida qonuniylikni ta'minlashning ushbu usulini, xususan, ijro hokimiyati sohasida sud nazoratining mazmuni, mohiyati, huquqiy shakli va belgilari masalalarini batafsil ko'rib chiqamiz. Avvalo, biz ushbu nazorat turi hokimiyatning ikki mustaqil tarmog‘i, ijro etuvchi va sud hokimiyati o‘rtasidagi munosabatlar tabiatining o‘ziga xos xususiyatlaridan kelib chiqqan holda muayyan shakllarda amalga oshirilishini ta’kidlaymiz.[3]

Sudlar ijro hokimiyati ustidan nazoratni amalga oshiradi, shu orqali fuqarolarni davlat organlari tomonidan qonunni suiiste'mol qilishdan himoya qiladi. Sud nazoratini amalga oshirish bilan bog'liq ishlarning eng ko'p qismi umumiy yurisdiktsiya sudlari tomonidan ko'rib chiqiladi.[4] Fuqarolarning huquqlari, erkinliklari va qonuniy manfaatlarini buzuvchi qonun hujjatlari, ijro etuvchi hokimiyat organlarining qarorlari, harakatlari (harakatsizligi) ustidan sudga shikoyat qilishingiz mumkin. Fuqarolar, tashkilotlar va boshqa shaxslar o‘z huquqlari, erkinliklari, qonuniy manfaatlarini qonun hujjatlari, ijro etuvchi hokimiyat va mahalliy o‘zini o‘zi boshqarish organlarining, mansabdor shaxslarning qarorlari, harakatlari (harakatsizligi) tomonidan buzilganligi to‘g‘risida sudga shikoyat (shikoyat, ariza) bilan murojaat qiladilar.[5]

III. MUNOZARA

Yuqoridagilar bilan bog'liq holda biz ijro hokimiyati sohasidagi sud nazorati belgilarini sanab o'tamiz. Pogorelaya va N.V.Pavlov quyidagi xususiyatlarni ko'rsatadi: “Nazorat hech qanday tarzda nazorat qilinadigan obyektga bog'liq bo'lmagan sud organi tomonidan amalga oshiriladi, sud nazorati orqali sud ijro hokimiyati organlari faoliyatida qonuniylik kafolati sifatidagi huquqiy maqomini amalga oshiradi. Sud nazorati protsessual qonun normalariga qat’iy rioya qilgan holda amalga oshirilishi kerak”ligi borasida fikr yuritishgan.[6] Fialkovskaya va O.A. Tonenkov, ijro hokimiyati sohasidagi sud nazoratining xususiyatlariga sudning hokimiyatning mustaqil tarmog'i sifatidagi funksiyasi u orqali amalga oshirilishini qo'shadi, u ikki tomonlama maqsadga ega: jismoniy va yuridik shaxslarning huquqlari va qonuniy manfaatlarini himoya qilishni ta'minlash, ya'ni, shaxsiy manfaatlar va ijro hokimiyati tomonidan o'zboshimchaliklarning oldini olish, ya'ni, jamoat manfaatlarini himoya qilishdan iborat ekanligini ta’kidlagan.[7] Ijro etuvchi hokimiyat organlari faoliyati ustidan sud nazoratining mohiyatiga kelsak, u, birinchi navbatda, ular tomonidan chiqarilgan idoraviy hujjatlarning qonuniyligini tekshirishda, davlat hokimiyati va boshqaruvi organlariga nisbatan ommaviy-huquqiy nizolarni ko'rib chiqish va hal etishda ifodalanadi.

IV. XULOSA

Xulosa qilib, quyidagi xulosalar chiqarish mumkin. Sud nazoratining asosiy mazmuni ijro hokimiyati faoliyatining qonuniyligini ta'minlash usuli sifatida huquqiy hujjatlarga baho berish, qonun ustuvorligi, fuqarolar, tashkilotlarning huquq va qonuniy manfaatlari buzilishini aniqlash va hokazolardan iborat, buzilgan huquq va manfaatlarni tiklash choralarini ko'rishda, aybdorlarni javobgarlikka tortishda ko`rishimiz mumkin. Sud nazoratining huquqiy ahamiyati shundaki, u murakkab tuzilmaviy institut bo‘lib, ijro hokimiyati sohasida qonuniylikning eng muhim kafolati, sud va ijro hokimiyati organlarining o‘zaro hamkorligining yo‘li hisoblanadi. Biroq, sud tizimining elementi sifatida ijro hokimiyati sohasida sud nazoratini takomillashtirish zarur. Ijro hokimiyati sohasida sud nazorati muammolari to'liq ishlab chiqilmagani ularni yanada chuqur o'rganish zarurligini ko'rsatadi. Mamlakatda ijro hokimiyati ustidan samarali sud nazoratini o'rnatish, nafaqat qonun ustuvorligini mustahkamlashga yordam beradi, balki davlat organlarining fuqarolarga nisbatan javobgarligini oshiradi. Buning uchun zarur qonunchilik islohotlari va institutsional o'zgarishlar amalga oshirilishi kerak. Bu jarayonlar ijro hokimiyati faoliyatini yanada adolatli va samarali qiladi, shuningdek, fuqarolar va tadbirkorlik subyektlarining huquqlarini kafolatlaydi.

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ABDULLA AVLONIY HAYOT YO‘LI

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ANNOTATSIYA

Ushbu maqola Abdulla Avloniy hayoti va ijodi, oilasi ,asarlari, pedagagik harakatlari va qarashlari, yaratgan darsliklari haqida qisqacha yoritib berilgan.

Kalit so‘zlari: Darslik, tarjima ,teatr, “Birinchi muallim”,”Ikkinchi muallim”, “Turkiy guliston yoxud axloq”, “Turon”,”Shuhrat”

Abdulla Avloniy 1878-yilning 12-iyulida Toshkentning Mergancha mahallasida kosib oilasida dunyoga keldi.

“ Avloniy yangi maktablar uchun qo‘llanma va o‘qish kitoblar yozib, nashr qildirgan (masalan, „Birinchi muallim“, „Ikkinchi muallim“, „Turkiy guliston yoxud axloq“, 4 juzd (qism) li „Adabiyot yoxud milliy she’rlar“ to‘plami, „Maktab gulistoni“, „Mardikorlar ashuvlasi“, va boshqalar.Avloniy toshkentlik savdogarning Salomatxon ismli qiziga uylangan. Ularning 7 nafar farzandi bo‘lib, ular: Savriniso, Karima, Kunduz, Hakima, Asadilla, Otaliq va Kenja.1907 yil Avloniy “Shuhrat” gazetasini ochadi. O‘qishdan so‘ng pedagogika bilan shug‘ullanadi, yangi o‘quv tizimiga asos soladi va

Sharq hamda G‘arb tillarini o‘qitish taklifini beradi.[1]

A.Avloniy “Hijron “taxallusi bilan ijod qiladi. Abdulla Avloniy maktab ta’limi haqida o‘z tarjimai holida shunday yozadi:”12 yoshimdan O‘qchi mahallasidagi madrasada dars o‘qiy boshladim. 13 yoshimdan boshlab yoz kunlari mardikor ishlab, oilamga yordam qilib, qish kunlari o‘qir edim. 14 yoshimdan boshlab, o‘sha zamonga muvofiq har xil she’rlar yoza boshladim. Bu zamonlarda”Tarjumon”gazetasini o‘qib, zamondan xabardor bo‘ldim”

Abdulla Avloniy “Turon”teatr turppasini tashkil qilgan.O‘zi bir qator sahna asarlarini yozgan.Hamda tarjima bilan ham shug‘ullangan,bir qancha chet el sahna asarlarini o‘zbek tiliga tarjima qilish bilan shug‘ullangan.

[1] „Abdulla Avloniy. Muxtasar tarixi anbiyo va tarixi Islom & Abdulla Avloniy. Tanlangan asarlar. 1-2 jild“Khdavron.uz

“XIX asr oxiri XX asr boshidagi o‘zbek milliy madaniyatining mashhur vakillaridan biri i shoir, dramaturg, jurnalist, olim, davlat va jamoat arbobi Abdulla Avloniydir. U 1878 yilning 12 iyulida Toshkentning Mergancha mahallasida, to‘quvchi Miravlon aka oilasida dunyoga keldi. Bolaligi Mirobod mahallasining egri-bugri ko‘chalarida, ko‘pchilik qismini ruslar tashkil qilgan temir yo‘l ishchilari bolalari orasida kechdi. O‘qchidagi eski maktabda, so‘ng madrasada o‘qidi (1885–1886).”[2]

Abdulla Avloniy o‘quvchilar uchun «Birinchi muallim», «Ikkinchi muallim», «Tarix», «Turkiy Guliston yoki axloq» kabi darsliklarni yozgan.Abdulla Avloniy Rus,arab,fors tillarini o‘rgangan hamda bu tillarda ham ijod qilgan..Tolstoy va K. D. Ushinskiy asarlarini o‘zbek tiliga tarjima qilgan.

“1921 yildan Avloniy maktablar ochish, xalqni savodxon qilish, o‘zbek xotinqizlarini o‘qitish, o‘qituvchilar va ziyoli kadrlar tayyorlash ishlari bilan shug‘ullandi. U Eski shahardagi xotin-qizlar va erlar maorif bilim yurtlari (inproslar)da mudir (1923—24), Toshkent harbiy maktabida o‘qituvchi (1924—29). 1930—34 yillarda O‘rta Osiyo universiteti til va adabiyot kafedrasi mudiri, profesoor. Shu davrda u o‘zbek maktablarining 7-sinfi uchun «Adabiyot xrestomatiyasi» tuzib, nashr ettirdi (1933).

Avloniy Hijron, Nabil, Indamas, Shuhrat, Tangriquli, Surayyo, Shapaloq, Chol, Ab, Chig‘aboy, Abdulhaq taxalluslari bilan tanqidiy va ilmiy maqola, 4000 misradan ortiq she’r ijod qilgan”[3]

Abdulla Avloniy tarbiya haqidagi fikrilarining birida “Tarbiya-pedagogika, ya’ni bola tarbiyasining fani demakdir. Bolaning salomat va saodati uchun yaxshi tarbiya, tanni pok tutmoq, yosh vaqtida maslakni tuzatmoq, yaxshi xulqlarni o‘rgatmoq tabiblardek kabidurki, tabib xastaning badanidagi kasaliga davo qilg‘oni kabi tarbiyachi bolaning vujudidagi jahl markaziga “yaxshi xulq” degan davoni ichidan, “poklik” degan davoni ustidan berib katta qilmog‘i lozimdir.”degan edi. Abdulla Avloniy 1934 yil 24 avgustda Toshkentda vafot etdi.

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ПОДХОД К ОБУЧЕНИЮ РУССКОМУ ЯЗЫКУ СТУДЕНТОВ ИЗ НАЦИОНАЛЬНЫХ ГРУПП

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Аннотация: В данной статье представлена информация о новых основных принципах обучения русскому языку в современном образовании, методах обучения русскому языку, а также обще дидактических принципах обучения.

Ключевые слова: Современное образование, русский язык, методика обучения, общие принципы диктанта, лингвистическая теория, принципы, экстралингвистический подход.

Основные принципы преподавания любого предмета представляют собой теоретические основы, которые определяют деятельность учителя. Эти принципы применимы к обучению всем школьным дисциплинам, они являются общедидактическими и способствуют качественной организации усвоения конкретного предмета. В работе надо освоением каждого раздела языка необходимо использовать специальные дидактические принципы, описанные ниже. Да, научный принцип содержательности в освоении теории языка подразумевает достоверность того, что сказанное точно соответствует тому, что реально установлено в науке. В работе над освоением каждого раздела языка необходимо использовать специальные дидактические принципы, описанные ниже. Да, научный принцип содержательности в освоении теории языка подразумевает достоверность того, что сказанное точно соответствует тому, что реально установлено в науке. Принцип развивающего обучения направлен на формирование устойчивого интереса к науке, создающего у детей мотивацию к чтению и активной деятельности. Экстралингвистический подход к работе с учебным материалом создает дополнительные возможности для формирования нравственных, социальных, интернациональных, патриотических и трудовых качеств субъекта обучения и свидетельствует о важности принципа единство образования и воспитания.

Принцип связи теории с практикой имеет свои особенности и при изучении языкознания: теория языкознания служит основой для формирования навыков употребления языковых единиц в различных условиях общения. Реализация этого принципа находит яркое выражение в языковой ассимиляции: каждое теоретическое положение экстраполируется на речевую ситуацию. Уровень информированности при изучении лингвистической теории зависит от активности и заинтересованности учащихся. Принципы доступности, осознанности и активности обеспечивают понимание способов связи с пройденным материалом и согласуются с принципом преемственности: при таком подходе обеспечивается не только взаимообусловленность тем и разделов, но и взаимодействие между учащимися при использовании также осуществляется связь ранее сформированных навыков познавательной деятельности. Важную роль играет квалифицированное и целенаправленное следование принципу Использование наглядных пособий: внимательное рассмотрение содержания каждого его компонента и способов применения в разных формах уроков Следует иметь в виду, что учитель должен знать индивидуальные особенности учащихся, умение внимательно наблюдать за процессом обучения, умение применять разные подходы и задания различной сложности с учетом психологических особенностей памяти, внимания, работоспособности. индивидуализация обучения связана с принципом, реализация которого призвана положительно сказаться на качестве усвоения материала. На основе дифференциации образования можно использовать принцип, который определяется как возрастными особенностями аудитории, так и уровнем ее развития. Персональные дидактические принципы дают представление об общих правилах, определяющих подходы к обучению тому или иному предмету. Таким образом, приоритетными правилами в обучении русскому языку будут:

- экстралингвистический (сопоставление языковых единиц и реалий жизни);

- функциональные (указывающие на место и функцию языкового явления в речи);

- нормативно-стилистический подход к использованию языковых единиц;

Классификационные признаки методов обучения. Метод – это совокупность методов и форм, направленных на достижение определенной цели обучения. Метод включает показатель способа и характера организации познавательной деятельности учащихся. Существуют разные подходы к

описанию соотношения понятий в дидактике. Было бы правомерно определить метод как способ передачи и усвоения учителем и учеником знаний, приобретения навыков и компетенций для применения этих знаний. В качестве отличительного признака при выборе активно-рациональных методов рекомендуется использовать показатель уровня активности учащихся, а также характер их учебно-познавательной деятельности. Также учитываются следующие отличительные признаки:

- Источники знаний (устные, наглядные, практические);
- методы логики (аналитико-синтетический, индуктивный, дедуктивный);
- характер обучения (разъяснительный, иллюстративный, проблемный);
- уровень познавательной самостоятельности учащихся (репродуктивная, продуктивная, эвристическая);
- уровень сложности предлагаемого материала (эвристический, исследовательский, алгоритмический, основной упор делается на программирование);
- дидактические цели и функции (методы стимулирования, организации и контроля);
- род деятельности учителя (способы оформления и организации самостоятельной учебной деятельности) и др. Такие разные подходы предполагают, что одно и то же когнитивное поведение, рассматриваемое с разных точек зрения, может характеризоваться несколькими параметрами. Если говорить об уровне востребованности, то каждый из них будет эффективен в процессе выполнения определенных дидактических функций, при определенных условиях организации учебного процесса. В частных методах данная классификация соответствующим образом корректируется. Таким образом, по мнению Н. З. Бакеевой, из трех проблемных методов поиска.и З. П. Даунене, два - постановка задачи и исследование - не нашли существенного применения в обучении русскому языку как родному. В таких условиях на занятиях по русскому языку И.Я. Лернер и М. Е. Скаткин применяют на практике один из двух методов, которые они называют соответственно объяснительно-иллюстративным и частичным исследованием. Однако репродуктивный метод, выделенный в той же типологии, требует дополнительного разделения, так как связан с разными видами мыслительной и речевой деятельности учащихся.

Ученый различает имитационные методы активного обучения, то есть методы работы, основанные на имитации учебно-познавательной

деятельности школьников. Все остальные методы являются не имитационными (например, представление материала в виде доклада). Методы моделирования делятся на игровые и неигровые соответственно. К первой группе относятся проведение деловых игр, игровое проектирование, ситуационные упражнения, а ко второй группе анализ реальных ситуаций, решение ситуационных задач. Классификация методов по источнику знаний А.В., 1987) в фундаментальном учебнике: 1) слово учитель (рассказ); 2) разговор; 3) языковой анализ (языковые наблюдения, грамматический анализ); 4) упражнения; 5) использование наглядных пособий (схемы, таблицы); 6) работа с учебником; 7) экскурсия.

Говоря о методах обучения применительно к урокам языка, следует подчеркнуть, что методы обучения речи. Таким образом, метод имитации речи предназначен для формирования автоматизированных речевых навыков: от ученика требуется повторить, имитировать услышанное или написанное. Использование операционного метода Учащиеся выполняют любые речевые действия, связанные с поиском, выделением, заполнением, изменением, добавлением или удалением определенных единиц языка. Коммуникативный метод предполагает понимание и самостоятельное образование коммуникативных единиц - предложений или связных текстов. В ней используются пересказ, построение, перевод, реферирование, эссе, комментарии, тезисы и др. Развитие методов обучения тесно связано с появлением новых подходов к изучению языка. Поскольку любой метод направлен на обучение определенной языковой функции, система обучения языку представляет собой комплексное использование множества методов, которые доминируют в коммуникативной роли адекватного выражения мыслей других людей и развития их способности выражать себя на определенном языке. Коммуникативное относится к речевой направленности процесса обучения, так как способом достижения этой цели является весьма практическое использование языка на основе принципа речемыслительной деятельности. Общение связано с важным обще дидактическим принципом - принципом индивидуального подхода к процессу обучения, но в языковом обучении этот принцип имеет свои особенности: речь также индивидуальна, потому что отношение к окружающей действительности всегда индивидуально личный. В 1990-х годах А. В. Дудников разработал другой подход к описанию методов обучения, в основе которого лежит описание образа мышления. Использование дедуктивных, индуктивных, дедуктивно-

индуктивных и индуктивно дедуктивных методов организовано с учетом статуса изучаемого языка (местный, родной язык, иностранный). Индуктивный метод представляет собой движение мысли от частного к общему, от наблюдения отдельных особенностей изучаемой категории языка к пониманию закономерностей, лежащих в основе определения или правила. Как прием эвристическая беседа может быть использована здесь и как слово учителя. Индуктивная инициация характеризуется работой аналитического мышления: выделением частей языкового признака, определением их специфики на основе наблюдения, сравнения и сложения элементов. Дедуктивный метод предполагает движение мысли от общего к частному, от образования определения или правила к конкретным признакам, утверждающим исходные положения. Здесь слову учителя также отводится важное место, и учитель переходит от вывода и обобщения к подбору доказательств их истинности. Дедукция дает представление о новом понятии в готовой словесной формуле, после чего понятие разбивается на составные части, которые усваиваются путем сравнения и противопоставления. Тесная связь между индуктивным и дедуктивным методами, по мнению А. В. Дудникова, приводит к наиболее часто используемым в практике языкового обучения соединениям: элементы дедукции присоединяются к индуктивной основе или элементы индукции присоединяются к дедуктивному пути мышление. В методике обучения родному языку за последнее десятилетие. Интенсивные методы обучения послужили основой для создания комплексной и эффективной технологии обучения с уникальными характеристиками: - для создания прочной языковой базы используются методы, активизирующие сознательные и бессознательные процессы психики; - вся система заданий ориентирована на коммуникативную деятельность; - создать условия для совместной работы. Блочный метод занимает особое место в современном контексте обучения языку, для него характерны следующие особенности: 1) тема или ситуация для беседы предлагается всей группе; 2) подготовка к диалогу (полилогу) осуществляется на родном языке слушателей; 3) организован процесс перевода диалогов; 4) диалоги изучаются и отрабатываются в ходе ролевых игр; 5) выполняются многоэтапные творческие подготовительные упражнения; 6) усваиваются грамматические особенности типовых конструкций; 7) для контроля используются специальные тесты; 8) практика презентаций и эссе

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PROBLEMS AND SOLUTIONS OF DEVELOPING LINGUISTIC COMPETENCE IN SECONDARY SCHOOL

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Annotation: In this article is found out Problems and solutions of developing Linguistic Competence in Secondary school. Author gave most effective methods and approaches in order to developing Linguistic Competence. She tried to solve the problems in teaching process.

Keywords: problems, solutions, linguistic competence, approaches, techniques, technology.

Building language competence is one of the most important aspects of teaching a native language, since language competence means the ability of students to use words, their various forms, syntactic constructions in accordance with the norms of the literary language, the ability to use synonymous means language, after all, is the ability to be able to use all the riches of language[1]. Language competence is psychological system that includes the formation of a linguistic sense based on the experience of everyday conversational communication and the establishment of a special language learning process. Currently, special importance is attached to the construction of language competence, since it is regarded as a prerequisite for the formation of a socially active person. Successful mastery of learning methods The language is provided with a high level of linguistic competence[2]. Language competence allows you to adequately perceive someone else's speech, recognize the intonation and modality of the interlocutor's speech, evaluate someone else's speech, and provides the ability to give appropriate answers based on the socio-cultural context.

Language competence is often considered as the position of the necessary specific skills required for speech communication between members of society and understanding it as a language academic discipline[3].

The presence of competence is expressed in the ability to use knowledge and skills, in success in solving certain problems of a wide range based on practical experience. If we consider the definition of competence more precisely, indicating the relevant sources, then competence means:

• a set of personal abilities and qualities necessary for the successful performance of their work, their description in behavioral terminology;

• certain character and abilities that are prerequisites that internally determine the effectiveness of a person's actions;

• a characteristic of a person, which consists of knowledge, skills and behaviors necessary for activity.

Then the competence, depending on the training of a specialist, explains a given social norm, which is considered necessary for high-quality and productive activities in the relevant field[4].

Competence in language proficiency through the use of didactic materials is the ability to successfully operate, at the same time, a free, broad, productive exchange of opinions aimed at achieving a communicative competence based on the abilities and knowledge needed to solve

Consequently, the concept of competence means a set of qualities that ensure the implementation of professional activity. A.V. Khutorskoy gives such a definition of competence, in which competence is a set of qualities that are needed for their use in any industry [5]. The concept of "language competence" in the methodology of teaching foreign languages is somewhat new, because it appeared and began to spread only in the middle of the twentieth century. In the development of the problem foreign scientists took a wide part in the language competence, among them: N. Chomsky, D. Himes, S. Savignon, A.A. Mirolyubov, R.P. Milrud, E.I. Passov, I.L. Bim, M.N. Vyatyutnev, L.N. Chernovaty, S.F. Shatilov and others. In its development, the concept of linguistic competence has received the following definitions: "The general science of the offending speaker and listener" [7]; "Knowledge of word units and well-known formal rules by which word units are combined into meaningful phrases.

The language competence includes lexical, grammatical, semantic, phonological, spelling and orthoepic competences" [8]; Competencies Each student should have their own vocabulary. In order to improve students' knowledge in practice, the formation of types of language competence is required. To do this, the following actions should be performed. Currently, special importance is attached to the construction of language competence, since it is regarded as a prerequisite for the formation of a socially active person. Successful mastery of learning methods The language is provided with a high level of linguistic competence. Language competence allows you to adequately perceive someone else's speech, recognize the intonation and modality of the interlocutor's speech, evaluate someone else's speech,

and provides the ability to give appropriate answers based on the socio-cultural context.

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THE ROLE OF INTERESTING GAMES IN TEACHING CHILDREN FOREIGN LANGUAGES QUICKLY AND EFFECTIVELY

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Today, the ability to know foreign languages has become one of the integral parts of our life. Due to the high rate of cooperation with foreign partners among specialists in various fields, their demand for language learning is high. People acquire such knowledge first in preschool educational institutions and then at school, then in institutes, training courses or independently learn a foreign language. Success in achieving this goal depends on the practical methods and skills of teachers. The ability to use information technology and modern teaching methods helps to quickly understand new materials. Combining different methods allows the teacher to solve specific educational programs.

Since the study of foreign languages is gaining importance, languages are taught not only in higher education institutions, schools, but also in pre-school educational institutions. If the lessons are not taught with unique methods and interesting methods, attracting students to the lesson may become a difficult task. If lessons are changed from traditional methods and made interesting, this not only ensures the quality of the lesson, but also prevents boredom and attracts passive students to participate in the lesson.

There are a number of interesting games in the process of teaching English and Russian. It is worth mentioning that when teaching language to children, it is necessary to use such games in which all students participate equally and learn new things from the lesson (for example, new vocabulary can be memorized, if this process is repeated every day, the student vocabulary increases to a higher level). It is inappropriate to start the lesson with grammar concepts, especially for younger students, because it causes them to quickly get bored. As a result, interest in the class may fade. With them, even the process of greeting should be started in an unconventional way, for example, the method of starting the lesson with an English song about greeting with the entrance of the teacher (mainly a motivational method for elementary school students) is an effective method. If the lesson continues in this way, the students will not lose their attention to one task during the lesson. They even look forward to English lessons. Of course, all this should be organized by the

teacher, and it is the pedagogue's responsibility. Therefore, to make learning a foreign language interesting, it is possible to mention some types of games.

"Rolli games" can be used to improve the effectiveness of English and Russian language lessons. The advantage of this game is that it is played based on the situation. This game is not only useful for learning science, but also allows you to develop mental skills. In this game, topics are selected and children create dialogues. For example, the passenger's conversation while stopping the taxi, or the conversations in clothing stores - all of this is spoken and shown in English. It is in this game that we can use the tactics of working with a group, that is, dividing students into groups and dividing them into different topics. In this case, competition also occurs. Competition will be the criterion. If a group that does well in a task is encouraged, the rest of the students will also be motivated. In addition, it is appropriate to use didactic games to conduct English lessons meaningfully.

OBJECT- this game serves to increase students' vocabulary. We know that the most important direction in learning a foreign language is memorizing a new word. Considering the characteristics of students, each student memorizes vocabulary in his own way. We are sure that learning new words through games is suitable for everyone and makes the process easier. In our game mentioned above, during the lesson, 15 objects in the classroom are placed on the table and the students come and look at these objects. The items are covered and then the students have to write what they see on the board in English for a certain amount of time. The student who spells the most words correctly is the winner. In order to ensure the quality of this game, I can say that in order to attract students who are in this situation and did not participate in the lesson, it would be appropriate if they were given the task of making one sentence for the names of these items, and this eliminates indifference.

Pictionary is a game familiar to most English language teachers and learners, a word game with its name and a picture in it. You can use a normal whiteboard or a magnetic board to draw in this game. Students of the class are divided into two groups, and a table is drawn on both sides of the board for each team. The scores of the teams are recorded in these tables. Word names are written on the desk and turned upside down. Students from each group take turns choosing one of the hidden words and drawing it on the board. The team that gets it first will be awarded a point. This game also sharpens the minds of the students. We can also say that the use of images is a tactic that attracts readers quickly, especially if it is created by the students themselves.

Taboo words game (Forbidden words) is a fun game that helps students use synonyms and their meanings and develop this skill. The use of synonyms ensures the fluency of speech and the beauty of speech. Especially in the English language, it is important not to make mistakes in the use of words, because many words in the English language with the same meaning are used according to the context of the sentence. This game will help you to be careful in this regard. In this, groups are formed, that is, students sit opposite each other. Each team chooses one person from their team to sit in the chair opposite them. The teacher goes behind the students and holds a word written on a large piece of paper. Students sitting in their seats should not be able to see this word. The member of the team sitting in the seat will have some time to say the word the teacher is holding.

Tennis game - the purpose of this game is to increase the speed of the students. This game is similar to a chain game and takes place within the chosen theme. In this case, a new word should be added to the last letter of the said word, for example, if the topic name is "Animals", if it starts with the word "Tiger" without deviating from the topic, the second participant should continue with "rabbit" In this way, the game continues. If the student does not answer for 5 minutes, the game is continued with the rest of the class. It will be fun and interesting to play with many people.This game can also be played by changing the theme.At the same time, connect them with different technical tools. tish also serves to increase interest, because in today's rapidly developing age, not all young people, teenagers and adults are indifferent to modern technologies.

In conclusion, grammar concepts are also taught in teaching because teachers' lesson plans indicate this. But there is also a game to make this process easier and fun. For example, subject word groups (parts of speech). They should be able to learn and distinguish word groups well. Students can be given the task of writing only words related to the noun (noun) word group while playing music in English and listening to the song, and then the student can be given another word group. In this way, the topic is strengthened, this method can be used in the process of passing other topics. It can also be organized as a cultural activity for students.

When using the game, we can change them depending on the knowledge and age of the children, that is, make them easier or more complicated. The purpose of these above-mentioned games is to strengthen the memory of the students, to increase their mental capacity, quickness, intelligence, to remember new words easily, and most importantly, to organize the lesson meaningfully. Today, the educational process is mainly carried out in a traditional way, but it is necessary to

organize continuous learning of foreign languages at all stages of the educational system, as well as to improve the qualifications of teachers and to teach with modern educational and methodological materials. provision requires further improvement. By introducing advanced methods of education with modern pedagogy and information communication, it is desirable to make the growing young generation an expert in the languages they are learning and, on the basis of this, they can speak these languages easily. After all, everything is for the great future of our youth and the development of our country.

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ISSUES OF RESTORATION OF TONE IN POETIC TRANSLATION

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Abstract. In this article, we analyzed the poetic translation and its complex requirements. Other types of poetic translation (simultaneous, scientific-technical, political-journalistic, informational-analytical material translation), in particular, the different aspects of literary translation, have been researched. Most importantly, the creativity and the skill of using words, which are very important in poetic translation, form the center of analysis of this article. In addition, a lot of attention is paid to the issue of being able to maintain harmony and morale.

Keywords: literature, work of art, translation, translator, poem, rhyme, spirit, inspiration, talent, skill, artistic taste.

A translation can usually be seen as a simple collection of words. However, his it is a complex process that is difficult for the reader to understand at first glance lies In addition, the translation process has its own characteristics, which are from the translator requires more skill and responsibility. Keep looking for it, again and again lexical, grammatical, which forces to analyze and bring out the finer points of the word and encourages to think over a number of problems such as stylistic painting.

The reason for this is the translation of a text taken from one language into another language language skills alone are not enough. In art science the translator not only fully understands the issues of translation, but also some creativity must have the ability. Talent, inspiration in translating a work of art The role of such abstract elements is incomparable. Therefore, other types of translation (simultaneous translation of scientific-technical, political-publicistic, informational-analytical materials) translators engaged in the most complex and delicate type of translation they do not always dare to touch the so-called artistic translation. Scientific deliver the main content of a specific message to the reader in the translation of texts if giving is the purpose of translation, in literary translation and especially its heart. In this poetic translation, the inner experiences and the spirit of the author of the work are original its main purpose is to preserve the status quo.

In the science of literature, a translator should not only fully understand the issues of translation, but also have some creativity. After all, the importance and role

of abstract elements such as talent and inspiration in re-presenting an artistic work into the language of translation is incomparable. Therefore, translators engaged in other types of translation (simultaneous, scientific-technical, political-journalistic, informational-analytical translation of materials) do not always dare to try literary translation, which is considered the most complex and delicate type of translation. In the translation of scientific texts, delivering the main content of a certain message to the reader is the goal of translation, while in literary translation - and especially in poetic translation, which is the heart of it, it is its main goal to preserve the inner experiences and psyche of the author of the work in its original state.

For this reason, we call the representatives of this field rightly poets-translators. A prose work has a plot, composition, conflict, development of events and, of course, solutions to problems. In the words of Ustoz Asqad Mukhtar, a translator creates like an artist, not a draftsman, and the author's opinion is more clear to the reader thanks to various methods of translation, including metonymic, transformation methods, implicit (hidden) meanings, and explicit (detailed) expressions. strives to deliver. But to translate the tone and lyrical experience of the four-line poem to the extent that the reader can find a place in the heart, as we mentioned above, requires poetic inspiration and skill.

You can feel the oriental tone from Rubai's English poetic slang. Such poems are not found in English poetry. However, in the verse "Sondin, I love you very much, dear life" in this Rubai, the poet does not mean the number of numbers, but "I love you more than any number of beings that can be counted". English lyrics don't have the phrase "I love you more than any number." Therefore, Navoi does not use this phrase, which is given in a very simple form in the translated language. If the translator had realized that the word "sondin" in the poem is not just a countable number, but is used in the sense of uncountable, infinite, perhaps he would not have made such a serious mistake. was In this place, the translator, the well-known Navoi scholar, the translator, the Doctor of Philosophy, Sh. As Sirojiddinov explained, the word "sondin" was used in the translation as "infinity" instead of "numbers". It would have been possible to fully preserve the original meaning and spirit of Rubaiyi.

Indeed, poetic translation is one of the most complex translation processes. Despite this, our poet-translators are doing unique and somewhat effective work in fulfilling this difficult task.

In particular, Q. Mamurov is one of the talented translators who is engaged in the work of translating not only poetry, but also Alisher Navoi's rubai into English.

Of course, That is why Q. Ma'murov was able to accurately copy his tone into the translation and recreate the spirit of the Turkish Rubaiyat in English.

Jondin, I love you so much, oh dear life, Sondin, I love you so much, oh dear life, I can't love you any more, Oh, I love you so much, oh dear life. Q. Administrator's translation: I love you more than my soul, oh, my dear, I love you more than all numbers, oh, my dear, Loving anything can not be more than that, I love you much more than that, oh my dear.

When it comes to translating poetic works, the content of the original text is language features in covering the essence, expressiveness of thought and other aspects is decisive. We know that translating poems is a very complicated process is considered In another language, keeping the meaning and melody of the poem translation is considered a great responsibility of the translator. All phonetics of the poem and intonation forms, such as weight, rhythm and tone, the poetic meaning of the work serves to express.

"The main task of poetic translation is to translate good poetry into bad poetry trying not to turn around, keeping the translation content as complete as possible stay, the weight of poetic text forms in accordance with the content of the poem is to maintain tone. How important is the problem of choosing words in translation for the creators of the work if so, it is more important in literary translation. The translated work is adequate it is certain that the translator will face the problem of choosing an alternative word. A. Oripov's poem "Atalar ilgida zamon bi vakt" in the Karakalpak language It is translated as "time in the generation of ancestors". Translated the name of the poem fully reflects the meaning it wants to express. Meaning by the translator using the word "offspring" as equivalent to "marrow" reached closeness. The translation of the first stanza of this poem contains the original accordingly, appropriate units were selected for some words.

But we can see that there are some mistakes in the second stanza of the poem it will be possible.

A. Oripov:
If I take an oriental metaphor, remember
One name is bad, one name is poor.
Holding the earth in the palm of his hand, to the generation
After all, it's the fathers who have delivered everything.
Translated by P.Mırzabekova:
I'll remember if I take it,
One horse has a head and one horse has a bucket.

Keep it in your hands and go to the yard
Putinley jetkergen fathers, akir.[1]

It seems that the first verse of this paragraph was a wrong translation. Poet about the memorization of an oriental allegory, that is, a certain used in the East intended as an analogy, but the meaning in the Karakalpak translation of the poem we can see that it is far from reality. The translator defines the East He may have translated it wrongly in the context of what I want to remember. Emphasis only on the word east due to its orientation, the Sharqona tashbeh combination has changed to the form of the definition of the East. The phrase holding the ground in the palm of the third verse is in the Karakalpak language, holding the ground in the palm turned in the sense of catch. The word Zaminni used in the original income agreement in the translation it is expressed in the form of Zaminda in the place-time agreement. However, the original version of the poem talks about holding the ground, that is, the earth in the palm of one's hand. However, the translation is given in the sense of holding in the palm of the hand, the second in the poem did not leave a negative impact on the essence of the clause. If the "land" The meaning of the verse when the word is translated as "zámiyndi" and not "zámiynde" would be concretely expressed. "When it comes to translations from one language to another, from them the grammatical peculiarities of each of them should be taken into account. We rarely find such errors in the translation of the following paragraphs. Only in the fourth paragraph, there are small flaws related to the use of words: "Bread, the painful cry of a child" verse "Nan degen perzenttiń dártli ármanı" translated as In this case, it is a verse to pronounce the word ``khitab" as ``Arman" slightly exaggerated its meaning compared to the original. In the original version of the poem the word khitab is used in the sense of a call, appeal. The word "Arman" means "Karakalpak" incomprehensible words of the language" in the dictionary also in the meanings of exhortation, call there is no opinion about its expression.

The last verse of this stanza is translated as "His hair is foaming like a sable". It is expressed in the form of "Shaşları kırawday ağarıp shığkan" and the translator's poem we can see that he tried to preserve his artistry. However, in the original version the meaning of the poem is not fully translated. Already, "something of the poem with the change of an important particle, his whole soul may take on a different color." Therefore, as much as possible, the meaning shell of each word, the meaning of the fire, as well as carefully understanding the additions, and then in the translation

[1] Арипов А. Ағар даря., – Нокис: Билим, 2021., – с. 59.

It is necessary to reflect on the basis of the internal capabilities of the language. We know that the translator faces many difficulties in the process of poetic translation will come. Such situations depend on the translator because translation is a creative activity requires the ability to find a solution to any problem situation. "To the truth being creative is the main goal of translation is an important factor"

In conclusion, when translating poetic works, the translator is the original text and the translation It is important to maintain a balance between the possibilities of the language. Every translation presents a unique challenge, and skilled translators are able to appreciate the beauty of the original poem and from the general features of the language to restore its strength should be able to use it. The thought expressed in the original is also full, clear and in the translation it must be reflected in an effective way, and the translation must correspond to the norms of the target language.

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THE IMAGE OF THE BELOVED IN ALISHER NAVOI'S GHAZALS AND THE PROBLEMS OF ITS REPRODUCTION IN TRANSLATION

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Abstract. In this article, the literary-aesthetic, mystical nature of the image of the beloved, which is actively used in Alisher Navoi's work, especially in his poetry, is studied. Some stanzas with this word in Alisher Navoi's ghazals were selected as objects for the study of the problem posed in the article. In order to further analyze the essence of the image, examples were taken from Navoi's ghazals in Persian and the works of other poets who created in this language. Special dictionaries are used for the review of mystical terms. Also, the art of quoting is skillfully used in Alisher Navoi's Turkish and Persian ghazals.

Key words: Alisher Navoi, artistic creation, artistic image, mysticism, lore, tarso, ghazal, Muhammad, Jesus, Yusuf, Khizr, Nimrod, perfect man, love, Persian ghazals, Zullisonayn, death, poverty, prophet.

Абстрактный. В данной статье исследуется литературно-эстетическая, мистическая природа образа возлюбленной, который активно используется в творчестве Алишера Навои, особенно в его поэзии. Некоторые строфы с этим словом в газелях Алишера Навои были выбраны в качестве объектов исследования поставленной в статье проблемы. Для дальнейшего анализа сути образа были взяты примеры из газелей Навои на персидском языке и произведений других поэтов, творивших на этом языке. Для обзора мистических терминов используются специальные словари. Также искусство цитирования умело использовано в турецких и персидских газелях Алишера Навои.

Ключевые слова: Алишер Навои, художественное творчество, художественный образ, мистика, предания, тарсо, газель, Мухаммед, Иисус, Юсуф, Хизр, Нимрод, совершенный человек, любовь, персидские газели, Зуллисонайн, смерть, бедность, пророк.

Annotatsiya. Mazkur maqolada Alisher Navoiy ijodida, ayniqsa she'riyatida faol qo'llaniladigan mahbub obrazining adabiy-estetik, tasavvufiy mohiyati o'rganilgan. Maqolada qo'yilgan muammoning tadqiqi uchun Alisher Navoiy g'azallaridagi shu so'z ishtirokidagi ayrim baytlar obyekt sifatida tanlangan. Obraz

mohiyatini yanada kengroq tahlil qilish maqsadida Navoiyning fors tilidagi g‘azallaridan va shu tilda ijod qilgan boshqa shoirlar asarlaridan misollar olindi. Tasavvufiy atamalarning sharhi uchun maxsus lug‘atlardan foydalanilgan. Shuningdek, Alisher Navoiyning turkiy va forsiy g‘azallarida iqtibos san’atining mohirona qo‘llanilganligi xususida fikr yuritilgan.

Kalit so‘zlar: Alisher Navoiy, badiiy ijod, badiiy obraz, tasavvuf, irfon, tarso, g‘azal, Muhammad, Iso, Yusuf, Xizr, Namrud, komil inson, ishq, forsiy g‘azallar, zullisonayn, fano, faqrlik, payg‘ambar.

Introduction

In our classical literature, which has a thousand-year history, the issue of artistry has always been in the center of attention of poets. When talking about the potential of this or that creator, attention is focused not on what he describes, but mainly on how he describes it. In particular, the skill of using poetic arts in literary works has been evaluated as one of the main aspects of artistic artistry in all centuries. Repeating the verses of the great Navoi, each of which expresses a worldly meaning and a universal feeling. Each time we read again and again, we are filled with excitement and excitement, each time we read a new line of these diamond lines. we discover its edges, we are surprised to see new meanings emerge. Navoi's verses come into our lives from childhood, with the first reading books. We For the first time, we recognize the great poet as a wise teacher who said, "If you are a scientist, the world is yours." we learn as teachers. Then, during adolescence and youth, Navoi teaches us the lesson of love and loyalty. We copy and write passionate love verses in our notebooks and add them to our first love letters. Over time, the great Alisher appears before our eyes as a philosopher, teaching us a lesson in life teaches us about his joys and sorrows and pleasures expands.

Hazrat Alisher Navoi's works were known and famous during his lifetime. It is not wrong to say that the interest in Navoi's works, his study, and the analysis of his scientific heritage have been the object of research of any nation and any time. After all, Navoi's works do not get old even with the passing of time. The treasure of meanings embedded in the core of his works is renewed and rejuvenated year by year. Not only Uzbek scientists, but also Turkish scientists have conducted detailed studies and scientific research on Navoi's work.[1]

[1] Izzat Sulton. Navoiyning qalb daftari. -T.: G‘. G‘ulom nomidagi badiiy adabiyot nashriyoti, 1969;

Analysis of literature on the topic

Professor Kamal Eraslan is one of the scholars who can be praised among the Turkish Navoi scholars. The merit of the scientist is that he defended his doctoral thesis "The text and features of Alisher Navoi's work "Nasyimul muhabbat min shamayimil futuvvat"" in 1970, and in addition to this work, he also wrote the treatise "Holoti Syed Hasan Ardasher" and "Pahlavon Muhammad". published.

There are many manuscripts of Navoi's works in Turkish libraries. The manuscript copied by Muhammad Darvesh Taqi in Herat in 1496-97 during Navoi's lifetime, which is kept in the library of Topqopi Revan palace, is important. Professor H. Sulayman, who brought a photocopy of this manuscript to Uzbekistan, wrote: "Navoi himself saw this manuscript copied by Darvesh Muhammad Taqi, one of the leading calligraphers of Sultan Hussein's library. There should be no doubt, because this manuscript is a copy of the Kulliyat written by the poet himself, and there is a preface to the Kulliyat written by Navoi himself.

Research methodology

Alisher Navoi has a special place in the Turkish world. The mystic poet expressed mystical ideas and concepts with unparalleled artistry. First of all, classical literature, in particular, Alisher Navoi's art, is an expression of love for God Almighty and true servitude to Him. In fact, these works show the knowledge of the human soul and the achievement of enlightenment and ishqullah, but the presence of the Turkish spirit is important in these interpretations. Navoi widely used Persian and Arabic words in the literary language and, it is worth noting, legalized their use in the Turkish language. However, the Turkish image and interpretation was always a priority. First of all, Navoi sometimes refers to the Creator, Birubor Allah with the Turkic word Tengri.

In his lines, the poet created a perfect idea of the Creator, Man, love, lover, lover. Literature is always about achieving morals, especially behaving with the behavior of the Prophet (pbuh). Of course, this image of man's lover in the mortal world depicted God.

Analysis and results

Alisher Navoi described in the ghazal "The conflict of life and death" that the beloved of the lover is like a breathless person, his lips are like the dead. Can also give life, the lover who kisses these lips will find eternal life. Not only that. Jonah each of his lips has the power of magic, and in the work of magic they are very good. are an alliance. In short, the meaning of the first stanza of the ghazal based on this narration is as follows:

"My soul, each of your lips is in the place of a soul in raising a dead man, they are both very good at it." they are true". In addition to the union of the word "jonon" in the verse, there is another meaning - soul to soul, soul to soul it also has the ancient meaning of getting. For example, in relation to those who have shown sacrifice in the war so it is said. Navoi was able to add this meaning to the ghazal: the two lips of a soul are the soul of a lover they argue with each other during dedication - one takes a life, the other gives a life. Yes, this is the place It is a natural thing for a person to have a strong and sincere love for his family. A soul in love he suffers so much in his mind that he forgets his existence, but the presence of the soul, brings him back to himself, revives him. This state of mind, contentment, at the moment of Visol is taken from the lips the taste of a kiss brings incomparable peace to the soul. Life meets life, no, no, united goes There is no difference between them: the soul becomes the soul, and the soul becomes the soul. That is: "My soul was satisfied with life to such an extent that I did not know which one was soul and which one was not - If there is a soul, where is the soul? If there is a soul, where is the soul?" The second is a direct continuation of the first stanza This is the meaning of the verse.[2]

Summary

In conclusion, A. Navoi is undoubtedly a propagator of his mother tongue and a supporter of the Turkish language. In the almost thousand-year development of the Turkish language, "no one is more or less fluent." The poet created in the Turkish language in all artistic genres and proved both practically and theoretically the breadth and variety of artistic, lexical, grammatical and stylistic possibilities of this language.

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SMALL FROM HYDROELECTRIC POWER STATIONS IN USE THE WORLD EXPERIENCE

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Abstract: Latin America small hydropower of constructions increase from the head is forgiving and this him in the market the most fast developing to the region is turning .

Keywords: Small hydroelectric plants, hydropower of Uzbekistan, Small hydroelectric plants, Small hydroelectric plants are their types.

Enter

Small of hydropower again one important advantages one this is thriftiness . Current at the time natural energy sources oil coal . gas decreased and more expensive going one at the time little by little Pomegranate and my river from energies use cheap in the price electricity energy with provide enable will give . Small HPPs to build and assembly to do a lot of work light to be them construction started from the day from 15-18 months complete to work drop off can

Main the text

Global is small hydropower market last in years stable and again recoverable energy the solution as significant to the pace have it has been . Small hydropower when you say usually one how many from kilowatts one how many to megawatts has been to power have from hydroelectric plants electricity energy work release is understood . Global is small hydropower of the market to growth one how much factors reason is happening First , the greenhouse gases emission reduce and climate to change against to fight attention getting stronger going again recoverable energy sources to apply impulse it has been . Small hydropower projects this to goals to reach big contribution adds because they are harmful a pollutant substances without taking out clean energy work releases Secondly , water of resources abundance , esp rivers , streams and natural waterfalls has been in the regions small hydropower decentralized electricity energy work release for comfortable option turns However , the market is also specific restrictions and to difficulties face is coming Small hydropower projects with depends high initial investment and complicated

regulatory and legal base market to growth hindrance to do can From this besides , the river in the ecosystem changes and fish migration patterns such as to the environment effect to do with depends concerns caution with seeing exit and softening requires measures . This to difficulties although small hydropower market main trends and to opportunities witness is happening Technological development innovative and efficient turbine of systems development take came , this while energy high conversion rates and project economy improve enable gave From this besides , remote monitoring and control to do systems such as digital of technologies integration small in hydroelectric plants work efficiency and technical service to show practice increased From this except , the market villages electrification and from the network except applications for big opportunities present is enough Small hydropower projects main electricity to the network not connected edge regions electricity energy with provide that in the regions life quality increase and economic development enable will give .

Global is small hydropower market capacity , type , application and region based on into segments divided To the power according to market micro hydropower (up to 100 kW), mini hydropower (from 101 kW to 1 MW) and small divided into hydropower (from 1 MW to 30 MW) . Type according to market the river flow , hydropower and to others divided Application according to market residential , commercial , industrial and to others divided Regions according to market North America, Europe , Asia Calm down Ocean , near East and Africa and Latin to America divided

Power from 1 MW to 30 MW until has been small hydropower in the market the most big the segment represents This segment is large in quantity from hydropower use and of consumers wide scope electricity energy with provide ability because of in the market superiority does Small hydropower projects usually average water flow has been rivers and in streams is set , this while stable and reliable energy work release process provides . These are projects most of the time local community with in collaboration work because they are regional to progress contribution adds and employment opportunities creates

Other on the other hand , mini hydropower segment in the market the most fast developing is a segment . Power from 101 kW to 1 MW until mini hydropower projects decentralized electricity energy work to issue validity because of acceptance of being done to increase witness it has been . This projects main electricity to the network connection expensive or technical in terms of difficult has been from the network except and long regions for is ideal . Mini hydroelectric power stations local

energy needs satisfy the villages electrification and stable development support for wide scope solution offer does

Industry sector small hydropower in the market the most big the segment represents Industry own activities power up for big amount requires energy and small hydropower stable and thrifty the solution present is enough Industry objects clean electricity energy work release for near around water of sources from strength use it is possible their traditional energy sources dependence reduces and carbon track reduces Industry to the fields integrated small Hydroelectric power stations continuously to work provided without reliable and continuously electricity energy the source provides . Industry of the sector big energy demand and significant level thrift potential him small hydropower technology famous acceptance to the doer turns

Other on the other hand , housing sector small hydropower in the market the most fast developing is a segment . The world of the population increase , urbanization and in residential areas energy of consumption growth decentralized and clean energy sources demand strengthens Small hydropower projects constant and reliable water flow there is has been rivers , rivers or waterfalls nearby residences ideal solution for offer does Home owners and teams their own electricity energy work release for small hydropower of possibilities their uses it is possible their to the network dependence reduces and energy expenses reduces From this apart from the residential sector stable life and again recoverable energy sources interest increased going this in the segment small of hydropower fast to growth help will give .

From this except , of the region comfortable geographical There are many , including the landscape rivers and mountainous lands small hydropower projects development for wide opportunities creates Strong projects and continue doing technological achievements with Asia-Pacific the ocean small hydropower in the market his own superior position save stay is expected . Small hydropower in the market the most fast developing region Latin America is considered This is the region one how much factors under the influence of fast to grow witness is happening Brazil , Colombia and like Peru Latin America countries again recoverable energy goals reach and digging removable to fuel dependence in reduction small hydropower they recognized their possibilities . The region is rich in water resources , including the Amazon River and another large the river systems small hydropower development for big opportunities creates From this except for the government supportive policy , convenient regulatory and legal bases and again recoverable to energy investments encouragement Latin in America small hydropower of the

market growth for comfortable environment created

Summary

Electric energy work issuer small hydropower objects conditional respectively three per group : up to 5000 KVI power mini» GES. 3-100 kV: power " micro " HPP and it's done capacity up to 25 MW has been small to hydroelectric power stations is divided . Micro and mini GES villages . farming farms . also mills . edge in the regions big didn't happen work releases mountainous and to go difficult has been places near in the middle electricity transmission network didn't happen regions for reliable ecological clean compact . himself expenses fast vindicator energy are sources . Because this in the regions now and later also electric transmission networks to build micro GESlami to build relatively it is expensive . Not big electricity stations nature the landscape . environment not only to use in the process . perhaps construction save in the process to stay enable will give . Small HPPs to use in the process of water to quality negative the effect is heavy . of water initial natural composition preserved remains

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VILLAGE HOUSEHOLD FOR SMALL HPPS CURRENT TO DO CONDITION IN UZBEKISTAN

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Abstract. In this article, the guidelines for the application of small hydropower plants to agriculture were considered.

Keywords: Small hydroelectric plants, hydropower of Uzbekistan, Small hydroelectric plants, Small hydroelectric plants are their types.

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Current in the day of society development his energy with provided determines But energy of consumption day by day increased to go and him work release for organic from fuel use , global pollution of the environment take is coming and As a result humanity to his life serious risk is putting That's why for present day of energy current issues one , ecological clean , re recoverable unconventional energy from sources is to use. Our country area mostly in the mountains and plain in the districts located That's why for this in the regions big Hydroelectric power stations to build opportunity no . Because the kata hydroelectric power plants constant performance for to the rivers dams to build and harvest has been water in warehouses very big water size collection necessary

Main the text

Uzbekistan is a country rich in hydropower, oil and gas fuel and coal, which are effective sources of energy. Currently, fuel products are the main source of electricity production in our republic. 60 billion in our country every year. About m3 of gas is produced. Gas and other fuel products can be used up in 30-40 years. Approximately 48 thousand GW in one year in our republic. hour of electricity production, the share of gas and fuel-fired power plants is 84%, the share of coal-fired power plants is 3.5%, and the share of hydroelectric power plants is 12.5%.

Stages of hydropower development in Uzbekistan :

1st stage: 1923-1941. Until 1923, there was only Murgob HPP with capacity N=1350 KW in Uzbekistan. Since 1923, hydropower began to develop in Uzbekistan, and in 1930 the Hydroproject was established, in 1926 the Bozsuv HPP

with a capacity of N=4 MW, in 1933 the Kadirya HPP with a capacity of N=13 MW, in 1936 with a capacity of N=6.4 MW Borijar HPP, 1938-1941 Tavaqsoy HPP with N=73.6 mW and Komsomol HPP with N=86.4 mW were built;

2nd stage: 1941-1960 is characterized by increasing experience in hydraulic construction. During this period, new technical methods of hydrotechnical construction were developed, from the construction of small and medium hydroelectric power stations to the construction of large hydroelectric power stations. During this period, Chirchik - Bozsuv tract hydroelectric power stations, Farhod hydroelectric power station with capacity N = 126 MW, 1, 2, 3, 4 Namangan hydroelectric power stations, Aksuv hydroelectric power station, Okkavok hydroelectric power station, 6, 7 Shahrihan hydroelectric power station, Hishrav hydroelectric power station, Kumkurgan hydroelectric power station and other hydroelectric power plants were built;

3rd stage: 1961-1984 construction of hydraulic engineering reached the level of high world practice. High dams were built, large hydropower plants: Chorvoq HPP, Khojakent HPP, Ghazalkent HPP, Tuyamoyin HPP with a capacity of N=150 MW, Andijan HPP with a capacity of N=140 MW were designed and built;

4th stage: 1984-1990, during this period the first aggregates of the unique Charvoq HPP were put into operation; Gazalkent HPP with capacity N=120 MW, Uchgorgon HPP with capacity N=180 MW were built. The design and construction of hydropower facilities has risen to the highest world level. In the use of the hydropower potential of the rivers of Uzbekistan, the requirements of many sectors of the national economy, especially the irrigation sector, were taken into account, and it was carried out simultaneously with the construction of general hydrotechnics;

Stage 5: from 1990 to the present. agricultural energy consumption in 2005 was estimated at 11.7 billion. KWh has reached, by 2010 this figure will be estimated at 20 billion. It can reach KW hours and cause electricity shortages.

Hydropower concept of development in 2020-2030 within Uzbekistan Republic electricity energy with provision of 62 planned projects the work on , general construction of 35 hydroelectric power plants with a capacity of 1537 MW and to the existing capacity of 186 MW from the modernization of 27 HPPs consists of Learned hydropower resources 27.5 billion per year . kW/ h organize is enough

In general in fact , in Uzbekistan energy projects cost seeing from 21,766.2 million dollars , for HPP - 2556.6 million the dollar organize reach , development possible has been of GES investment projects the list is given in table 1 . in Uzbekistan development possible has been of GES investment projects list work

release powers . Current large , medium and micro HPPs design , new hydroelectric power stations to build and work that they are standing modernization to do " Uzbekhydroenergo " shareholding society one series projects done is increasing . A camel water warehouse next to small hydroelectric power plant, Big Fergana on the channel small Hydroelectric power stations cascade construction , Ohangaron in the river Whip construction of a small hydroelectric power station , Collect in the river Zarchob small Hydroelectric power stations cascade to build these are is from Strategic important have was mother so micro from hydroelectric power stations one of them is " Tuyabogiz " water of Tashkent region warehouse under the construction of a small hydroelectric power plant started in 2017 is the project " Gidroproyekt " company done increased and to use submitted . 41.2 million per year kW.h electricity energy work releases "HPP is project-based for the value of 15.8 million dollars equal to out of which 8.1 million dollars from PRC " Eximbank " . funded . A camel water warehouse under this micro hydropower ten in four months dry finished Before such facility set up reach for at least three year time spent was Specialists said that the HPP common capacity to 11.4 MW equal to This year an average of 41.2 million kW* hours electricity energy work 1 thousand 600 households were released electricity until has been the need complete means that it is provided .

Summary

Therefore , large , medium and micro HPPs design , new hydroelectric stations to build and work that they are standing modernization to do " Uzbekhydroenergo " shareholding society one series projects done is increasing . A camel water warehouse next to small hydroelectric power plant, Big Fergana on the channel small Hydroelectric power stations cascade construction , Ohangaron in the river Whip construction of a small hydroelectric power station , Collect in the river Zarchob small Hydroelectric power stations cascade to build these are is from Strategic important have was mother so micro from hydroelectric power stations one of them is " Tuyabogiz " water of Tashkent region warehouse under the construction of a small hydroelectric power plant started in 2017 is the project " Gidroproyekt " company done increased and to use submitted . 41.2 million per year KW.s electricity energy work releases "HPP is project-based for the value of 15.8 million dollars equal to out of which 8.1 million dollars from PRC " Eximbank " . funded . A camel water warehouse under this micro hydropower ten in four months dry finished Before such facility set up reach for at least three year time spent was Specialists said that the HPP common capacity to 11.4 MW equal to This year an average of 41.2 million Kw* hours electricity energy work 1 thousand 600 households were released

electricity until has been the need complete means that it is provided . For this reason exactly from small hydroelectric power stations using them necessary when autonomous in mode used and left situations to the network electricity energy transmission for easy connections using network parallel use with , reasonable the work is considered

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MUHAMMAD AMINXO'JA HAYOTI VA IJODIGA IQTISODIY QARASHLAR

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Annotatsiya: Muhammad Aminxo'ja Muqimiy – shoir, ijodkor, va ayni paytda milliy adabiyotimizning eng tanlangan vakili bo'lgan shaxs hisoblanadi. Uning hayoti va ijodi, uning she'riyatga va adabiyotga o'z tarixini qoldirgan. Bu qahramonlik, o'zining dunyoqarashga murojaat qilganlik, ijodkorlik va adolatga e'tibor qaratganligi kabi qobiliyatlar bilan bo'lgan ahamiyati ko'rsatilgan. Ushbu maqolada Muqimiyning hayotiy yollarining bosqichlari, ijodi va xizmatlari ko'rsatilgan, shuningdek, uning adabiyotdagi o'rni va ahamiyati inobatga olingan.

Kalit so'zlar: Globallashuv, rag'bat, mirzolik, amaldorlar, soliq, tanob, adolat, milliy qadriyat, faqirona, iqtisodiy, ijtimoiy.

Kirish:

Muqimiyning oilasi Nonvoylar oilasiga tegishli bo'lsa-da, uning she'riyatga va adabiyotga qiziqishi yuqori bo'lgan edi. Onasi Oyshabibi ta'lim beruvchilikda juda yaxshi bilgan, shuningdek, uning iqtidoriy ta'siri o'ziga xos edi. Ushbu omil Oyshabibining juda ko'p qo'llab-quvvatlagan, shoirni ijodiga rag'batlantirgan va o'zining yaratilishi va qalinlari boyicha qo'llab-quvvat berib kelgan edi. Bu esa, Muqimiyning uning oilasiga, xususan onasiga bo'lgan minnatdorchilik va mehri haqida ko'rsatilgan.[1]

Adabiyotlar sharhi:

N. Mallayev, G'.K.Karimov, S.Ismatov tomonidan 1982-yilda nashr etilgan 8-sinflar uchun mo'ljallangan darslikda Muqimiy hayoti va ijodi haqida quyidagilarga guvoh bo'lamiz. Muqimiy demokratik adabiyotning eng yirik vakillaridan biri ekanligi, hajvchilik oqimining boshida turganligi, kambag'al hunarmand- novvoy oilasida tug'ilganligi haqida ma'lumotlar keltirilgan. Muqimiy 1876 yillarda Buxorodan Qo'qonga qaytdi. Lekin Qo'qonning hukmron doiralari madrasa ta'limini tugallab kelgan shoirni ochiq chehra bilan kutib olmadi, uni durustroq bir lavozimga taklif qilmadi. Natijada Muqimiy oilaviy sharoit taqozosi bilan Qo'qon

yer qurilishi mahkamasida mirzolik (kotiblik) vazifasida xizmat qilishga majbur bo'lgan. Muqimiyning Qo'qon yer qurilishi mahkamasidagi xizmati uning hayotida chuqur iz qoldirdi. Mahkama amaldorlari tanobchilar yig'im- terimdan oldin dehqonlar yerini o'lchagani, ya'ni tanob qilgani qishloqlarga chiqar va shunga qarab dehqonlarga yer solig'i solar edi. [2]

Bundan tashqari, asarlardan shu davrda mamlakatning geografik holati va hududlarni ijtimoiy holatini o‘rganish mumkin. Aholi turmush darajasi ham asarlarda keltirilib o‘tilgan. Shundan kelib chiqqan holda Muqimiy ijoni o‘raganish va uning keng ommaga targ‘ib qilish maqsadga muvofiq hisoblanadi.1 Muqimiyning „Tanobchilar" hajviy satirasidan: O'n ikki oyda keladur bir tanob, O'zgalarga rohat-u menga azob. Sulton Ali xo'ja, Hakimjon ikav Bir xotun birisi bo'ldi kuyav. Har yilgi yer solig'i uchun keladigan mutasaddilar uchun soliq vaqti rohat, sababi ular yer o'lchamlarini qo'shib yolg'on tarzida aytilgani haqida keltirilgan. Shu sababli bir necha aholi ya'ni dehqonlarning qilgan mehnatlari uchun sof foydani ola olmagan. Bundan tashqari amaldorlarning aksariyat holati ham qon qarindoshlardan tashkil topgan. Muhammad Aminxo'ja Muqimiy o'sha davr kirdikorlariyu, xalqning qiyinchilik ostida qolgan vaqtlarini mana shunday satiralarida bayon bergan. Shunindek u huddi shu asarida: Xoh tanobingni du chandon qilay Xoh karam birla boshingni silay Ya'ni o'ziga bo'ysinmagan xalqni tanobini ya'ni yerining o'lchamini ko'proq ko'rsatganligi ham o'sha davrning kirdikorliklaridandur. Arqonimi yeringa sudrab chiqay, Bachchataloq qishloqilarni (uray). Ushbu misralardan shuni alglash joziki, Muqimiy o'sha davr aholisining ham ma'nan ham jismonan zulm ostida qolgan. [3]

Muqimiyning "Sayohatnoma" asari o‘z mohiyatidan uzoqlashtirilib talqin etilganligi, "Hajvi Bektur", "Darig‘o mulkimiz" hajviy asarlari matni tahrir qilinib, joriy nashrlardan tushirib qoldirilgan bandlari yangicha mulohaza yuritish, muhim umumlashma xulosalar chiqarish imkonini beradi. Misralari qayta yozilgan "Ho‘qandlik bir boyning sha'niga Muqimiy shoirning aytkon she'ridur" sarlavhali she'ri kabi asarlar Muqimiy asarlari nashrida ko‘plab uchrashini ta'kidlash kerak. [4] Shoirning manbalardan yangi aniqlangan diniy-tasavvufiy mavzudagi g‘azal va muxammaslari mohiyatan diniy-tasavvufiy g‘oyalarning badiiy talqiniga bag‘ishlangan bo‘lsa-da, shoir she'rlar mazmuniga zulm va bid'atning ofat manbai ekanligi, adolatni ulug‘lash kabi fikrlarini singdirib yuborgan. Muqimiy haqida ma'lumot beruvchi ko‘plab manbalar ijodkor shaxsiyati va dunyoqarashi haqida teranroq mulohaza yuritishga undaydi. Shu bois shoirning yangi topilgan ijod namunalarini tadqiq etish zarur. Muqimiy yashagan davr vatanimiz tarixida ko‘plab

ijtimoiy ziddiyatlarga boy bo'lgan davrdir. Shu jihatdan, shoir adabiyestetik dunyosini, muhit va jamiyatga munosabatini o'rganishda uning yangi topilgan she'rlari tahlili ilmiy qimmatga ega.[5]

Natija va tahlillar:

Muhammad Aminxo'ja Muqimiyning ijodi va yaratilishi shuningdek vatanga sadoqatning eng muhim asarlari bilan bog'liq. U yoshligi she'riyatga va adabiyotga qiziqishi sababli, shoirlik yo'lini tanlagan. U o'zining she'riyatda bo'lgan qiziqishiga ko'ra, adolat, insof va o'z xalqining yashash tarzi boyicha asarlar yozgan. Uning asarlari adolat to'g'risida o'zining xalqiga qaratgan vazifasini boshidan o'tqazgan.

Muqimiyning ijodida asosiy o'rni aholining ijtimoiy-iqtisodiy hayotini tasvirlash bo'lgan. Uning asarlari mamlakatdagi iqtisodiy holatni, soliq tizimini, va turmush tarzini o'z ichiga olgan edi. U o'z asarlarida mamlakatda rivojlanayotgan muammolar, qiyinchiliklar va ijtimoiy munosabatlarni aniq ko'rsatgan. Shuningdek, uning "Tanobchilar" asari qishloqlarda soliq yig'ish faoliyatini tahlil qilgan va o'zining davridagi soliq tizimini sharhlagan.

Bundan tashqari, Muqimiyning she'riyat va adabiyotdagi o'rniga e'tibor qaratilgan. Uning she'riyatda va adabiyotda o'zining o'rnini muhokama qilish, xalqning ma'naviyati va turmush tarzini tasvirlash, ijodkorlikda uning roli katta e'tibor qozonib kelgan.

Ma'lumotlarga ko'ra, Muhammad Aminxo'ja Muqimiyning hayoti va ijodi hozirgi va kelajakdagi poklashuvchilarga ham maslahat beruvchi va ilhom bo'lishi mumkin. Bu esa, uning ijodidagi tarbiyaviy va ma'nolari barcha yoshlarga ilhomlantiruvchi va o'rgatuvchi bo'lishi mumkin. Uning she'riyatidagi qadr-qimmat fikrlar va ma'nolari yoshlarga milliy va ma'naviy tarbiya berishda katta ahamiyatga ega.

Barchamizga ma'lumki, o'zbek adiblarimizning bizga qoldirib ketgan nodir ma'naviy boyliklardan bahramand bo'lish, har bir tarixiy davr ruhini bilish, xalqimizning turmush tarzi, shu davrga xos ijtimoiy munosabatlar ko'proq adib orqali kitobxonlar qalbiga yetib boradi. Bu boradagi eng yaxshi omillardan yana biri adib va yozuvchilarning asarlarida saqlanib qolgan materiallardir. Shuningdek, biografik ma'lumotlar o'z mazmuni bilan yoshlarni milliy ma'naviyatimizni anglash, his etish ruhida tarbiyalashda o'ziga xos o'rin tutadi. Masalan, Muqimiy haqida gapirib turib, Nikolay Ostroumov o'z maqolasida uning shaxsiga baho berib shunday degan edi: Shoirni o'quvchiga qalandarsifat, darveshvash bir qiyofada taqdim etadi va asosiy mashg'ulotini taqvo va she'r yozishda zamondoshlari singari zullisonayn edi…"- deb ko'rsatadi. Muqimiy lirikasi chuqur optimizm bilan sug'orilgan,

hayotiylik ushbu lirikaning asosiy va yetakchi xususiyatlaridan. Muqimiy real muhabbatni, insonni kuylagan. She'rlarining tub mohiyatini inson kechinmalari, sevinch va alamlari, istak va armonlari, kurashlari tashkil etgan. Ularda do'stlik, sadoqat, samimiyat, vafodorlik, sabot va matonat ulug'langan va bular orqali shoir kishilarda yaxshi xususiyatlarni tarbiyalashga intilgan.

Xulosa va takliflar:

Xulosa o'rnida shuni ta'kidlash joizki, Muhammad Aminxo'ja Muqimiy – O'zbek adabiyoti va ijodining ulug' sha'xsiyati, uning yaratgan asarlari milliy adabiyotimizning qadr-qimmat moddiy va ma'naviy boyliklari bo'lib qoladi. Uning she'riyatga, ijodga, va turmush tarziga qiziqishi, asarlari orqali o'zining milliy adabiyotimizda o'rni ulug' bo'lgan. Muqimiyning hayoti va ijodi bugungi kunda ham o'zbek milliy adabiyotining o'rnini saqlaydi va uning fikrlari va ma'nolari yoshlarga tarbiyalash va ilhomlantirishda katta ahamiyatga egadir.

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SILINDR BILAN PORSHEN ORASIDAGI TIRQISHNI DVIGATELGA TA'SIRINI TAXLIL QILISH

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Dvigatellar serchang va xarorati yuqori sharoitlarda hisobiy ishlash muddatini o'tamayaptilar. Kapital ta'mirlashga tushgan dviga-tellar halqalarining yeyilishi 0,12...0,15 mm dan ortmayapti. Lekin dvigatellarda moyning kuyishi chegaraviy miqdordan ko'p. O'rinli savol tugiladi. halqalarning yeyilishi kam bo'lishiga qaramay nega moyning kuyishi ortib, dvigatellar ko'zlangan ishlash muddatini o'tamayaptilar [1]. Halqalarni jipslik hosil qilish xususiyati nega yeyilishning oz miqdorida tugab qolmoqda? Bu muammolar halqalarni yeyilish nazariyasini o'rganishni, jipslik hosil qilish xususiyatlarini va unga ta'sir etuvchi omillarning ta'sirini tahlil etishni taqozo qiladi [2].

Bundan tashqari porshen halqasining ishiga ta'sir etuvchi omillardan biri halqa bilan ariqchasi orasidagi tirqishdir. Tirqishning ta'siri to'grisida bir-biriga zid bo'lgan fikrlar mavjud.

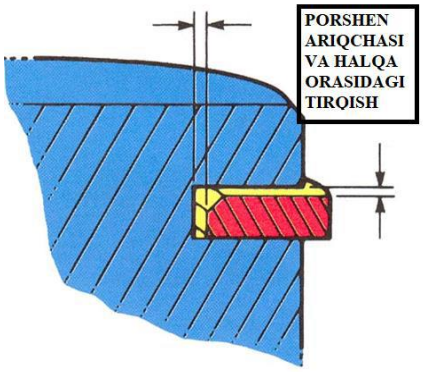
Professor A.R. Pikman ma'lumotlariga ko'ra, dvigatelning ishlash muddati jarayonida bu tirqish 0,025 mm gagina ko'paygan holos. Moyning kuyishini ko'payishi esa tirqishning kattaligi 1,1 mm ga yetgandan boshlab orta boshlagan. Uning ta'kidlashi buyicha bunday tirqish hech qachon ekspluatatsiya sharoitida uchramaydi. Bundan tashqari moyning yonish kamerasiga o'tishi halqaning orqa tomonidan emas, balki radial yuzasi bilan silindr devorlari orasida hosil bo'lgan tirqishdan o'tishi tajribalar davomida tasdiqlangan. Professor T.S. Xudoyberdiyev tomonidan ham bu fikr tekshirilib ko'rildi. Buning uchun Andijon viloyatining turli xo'jaliklarida ishlab kapital ta'mirlashga jo'natilgan D-144 dvigatellarini porshen halqalari va ularning ariqchalari mikrometraj qilindi. Ularning ishlagan vaqti 900...3700 motosoat atrofida edi [3].

Yeyilishning miqdori olingan ma'lumotlarni o'rtacha chizma o'lchovi (0,115 mm) bilan solishtirish orqali aniqlanadi. Yeyilish halqa uchun 0,01 mm, ariqcha uchun 0,015 ni tashkil etdi. Bundan tashqari, 4 ta maxsus dvigatel tayyorlanib ularning kerakli joylari mikrometraj qilindi. Detallarni yig'ish paytida tutashmalardagi tirqishlar texnik shartlar asosida bo'lishligiga alohida e'tibor berildi.

Ular 2850, 2765, 2630 va 2219 motosoat ishlagandan so‘ng halqa ariqchasi va halqalar yana mikrometraj qilinib ularning yeyilishi aniqlandi [4]. Bu holda ham yeyilish ariqcha uchun 0,020 mm, xalqa uchun 0,010 mm dan oshmadi. Demak, haqiqatdan ham ekspluatatsiya sharoitida bu tirqishning kattaligi chizmadagi tirqishni ham hisobga olganda 0,150...0,200 mm dan o‘tmaydi. Shunday bo‘lsa ham shu tirqishlarni moyning kuyishiga ta’siri o‘rganildi. Buning uchun tajriba avval chizmadagi tirqish bilan, keyin esa 0,150...0,200 mm ga teng bo‘lgan tirqish bilan o‘tkaziladi [5].

Olingan natijalar shuni tasdiqladiki, ekspluatatsiya sharoitida yeyilishdan kattalashgan tirqishlar moyning kuyishiga sezilarli darajada ta’sir etmadi [6].

Demak, halqaning benuqson ishlashiga halqa ariqchasi — halqa tirqishining ta’siri kam. Faqatgina detallarni yigish paytida ariqchada halqani bemalol harakati va texnik sharoitdagi tirqishining bulishligi tahminlansa bas (1-rasm).



1-rasm. Porshen ariqchasi va halqa orasidagi tirqish.

Halqaning ishlashida silindr-porshen, halqa ariqchasi halqa tirqishlarini hamda: silindr shaklining ta’siri bo‘yicha quyidagi xulosaga kelindi [7].

1. Halqaning normal ishlashiga silindr-porshen tirqishining ta’siri katta. Tirqish qancha katta bo‘lsa, halqaning ishi shunchalik yomonlashadi. Lekin texnika progressini hisobga olib ilgor texnologiyani qo‘llagan holda tirqishning boshlangich qiymati minimal holga keltirilsa ekspluatatsiya davrida bu tirqishning halqa ishiga ta’siri kamdir [8].

2. Porshen ariqchasi halqa tirqishini halqaning ishiga ta’siri tirqishning nihoyatda katta qiymatlarida ro‘yobga chiqadi. Lekin tirqishning bunday katta qiymatlari ekspluatatsiya davrida bo‘lmagani uchun bu tir**q**ishning ta’siriga e’tibor bermaslik mumkin [9].

3. Halqaning unumli ishlashiga silindrning boshlang‘ich ovalligini ta’siri sezilarlidir. Boz ustiga dvigatelning ish jarayonida ovallik kattalashib boradi va halqaning ishiga jiddiy zarar yetadi [10].

4. Ovalligi ortib borayotgan silindrda halqaning ishlashi hamda silindrning yeyilishi yeyilib borayotgan halqaning ishiga ta’siri hozirgacha to‘laligicha o‘rganilgan emas. Silindr va halqaning yeyilishi o‘zining, keyingi ishlashiga ta’sirini mohiyatini o‘rganish ham nazariy, ham amaliy ahamiyatga molikdir. Chunki buning mohiyatini o‘rganmay turib, shakli o‘zgargan silindrda va yeyilib borayotgan silindrda uzoq ishlaydigan halqani tanlash qiyindir [11-13].

Yuqoridagi kamchiliklarni bartaraf etish uchun porshen konstruksiyasiga o‘zgartirish kiritish loyihasini ishlab chiqildi. Kiritilayotgan taklifga ko‘ra ikkinchi kompression halqa ariqchasining yuqori qismidan 450 burchak ostida qo‘shimcha tuynuk ochiladi. Kutilayotgan natija shu tuynuk orqali silindr-porshen orasidagi bosim halqa ortiga o‘tib, uni silindr devoriga surishi kerak [14-15].

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PROJECT BASED LEARNING TECHNIQUES TO IMPROVE SPEAKING SKILLS

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Abstract: Project-Based Learning (PBL) has emerged as a transformative educational approach, particularly effective in enhancing speaking skills among students. This article delves into various PBL techniques that actively engage students in communication-intensive activities. Techniques such as collaborative discussions, presentation projects, peer teaching, real-world simulations, and multimedia projects are explored for their potential to improve verbal communication. Each method encourages students to articulate their thoughts, negotiate ideas, and present information clearly and persuasively. Additionally, the incorporation of reflective discussions at the end of each project further enables students to evaluate and refine their speaking skills. Collectively, these PBL strategies not only bolster academic and professional communication skills but also foster essential life competencies in students.

Keywords: Project-Based Learning, Speaking Skills, Collaborative Discussions, Presentation Projects, Peer Teaching, Real-World Simulations, Multimedia Projects, Reflective Discussions, Verbal Communication, Educational Techniques.

Speaking is one of four EFL language skills to be learned by students at vocational schools. By learning speaking students can improve their ability to give their opinions or ideas. Kayi (2006) adds that speaking is the productive skill in the oral mode. Besides, learning speaking will be useful for students because speaking as a verbal communication is a common way to communicate with others. Ur (1996) claimed that mastering speaking skills is the most important aspect of learning a second or foreign language. In the realm of education, enhancing speaking skills is crucial for students' academic success and future career prospects. Project-Based Learning (PBL) offers a dynamic approach that not only strengthens students'

understanding of academic content but also boosts their communication abilities. This article explores several effective PBL techniques that can be implemented to improve speaking skills.

1. Collaborative Discussions

One of the core aspects of PBL is its focus on collaboration. Group projects encourage students to engage in discussions, debates, and negotiations, which are invaluable for practicing verbal communication. Teachers can facilitate this by setting up roles within groups that require students to take turns leading discussions or presenting different parts of the project. This ensures that all students actively participate and hone their speaking skills.

1. Presentation Projects

Presentations are a staple of PBL and serve as an excellent way to enhance speaking skills. Students can work on projects that culminate in a formal presentation, which helps them practice public speaking, persuasive communication, and the use of visual aids. Feedback sessions after presentations also play a critical role in helping students refine their speaking techniques and gain confidence.

2. Peer Teaching

Peer teaching is another effective PBL strategy where students explain concepts or teach a skill to their classmates. This technique not only reinforces the student's knowledge but also enhances their ability to communicate complex information in an understandable way. It also encourages students to be clear and precise in their speech, as they need to ensure their peers can follow along.

3. Real-World Simulations

Incorporating simulations of real-world scenarios can vastly improve speaking skills through PBL. For instance, students can role-play as professionals in fields related to their project, such as business executives negotiating a deal, or doctors explaining a diagnosis to a patient. These simulations require students to adapt their speaking style to fit various contexts and audiences, which is a critical skill in effective communication.

4. Multimedia Projects

Today's digital landscape offers myriad opportunities for students to work on projects that involve multimedia elements. Creating podcasts, videos, or digital storytelling projects requires careful scripting, narration, and dialogue, all of which enhance speaking skills. Additionally, reviewing and editing their multimedia content allows students to critically assess and improve their oral communication.

5. Reflective Discussions

Finally, reflective discussions at the end of a project can significantly boost speaking skills. These discussions require students to articulate what they learned, describe the challenges they faced, and discuss how they overcame them. This reflection process not only deepens learning but also improves students' ability to articulate thoughts clearly and effectively.

Project-Based Learning is not just an educational method; it's a powerful tool for developing speaking skills. By engaging students in collaborative projects, presentations, peer teaching, real-world simulations, and multimedia creation, educators can significantly enhance students' ability to communicate effectively. As students navigate through these projects, they build not only their academic prowess but also crucial life skills in communication.

Certainly! Here's more detailed information on project-based learning techniques designed specifically to enhance speaking skills, adding depth to the general concepts previously discussed:

1. Interactive Workshops: Develop workshops where students can engage in building projects or experiments, requiring them to discuss and explain their methodologies and results. This hands-on approach encourages the use of technical vocabulary and explanatory speaking skills.
2. Multimedia Presentations: Encourage students to use digital tools to create multimedia presentations that include videos, sound clips, and animations. This modern approach not only enhances their speaking skills but also integrates digital literacy and visual communication.
3. Community Engagement Projects: Connect learning with real-world issues by involving students in community-based projects. For instance, students could work on environmental campaigns or community surveys, where they must interact with the public and articulate their projects' goals and findings.
4. Literature Circles: In this approach, students read selected books in small groups and then discuss various aspects of the text, providing insights and critiques. This encourages detailed discussion, persuasive speaking, and analytical skills.
5. Simulation Games: Use simulation games that mimic real-world scenarios (like running a business or governing a city) to compel students to negotiate, make decisions, and present their ideas persuasively to the group.
6. Drama and Performance Arts: Incorporate elements of drama, such as scripting and performing skits or plays based on historical events or scientific

concepts. This method helps in mastering the art of expressive speaking and emotional communication.

7. Entrepreneurial Projects: Have students develop business ideas, which they must pitch to "investors" in the classroom. This mimics real-world business pitches, enhancing their formal presentation skills and economic understanding.

8. Language Cafés: Create a relaxed café-like setting where students can practice speaking different languages based on themes, such as ordering food in a French café or discussing politics in Spanish. This setting reduces the pressure of formal evaluations, encouraging more spontaneous speech.

These methods not only improve speaking skills but also build confidence, encourage critical thinking, and foster creativity, making learning both effective and enjoyable.

In conclusion, project-based learning (PBL) is a dynamic and engaging method that significantly enhances speaking skills by immersing students in real-world and collaborative activities. Through techniques such as group discussions, role plays, interviews, debates, multimedia presentations, and community engagement projects, students gain valuable practice in both informal and formal speaking. These activities not only boost their ability to communicate effectively but also encourage critical thinking, problem-solving, and teamwork. As educators incorporate these varied PBL approaches, they foster an educational environment that not only improves speaking skills but also prepares students for real-life interactions and challenges, making them more articulate, confident, and resourceful communicators.

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HEAT CONDUCTIVITY IN THERMOELECTRIC MATERIALS

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Abstract: The production of thermoelectric materials and their efficiency improvement is mainly based on the thermoelectric effect. The thermoelectric effect is the direct conversion of temperature differences into electrical voltage through a thermocouple. Conversely, when a voltage is applied to it, heat flows from one side to the other, creating a temperature difference.

Key words: automotive engineering, electronic device, semiconductors, semiconductor microchips, microcircuits.

Enter

Currently, various energy sources are used to solve energy problems. But the increase of humanity and the development of society on a large scale and the increase of production sectors lead to the ever-increasing demand for energy. Alternative and renewable energy sources are widely used to solve such problems. In particular, the world's leading countries, the USA, China, Canada, Anguilla, Germany, Spain, Turkey, Russia and several developed countries, are leading the way in effective use of solar and wind energy. In this regard, the scientists of the Institute of Advanced Scientific Research of Duyo have been conducting scientific researches in the preparation of energy converters and their implementation, and have been applying methods of increasing the efficiency of new types of energy converters. In particular, scientific research is being conducted on the preparation of thermoelectric materials and their efficiency improvement.

LITERATURE ANALYSIS:

The production of thermoelectric materials and their efficiency improvement is mainly based on the thermoelectric effect. The thermoelectric effect is the direct conversion of temperature differences into electrical voltage through a thermocouple. Conversely, when a voltage is applied to it, heat flows from one side to the other, creating a temperature difference. A temperature gradient applied at the atomic scale causes charge carriers in the material to diffuse from the hot side to the cold side. This effect can be used to generate electricity, measure temperature, or change the temperature of objects. Since the direction of heating and cooling is

determined by the polarity of the applied voltage, thermoelectric devices can be used as temperature controllers.

RESEARCH METHOD.

The thermoelectric effect includes three distinct effects: the Seebeck effect, the Peltier effect, and the Thomson effect.

In 1821, the German physicist Thomas Seebeck discovered that when two dissimilar metals (Seebeck used copper and bismuth) wires were joined together at both ends to form a loop (Figure 1).

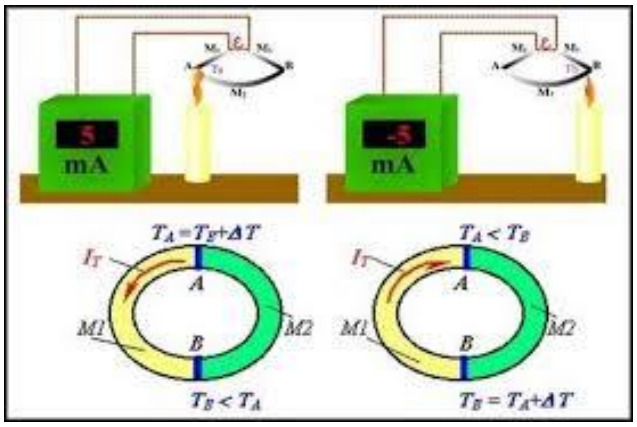

Figure 1. Generation of thermocouples based on the Seebeck effect.

In 1834, French watchmaker Jean Peltier discovered the second thermoelectric effect. Ung's experiment shows that Agar causes heat to be absorbed or released between contacts where two dissimilar metals are joined (Figure 2).

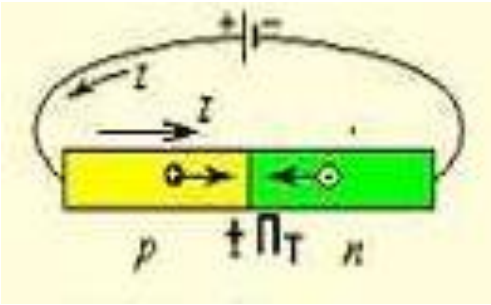

Figure 2. The pillte effect.

William Thomson (later known as Lord Kelvin) discovered a third thermoelectric effect that provides a link between the Seebeck effect and the Peltier effect. When there is a temperature gradient along the current conductor, in addition to the heat released according to the Joule-Lenz law, a certain amount of heat is released or absorbed in the heat circuit (Fig. 3).

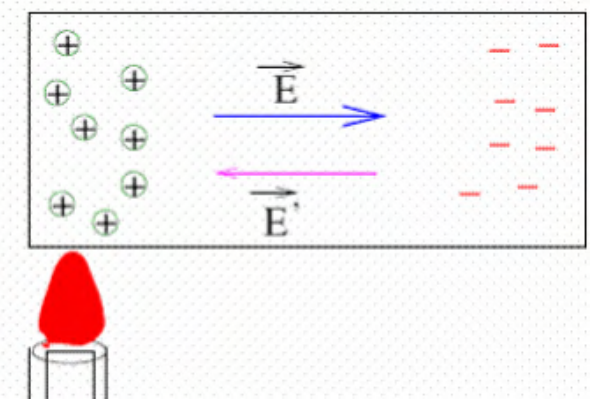

Figure 3. Identifying the Thomson effect.

Taking into account the above effects, the development of efficient thermoelectric devices can increase the enthusiasm of materials research. A heat-to-electricity converter provides an alternative energy supply by improving fuel efficiency and making efficient use of waste heat, thus helping to find new energy solutions. High-quality thermoelectric materials are used to create high-efficiency energy converter devices.

CONCLUSIONS.

A thermoelectric depends on the efficiency of the material to convert heat into electricity. The efficiency of a thermoelectric material is primarily based on the serviceability of the thermoelectric material. Currently, all good thermoelectric materials are semiconductors: they are semiconductors with a lot of free electrons, which have many properties similar to metals. The charge carrier concentration depends on internal defects as well as external additives.

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EFFECT OF INPUTS ON ELECTROPHYSICAL AND THERMOELECTRIC PROPERTIES OF GRANULAR SILICON

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Annotation. Silicon is one of the main materials widely used in the production of semiconductor devices, and is specially alloyed with elements of groups III and IV of the Mendeleev table in order to have the necessary electrophysical properties. These impurity atoms form an impurity layer located in the band gap of silicon. The thermal conductivity of semiconductors and metals decreases sharply as a result of the introduction of various types of dopant atoms.

Keywords: access atoms, conductivity, silicon semiconductor, thermoelectric materials.

INTRODUCTION

Currently, there are a number of methods for the production of semiconductor-based, in particular, silicon-based thermoelectric materials and thermocouples, based on the formation of different energy levels in the semiconductor band gap [1-5]. Silicon is one of the main materials widely used in the production of semiconductor devices, and is specially alloyed with elements of groups III and IV of the Mendeleev table in order to have the necessary electrophysical properties. These impurity atoms form an impurity layer located in the band gap of silicon [2-6]. The thermal conductivity of semiconductors and metals decreases sharply as a result of the introduction of various types of dopant atoms. This is explained by the increase in structural inhomogeneity, which causes electron scattering. In alloys, the heat transfer coefficient increases with increasing temperature [1-6].

LITERATURE ANALYSIS

In many research works, the mechanism of silicon powder pressing process for solar cells (QE) has been developed, and a two-step method of cleaning the surface of the plates obtained by vacuum sputtering from inclusions has been proposed [3-7]. This assumption is incorrect for nanoparticles, since the properties of macroscopically sized materials are size-independent. Because, firstly, most of the atoms in nanoparticles are located on the surface, and secondly, this ratio depends on the size of the granule, which increases inversely with the linear size of the

nanoparticle. If the grain size remains equal to the interatomic distance, almost all atoms will migrate to the surface. The properties of the atoms located on the surface of the granule and in its volume are significantly different, because their energy exchange with the external environment is different, and the amount of inputs increases from the volume of the granule to the surface [5-9]. Another reason for the difference in the properties of nano- and macroscopic particles is quantum effects. If the size of the studied particle is less than 100 nm, then its properties are usually size-dependent. The electronic energy in such granules is quantized, the energy difference between individual levels is large, and quantum effects manifest themselves even at sufficiently high temperatures. In them, the bulk of the volume corresponds to the intergranular boundaries. Also, under the influence of electric current in granules, tunneling between electrons and separate granules, interference of electrons, and effect of atoms entering the electric field generated by separate granules on the electron energy (Coulomb barrier effect, single-electron transistors) [6-12].

PRACTICAL PART

Currently, advanced scientific testing institutes of our republic and many countries of the world are working to increase the thermoelectric, electrophysical and radiation resistance properties of nano- and micro-sized semiconductor materials, as well as the effect of alkali metals on them, the dependence of the physical properties of granulated semiconductors on thermal voltaic effects and the manifestation of these effects. many practical research studies are being conducted to study the mechanisms [12-18]. It is known from the powder technology that granulated silicon contains metallurgical silicon impurities (Si 98÷99%; Fe, Au, B, P, Ca, Cr, Cu, Mg, Mn, Ni, Ti, Various chemical elements (such as V 1÷2%) can be preserved. We know that the introduction of alkali metal (Li, Na, K, Cs) atoms allows to obtain silicon-based p-n structures. The sensitivity of such structures to light rays is in the spectral maximum range of 0.8÷1 μm, and the efficiency is 7.4%. The introduction of alkali metal atoms increases the radiation resistance of silicon-based semiconductor devices and QEs [19-22]. In addition, scientific studies have shown that when the size of silicon granules and the amount of input atoms are changed under the influence of temperature, the values of ZT can be improved by 100 times compared to silicon wafer, and ZT≈1 at 200 K. Independent measurements of the Seebeck coefficient, electrical conductivity, and thermal conductivity based on theory show that the increase in efficiency is caused by phonons [23-25].

Thus, alkali metal atoms interact with oxygen atoms and vacancies to form complex compounds. This process prevents the appearance of SiO2 or SixOu

precipitates [14-18] on the surface of silicon granules, and also allows to eliminate new types of recombination centers that appear under the influence of temperature. In this case, electrical conductivity depends on the formation of electron-hole pairs in accessible states consisting of complex compounds formed with alkali metal atoms. An increase in the number of electron-hole pairs with temperature leads to an increase in the electrical conductivity of the thermoelectric material into which alkali metal atoms are introduced.

CONCLUSION

In short, based on the reviewed scientific research, it can be said that the introductions and alkali metal atoms form donor surfaces in granulated silicon. This, in turn, causes a change in the electrophysical and thermoelectric properties of the granules during the temperature change. The above considerations can be important in explaining the physical properties of granulated semiconductors under certain conditions, including the structure of granules, the formation of two adjacent areas, charge transfer processes between them, as well as other kinetic phenomena in micro- and nano-sized semiconductors.

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ORGANIZATION OF ENERGY MANAGEMENT IN MANUFACTURING ENTERPRISES AND ORGANIZATIONS

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Abstract

Energy management (English: management — management, organization) is a special management activity. The energy management system is the most necessary system right now, as the demand for energy is increasing, as a result, we are using our natural resources without clear plans. It is estimated that our natural resources will run out by 2050.

Using the ISO 50001 Energy Management System in Manufacturing Industrial Enterprises for rational use of energy, reduction of wastage, and savings helps to eliminate such problems.

Key words: Energy, Management, ISO 50001, Efficiency, Energy saving, Economy

Due to the need to conserve energy and reduce greenhouse gas emissions worldwide, energy management is now a global focus. Energy-saving technologies and devices are only part of the methodologies for improving energy efficiency. A more rational and systematic approach to sustainably improve an enterprise's energy efficiency is to create and implement a standardized, process-based energy management structure. Published on June 15, 2011, the ISO 50001 Energy Management System (EnMS) standard is a globally accepted framework for energy management that provides technical and management strategies for businesses to improve energy efficiency, reduce costs, and improve environmental performance. The ISO 50001 energy management system is gradually being implemented in enterprises.

Smart use of energy helps organizations save money and resources, and reduce their impact on the environment and climate. ISO 50001 supports organizations in all industries in their efforts to use energy more efficiently by developing an energy management system.

ISO 50001 is based on a management system model focused on continuous improvement[9]. Used together with other well-known standards such as ISO 9001 or ISO 14001, it allows organizations to integrate energy management with their efforts to improve quality and the environment.

The decision of the President of the Republic of Uzbekistan on rapid measures to increase the energy efficiency of economic sectors and the social sphere, introduce energy-saving technologies and develop renewable energy sources, according to the road map, the network diagram of the introduction of the energy management system by Ozbekneftgaz JSC in accordance with the requirements of the international standard (ISO 50001) developed and approved. Currently, the Mubarak Oil and Gas Production Department, Mubarak Gas Processing Plant, Ustyurt Gas Processing Plant and Uz-Kor Gas Chemical joint venture under the jurisdiction of Uzbekneftgaz JSC are gradually implementing the energy management system in accordance with the requirements of the international standard (ISO 50001). is increasing. Its resources are at serious risk as a result of irresponsible and careless use. Energy resources are dwindling, climate change is occurring and the ecological balance is disturbed.

Therefore, the issue of energy management is more than ever on the world agenda. Regardless of the field of activity, their responsibility to the environment is questioned. Every business needs to take concrete steps to address and raise the issue of energy efficiency. As consumers' awareness of energy efficiency increases, government and non-government organizations strive to reduce energy consumption and ensure sustainability. Companies that do not implement the ISO 50001 standard are left behind in the competitive environment and lose market share[1].The benefits of ISO 50001 Energy Management System are listed below:

- Reduces energy consumption

-Reduces greenhouse gas emissions and legal obligations of the enterprise

-Determine the weaknesses and risks of energy resources

-Increasing awareness about energy management

-Energy policy and business goals are formalized

-Easy integration with quality management system, environmental management system and other systems used in the enterprise

Analysis

According to a 2006 Energy Management System study, only 1 in 5 percent of businesses have an energy manager. Only 20% of enterprises have set energy efficiency improvement targets. Only 22% of the enterprises were engaged in energy

assessment. Only 8% of enterprises have provided energy management training to their employees.

Today, energy resources are becoming less and less, which requires not only business, but also sensitivity in terms of energy management. In this context, it is important to look for new energy resources while preserving the existing resources and using them more efficiently. The importance of the energy management system is clear here. This system is business,

It allows them to set energy policies and goals and create energy processes

Energy enables the preparation, management and implementation of event plans

It allows energy to reach its goals and objectives

Increase energy awareness among senior management and all employees

Reveals the importance of energy conservation and implements operational management to ensure continuity

Enables routine energy measurement and analysis

Enables control and improvement of energy efficiency

With energy management research, companies have a systematic approach. On the basis of this approach, energy efficiency increases, energy density decreases, the decision-making process of top management becomes effective, organizational and cultural changes are implemented in the enterprise, and enterprises that cannot ensure proper management of resources are provided with competitiveness. recognizes the social responsibilities of employees and adheres to them in accordance with legal and local standards. Identifying business locations for carbon accounting.

Summary

The energy management system is a system that ensures the achievement of the company's energy plans, specific goals and energy goals, ensuring the continuity of the energy saving process, measuring and monitoring energy use, and improving the energy efficiency of the enterprise. This system is part of the social responsibility of business. If we apply this energy management system to production enterprises, if we implement this system, we will achieve excellence in energy management of enterprises. Any type of energy is effectively saved. Various interruptions, malfunctions and accidents are not observed in the energy supply.

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ORGANIZATION OF ENERGY MANAGEMENT IN MANUFACTURING ENTERPRISES

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Key words: Luminiset lamps, Diode lamps, Led lamps, Voltmeter, Ammeter, Multimeter.

Annotation: The article examines the issues of daily electricity consumption on the 4th floor of Andijan Mechanical Engineering Institute 1- Student accommodation and energy savings of its users. In the last part, suggestions are given, for example, switching from LED lamps to diode lamps, replacing electric plates with new energy-saving ones, and setting up an automatic lamp on-off system. The article concludes with suggestions for improving energy efficiency and reducing energy consumption.

В статье рассмотрены вопросы суточного потребления электроэнергии на 4 этаже Андижанского машиностроительного института 1- Студенческая гостиница и энергосбережения ее потребителей. В последней части даются предложения, например, по переходу со светодиодных ламп на диодные, замене электроплит на новые энергосберегающие, настройке системы автоматического включения-выключения ламп. Статья завершается предложениями по повышению энергоэффективности и снижению энергопотребления.

Maqolada Andijon Mashinasozlik Instituti 1-Talabalar turar joyining 4-etajidagi kunlik elektr energiya isrofi va undagi foydalanuvchilarning yana energiya tejamkorliklari masalalari ko'rib chiqilgan. So'nggi qismida, takliflar berilgan, masalan, led lampalarni diod lampalarga o'tkazish, elektr plitalarni yangi energiya tejamkorlarga almashtirish, va avtomatik lampalarni yoqib-o'chirish tizimini yo'lga qo'yish. Maqola, energiya tejamkorligini oshirish va energiya sarflarini kamaytirish bo'yicha takliflar bilan tugatilgan.

The daily, monthly and annual calculation of the electricity consumption of the 4th floor of the 1st student residence of the Andijan Mechanical Engineering Institute is determined. The available equipment in the student accommodation will be reviewed.

Name of rooms	Number and name of lamps	Other devices
Shower 423	10 led	2 ariston
Toilet 424	8 led	1 ariston
Laundry 425	2 led	cleaning machine ariston 1
Kitchen 426	2 led	1 ariston
Spiritual room 436	4 led	TV 42
Laundry 438	2 led	cleaning machine ariston 1
Toilet 439	8 led	1 ariston
Kitchen 440	2 led	1 ariston
Large rooms 407-412	12 led	-
Hall	11 luminesce	WiFi
Hall	2 diode	WiFi
Sports rooms	4 led	-
The remaining 30 rooms	60 led	-

If the power of LED lamps in the student accommodation is 6W, how many lamps are there in each room and their hourly and daily calculation is determined. According to the information provided, the power of the currently working aristons is calculated from 1.5 KW, depending on the number of hours of operation per day. There are 11 Luminesets and 2 diode lamps in the hall on the 4th floor of the student residence. Of these lamps, luminiset consumes 40W per hour, and diode lamps consumes 36W per hour.

Daily operating time and calculation:

1. The lamps in the shower stay on for 5 hours all day. 10 lamps there consume 6W total hourly calculation:

Consumes 6x10=60W.

We multiply the hourly consumption by the number of working hours throughout the day:

5x60=300W
Toilet 424. Hourly calculation of 8 led lamps 6W: 8x6=48W
Daily calculation: 6x48=288W
Laundry 425. 2 led lamps 6W per hour: 2x6=12W
Daily calculation: 5x12=60W
Kitchen 426. Hourly calculation of 2 led lamps 6W: 2x6=12W
Daily calculation: 5x12=60W
Spiritual room 436. Hourly calculation of 4 LEDs 6W: 4x6=24W
Daily calculation: 2x24=48W
Laundry 438. 2 led lamps 6W per hour: 2x6=12W
Daily calculation: 3x12=36W
2. Toilet 439. Hourly calculation of 8 led lamps 6W: 8x6=48W
Daily calculation: 6x48=288W
3. Kitchen 440. Hourly calculation of 2 led lamps 6W: 2x6=12W
Daily calculation: 5x12=60W
Large rooms 407-412. Hourly calculation of 12 led lamps 6W: 12x6=72W
Daily calculation: 6x72=432W
2. Hourly calculation of 11 luminiset 40W in the hall: 11x40=440W
Daily calculation: 5x440=2200W
3. Hourly calculation of hall 2 diodes 36W: 2x36=72W
Daily calculation: 5x72=360W
The remaining 30 rooms. Hourly calculation of 60 LEDs 6W: 60x6=360W
Daily calculation: 6x360=2160W
2. Sports rooms. Hourly calculation of 4 led lamps 6W: 4x6=24W
Daily calculation: 5x24=120W
2 additional LEDs are lit until the morning: 19:00 - 7:00. 12 hours is considered.
1 luminiset and 1 diode will burn until morning:
Consumes 40x12=480W 36x12=432W 480+432=912W.
Daily calculation: 912W = 0.912kw
Additional equipment:
- Number of electric plates is 4, used 4 hours a day
-The number of patients is 25, it is used 3 times a day
-The number of chargers is 100, used for 4 hours a day
- 10 computers are charged for 3 hours a day

Name of devices	how many	Power /w	Daily consumption/ kw
Electric stove	4	4000	16
Tefal	25	2000	0.51
Charger	100	50	0.2
computer	10	45	0.14

According to the information given above, the total daily demand of lamps, Aristons, washing machines is determined:

Name of rooms	Number and type of equipment	Other devices	Daily demand /kw
Shower 423	10 led	2 ariston	30,3
Toilet 424	8 led	1 ariston	15,288
Laundry 425	2 led	Kirmoshia ariston 1	16,66
Kitchen 426	2 led	1 ariston	15,06
Spiritual room 436	4 led	TV 42	0,178
Laundry 438	2 led	Kirmoshina ariston 1	16,636
Toilet 439	8 led	1 ariston	0,288
Kitchen 440	2 led	1 ariston	15,06
Large rooms 407-412	12 led	-	0,432
Hall	11 lyums	WiFi	2,356
Hall	2 diod	WF	0,516
Sports rooms	4 led	-	0,024
The remaining 30 rooms	60 led	-	2,16

The daily calculation of all electrical energy consuming devices is as follows:
Daily consumption 1 + Daily consumption 2 = 16.85+114.958=131.808 kw.

Andijan Institute of Mechanical Engineering charges 1,000 soums for each KW of electricity consumed. It can be seen that the amount required to pay for the daily electricity of the 4th floor is 131808 soums.

Lumen of lighting for residences and buildings:

Room type	Classification	Recommended lighting (lux).
Hotel bedroom kitchen dining room gym	Living rooms designed for relaxation and social activities, including zones for physical exercises	150
Children's room	For children to play and study, the room needs to be brighter.	200
Office, billiard hall	Work and hobby areas need good lighting levels for attention and attention to detail	300
Sauna bath indoor pool	Rooms with high humidity need adequate lighting for safety.	100
Hall toilet	Corridors require a minimum level of illumination for orientation.	50
Wardrobe	Adequate lighting is required for ease of use for viewing clothes and storing items.	75
Warehouse	The lighting of the place where household items are stored can be minimal, but it should be enough to find the items.	30
Reception	Entrance zones of the building should create a first impression and ensure traffic safety.	30
Staircases, interfloor corridors, elevator landings.	The movement zone between the floors should have enough light for movement safety and orientation.	20

It was determined that the 4th floor of the 1st TTJ of the Andijan Institute of Mechanical Engineering required daily electricity.

1. For the hall, instead of 40 W Lumenset lamps, it is necessary to switch to 6 W Led lamps and make the distance between them a little longer.

2. Replacing electric plates with a new modern energy-saving one

3. Setting up the system of turning on and off the lamps automatically.

Conclusion:

In order to reduce payments for electricity consumers, it is recommended to use the following equipment and devices:

For the hall, instead of 40 W Lumenset lamps, it is necessary to switch to 6 W Led lamps and increase the distance from 1 m to 1.5 m.

Replacing electric plates with a new modern energy-saving one

Setting up the system of automatic switching on and off of lamps.

It is necessary to replace all electrical energy-consuming equipment in the student accommodation with new ones and change to energy-saving devices. Setting up the system of automatic turning off and on of the lamps in the rooms during the day, of course, taking into account the weather conditions and the location of the room.

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LIGHTING SYSTEMS

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Abstract. This article provides information on important indicators in the field of lighting systems. This article mainly examines and analyzes the level of illumination that varies depending on the function of buildings and offices.

Key words: lighting systems, lumens, lux, lamp, kelvin, color rendering index, electricity, timer schedules, occupancy sensing.

Lighting systems normally account for more than 20 percent of the electrical energy consumed in commercial buildings. Lighting systems not only consume power directly to generate light, in air-conditioned build- ings they also indirectly account for some of the power consumed by airconditioning systems, as the heat added by lighting has to be removed by the building cooling systems.

However, lighting is essential for buildings to ensure the comfort, productivity and safety of the building's occupants. Therefore, lighting systems need to be carefully designed to achieve the desired illumina- tion level while using the minimum amount of energy.

Energy savings from lighting systems can be achieved by means such as optimizing lighting levels, improving the efficiency of lighting sys- tems, using controls, and daylighting (using natural light). This chap- ter provides a brief description of some basic concepts of lighting followed by typical energy saving measures for lighting systems.

Lumens. Lumens is the SI unit for luminous flux, which is the quantity of light emitted by a source or the quantity of light received by a surface.

Typical values of luminous flux emitted by some common sources of light are given in Table 1.1.

TABLE 1.1 Luminous Flux Emitted by Common Light Sources

№	Lamp	Lamp wattage	Lumens
1	Torch lamp	3 W	30
2	Incandescent lamp	75 W	950
3	Compact fluorescent lamp	15 W	810
4	Fluorescent lamp	36 W	2,400
5	High-pressure sodium lamp	100 W	10,500
6	Low-pressure sodium lamp	131 W	26,000

Candela. Candela (cd) is a measure of luminous intensity. Originally luminous intensity was measured in units called candles (based on the approximate amount of light emitted by a candle flame). Later the term candela was adopted to allow for consistent and repeatable measure- ments of light, where 1 candela is equal to 1 candlepower.

Lux. Lux is the SI unit for illuminance, which is a measure of the direct illumination on a surface area of one square metre. One lux is one lumen/m 2 . Some typical lux values are given in Table:

TABLE 1.2 Typical Lux Values

№	Location	Lux level
1	Basement car parks	15
2	Offices	500
3	Under the shade of a tree	10,000
4	Under the midday sun	100,000

Luminous efficacy. Luminous efficacy is the ratio of luminous flux emitted by a lamp to the power consumed by the lamp and its control gear. This ratio indicates the efficiency of a lamp in converting electrical power into light. The units of efficacy are lm/W.

Edison's first electric filament lamp had an efficacy of 1.4 lm/W. However, with research and development, the efficacy of lamps has improved significantly over the years. Typical values of efficacy for some common lamps are given in Table:

TABLE 1.3 Typical Efficacy of Lamps

№	Lamp type	Efficacy (lm/W)
1	Incandescent	10–15
2	Halogen	13–25
3	Compact fluorescent	50–60
4	Fluorescent lube	69–100
5	Metal halide	85–120
6	High-pressure sodium	80–140
7	Low-pressure sodium	150–200

Color temperature. The color temperature of a light source is a numerical measurement of its color appearance. It is based on the fact that when an object is heated to a temperature high enough it will emit light and as the temperature is increased, the color of the light emitted will also increase. For example, when a blacksmith heats a horseshoe, it will first appear red and will change to orange, followed by yellow and later white. Color temperature is defined as the temperature of a blackbody radiator which emits radiation of the same chromaticity as the lamp. The unit of color temperature is Kelvin (K). The degree of "warmth" or "cool-ness" of the space is related to the color temperature of the light source.The lower the color temperature, the "warmer" the light appears. Light sources that appear violet or blue color are "cool" while those that are red, yellow or orange are "warm."

Typical values of color temperature and associated warmness or coolness are given in Table:

TABLE 1.4 Color Temperature and Warmness of Common Types of Lamps.

№	Lamp type	Color temperature (K)
1	Incandescent filament lamp	2600–3000
2	Tungsten halogen	3000–3400
3	Warm white fluorescent	3000
4	Cool white fluorescent	4000
5	Daylight fluorescent	5000
6	Metal halide	3300–5700
7	High-pressure sodium	2000–3200
8	Low-pressure sodium	1600

Color rendering. While color temperature is a measure of the color of a light source, the color rendering index is an indication of the ability of a light source to accurately show colors.

Color rendering expresses the appearance of object colors when illuminated by a given light source as compared to its appearance in a reference light source. It is usually expressed as an index called the color rendering index (CRI), which is an indication of the appearance of an object illuminated by a light source compared to its appearance under natural light. Natural light will have a CRI of 100. Electric filament lamps produce a continuous spectrum with all colors present and, therefore, they have a CRI of 100. Normally, CRI below 80 is considered poor color rendering while CRI above 80 is considered good. Typical values of CRI are given in Table:

TABLE 1.5 Typical Values of Color Rendering Index.

№	Lamp type	Color rendering index (CRI)
1	Incandescent filament lamp	100
2	Tungsten halogen	100
3	Fluorescent	80–95
4	Metal halide	65–80

5	High-pressure sodium	25
6	Low-pressure sodium	0

The lighting level or lux level required for a space depends on the type of space, tasks performed in the space, and other visual requirements. General guidelines for the illuminance range for different applications that need to be used when designing of lighting systems are available in lighting reference books and codes of practice. Asummary of recommended lighting levels for some common building spaces are given in Table 1.6.

TABLE 1.6 Recommended Illuminance Levels

№	Type of area	Illuminance (lux)	Recommended design value (lux)
1	General offices, conference	300–750	500
2	rooms, computer workstations	-	-
3	School classrooms	200–500	300
4	Shops, departmental stores	300–750	500
5	Supermarkets	500–1000	750
6	Hospitals	200–500	300
7	Lobbies, corridors	100–200	150
8	Hotel rooms:	-	-
9	General	75–150	100
10	Local	200–500	300
11	Car parks:	-	-
12	Parking areas	10–20	15
13	Entrance	50–300	100

The lighting levels given in Table 1.6 are used generally as a guideline to ensure that lighting levels provided are adequate for the specific tasks to be performed while preventing unnecessary wastage of electricity due to excessive lighting levels.

Lighting controls. Energy consumed by lighting can also be reduced by minimizing their usage by better matching operations with demand through lighting controls. Various systems such as timers, occupancy sensors, and light sensors can be used to control lighting operations.

a) Timer schedules. Simple timers can be used to switch on and off all or some lighting circuits at predetermined times based on occupancy sched-ules. Provision for manual override can be incorporated into the controlsso that occupants can extend the operating hours of lighting circuitsbased on individual requirements. Lighting control systems can consist of simple timers that have 24-hour clocks to switch on and off lighting daily at preset times, or more sophisticated timers that can be used to program lighting schedules for a year or more, where holidays and other special requirements can be programmed in advance. Often lighting operating schedules can also be programmed into building automation systems to control the operating hours of lighting.

b) Occupancy sensing. Occupancy sensors can also be used to switch on lighting when a space is occupied and switch off the lighting after a preset time delay when the space is not occupied. Typical applications for occupancy sensors are in toilets, car parks, meeting rooms, storage areas, and common corridors. The two basic technologies used in occupancy sensing devices are infrared and ultrasonic. Infrared sensors scan the area around them to detect heat generated by occupants. They are ideal for small open areas such as offices and classrooms. Ultrasonic sensors emit high frequency sound waves to detect occupancy. The are generally used in large or obstructed areas. Due to the relative advantages and disadvantages of the two types of technologies, sensors that incorporate both types of technologies are available with more effective sensing capabilities.

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EFFICIENT ENERGY CONVERSION IN AN ELECTRICAL LIGHTING SYSTEM

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Key words: Lighting, Halogen Lamps, Fluorescent, Light-Emitting Diodes (LEDs), Tungsten, Spiral, Light Extension, Noble Gases, Argon Gases, Electrons, Compact, Bulb, Infrared Red Lighting, Interference, Indexation

Annotatsiya

Bu maqola yoritish sohasida energiya tejamlashning muhim ko'rsatkichlari va bu texnologiyalarning turlari haqida ma'lumot beradi. Ushbu maqolada galogenli cho'g'lanma lampalar, lyuminessent lampalar, svetodiodlar (yorug'lik diodlari), va energotejamkor lampalar kabi asosiy yoritish usullari qisqacha ta'rifi beriladi. Har bir usulning afzalliklari va kamchiliklari, ularning ishlash prinsiplari va foydalanish sohalariga oid ma'lumotlar keltirilgan.

Этот материал предоставляет информацию о важных показателях в области освещения и типах этих технологий. В этой статье кратко описаны основные методы освещения, такие как галогенные лампы, люминесцентные лампы, светодиоды (диоды освещения) и энергосберегающие лампы. Для каждого метода приведены преимущества и недостатки, принципы работы и сферы применения.

This article provides information about important indicators in the field of lighting and types of these technologies. The main methods of lighting, such as halogen lamps, fluorescent lamps, light-emitting diodes (LEDs), and energy-saving lamps, are briefly described in this article. For each method, the advantages and disadvantages, principles of operation, and areas of application are provided.

Today, 40% of the world's energy and 37% of all energy resources are used in residential and public buildings. Lighting makes up a significant share (40-60%) of energy consumption in buildings.

Primary efficient lighting sources:

Efficient lighting sources can be divided into several types, such as:

Halogen incandescent lamps

Fluorescent lamps

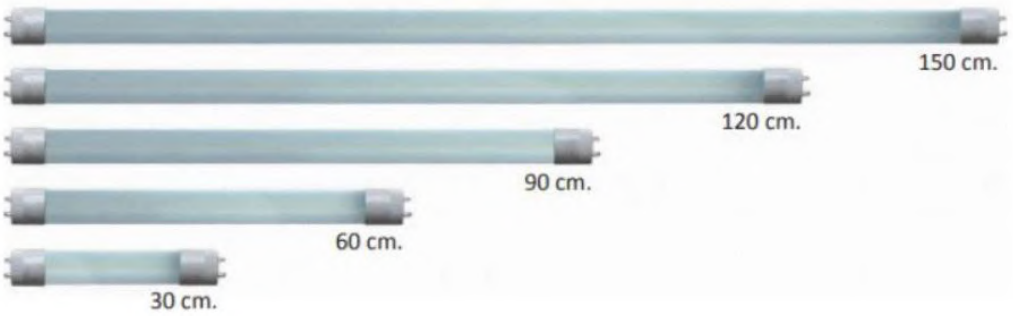
Light Emitting Diodes (LEDs)

Energy-efficient lamps

Halogen incandescent lamps - The primary disadvantage of incandescent lamps is their low light output and short service life (1000 - 3000 hours). If the lamp is filled with halogen gas (non-metal chemical elements fluorine, chlorine, bromine, iodine, and astatine), moisture does not accumulate inside the bulb, resulting in the lamp maintaining its constant light output (lumens) throughout its service life. This efficient result is achieved by adding halogen gases to the tungsten filaments, which later re-deposit on the tungsten spiral at high temperatures. The tungsten atoms emitted from the heated spiral do not reach the walls of the lamp (which reduces blackening) but return to the spiral with chemical reactions. This phenomenon is called the halogen cycle. Therefore, the service life and light output of the lamp are significantly improved. While standard incandescent lamps have a light output of 10 Lm/W, halogen incandescent lamps reach 25 Lm/W. Additionally, halogen incandescent lamps are compact, rare, and suitable for special luminaires. They are available for purchase with a mains voltage of 220 V and low voltage: 6, 12, and 24 V. Low-voltage halogen lamps require an additional transformer.

1-image. Halogen incandescent lamps

Fluorescent lamps - Fluorescent lamps have the highest light output among all types of lamps. In three-band lamps, when light passes through fluorescent layers applied to the lamp's inner surface, it produces visible light. Fluorescent lamps use inert gases such as neon, argon, or mercury vapor as phosphors. Excited electrons produce ultraviolet radiation, which generates visible light when absorbed by the phosphors. Different types of phosphors produce different light spectra. Compact fluorescent lamps or energy-efficient lamps, like standard fluorescent lamps, only operate with starter ignition devices. The service life of fluorescent lamps depends on various factors, mainly on the quality of the materials used. The lamp's lifespan can be affected by rapid ignition of the electrodes, so decorative lighting uses halogen return lamps with power from 10-50 Lm/W and reflector lamps with power from 20-75 W. Such lamps return 2/3 of the heat with infrared radiation, thereby preventing objects from overheating. The standard service life of low-voltage halogen lamps is considered to be 2000 hours. Mechanical stress (spiral for long lamps) and frequent switching shorten the lamps' service life. The color and brightness of halogen lamps are higher than those of ordinary lamps, reaching 3000-3200 K. This parameter can be adjusted in lamps with installed or external light filters. The light output index Ra of halogen lamps is maximized and equals 100 Lm/W, but due to the high operating temperature (compared to ordinary incandescent lamps), halogen incandescent lamps emit greenish-yellow light. The lamp's total service life decreases with frequent switching, and the initial light output decreases to 70% of the initial light output, indicating the beginning of lamp deterioration. Modern fluorescent lamps have an average service life of 8000-15000 hours, depending on the lamp model. Fluorescent lamps cover a color temperature range from 2700 to 10000 K. Colored lamps are also available. The color rendering index Ra, which can range from 60 to 95 for standard fluorescent lamps, affects the quality of color rendering. The improvement of color rendering is associated with the improvement of light output.



2-image. Fluorescent lamps

Light Emitting Diodes (LEDs) - LED lighting is considered the future of lighting sources. LED technology has reached high levels of efficiency. The characteristics of LEDs (the light output of bright LEDs is 25 Lm/W with a power of 5 W, Ra=80-85, and a service life of 100,000 hours) provide them with a niche in lighting equipment, signaling devices, automotive and aviation technology, surpassing previous solutions in these areas. LED sources are gradually penetrating the general lighting market. LEDs are semiconductor devices that convert electrical energy into a wide range of electromagnetic radiation, which can be transformed into visible light in a broad spectrum. LED light sources are characterized by:

- High luminous efficacy. Modern LED light sources surpass incandescent lamps in this indicator.

- High mechanical strength, resistance to shocks (absence of filaments and breakable elements).

- Long service life. However, this life is not indefinite; it can be affected by prolonged use or poor ventilation, causing crystal "aging" and gradual reduction of luminous flux.

- Specific light spectrum. This spectrum is sufficient for most purposes. The ability to extend the spectrum is considered an advantage in information dissemination but is considered a disadvantage in lighting systems. Only laser diodes have a narrow spectrum; otherwise, LEDs have broad spectrum and low coherence; they are harmless, do not require high power, and are resistant to low and very low temperatures. However, like all semiconductor devices, LEDs are negatively affected by high temperatures, typical of all semiconductor devices. However, LED sources have a higher thermal resistance than other sources. Thus, they are more suitable for use in hot environments or where significant temperature differences are expected. However, like all semiconductor devices, LEDs are negatively affected by high temperatures.

3-4-image. Light Emitting Diodes

Energy-saving lamps - The construction of energy-saving lamps is well known. During operation, the lamp's tungsten filament is heated to its luminous intensity by an electric current. However, not everyone knows the construction of energy-saving lamps. Energy-saving lamps are filled with a mixture of mercury and argon and equipped with a starting device (starter). Inside the bulb, there is a special substance called a phosphor. The phosphor, when exposed to ultraviolet radiation, emits light visible to the human eye. If we reach the energy source for the energy-saving lamp, mercury vapor inside the lamp emits ultraviolet radiation, and ultraviolet radiation, in turn, passes to the inside of the lamp through the phosphor, transforming into visible light. Due to the variety of phosphors used, energy-saving lamps can produce light in various colors. Energy-saving lamp sizes are prepared as standard incandescent lamps. Therefore, the base diameter of the lamp can be either 14 or 27 mm. Hence, energy-saving lamps can be installed in chandeliers and luminaires instead of incandescent lamps.

5-image. Energy-efficient lamps

Energy-saving lamps have a high energy efficiency rating, and their light output is approximately five times higher than that of ordinary incandescent lamps. For example, a 20 W energy-saving lamp produces the same light output as a 100 W incandescent lamp. Therefore, energy-saving lamps achieve up to 80% energy savings. Energy-saving lamps have a much longer service life compared to ordinary incandescent lamps. Since incandescent lamps operate by heating tungsten filaments, they can burn out quickly. Energy-saving lamps have a different construction and working principle, so their service life is on average 5-15 times longer than incandescent lamps. This period can range from 5,000 to 12,000 hours (usually, lamp operation is determined by the manufacturer). Therefore, energy-saving lamps are suitable for use in places where frequent replacement is difficult, such as high-ceiling rooms or complex structures.

Energy-saving lamps have low heat output. Since all electrical energy consumed by the lamp is converted into light, energy-saving lamps emit minimal heat, which means that all energy consumed by the lamp is converted into light, i.e., energy-saving lamps dissipate very little heat. It is essential to be cautious when installing them in lamps and luminaires because they do not dissipate much heat and can cause plastic parts of holders or lamp bodies to melt, which, in turn, leads to bulb loosening. Therefore, it is necessary to use energy-saving lamps in lamp holders with limited heat resistance or in rooms with adequate ventilation.

Disadvantages of energy-saving lamps:

The main disadvantage of energy-saving lamps compared to incandescent lamps is their higher purchase price. The price of energy-saving lamps is 10-20 times higher than that of incandescent lamps. Energy-saving lamps are not called incandescent lamps. The fact that they are called energy-saving lamps does not mean that they do not have drawbacks. One of the drawbacks of such lamps is the mercury content. The mercury vapor inside the lamp is poisonous. Therefore, when using such lamps, it is necessary to handle them with care. Therefore, energy-saving lamps are considered environmentally hazardous, and they must be disposed of properly, and their disposal is limited.

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Аннотация. В данной работе представлены результаты исследования конструкции заземлений для безопасности систем электроснабжения. Приведены сведения о мерах и технических устройствах обеспечения безопасности электроустановок, отмечены особенности поражения человека электрическим током, рассмотрены влияющие на исход поражения факторы, описан порядок расчета системы защитного заземления

Ключевые слова:короткое замыкание, заземляющий электрод, растекание тока, плотность тока, системы электроснабжения

GROUNDING SAFETY STUDY

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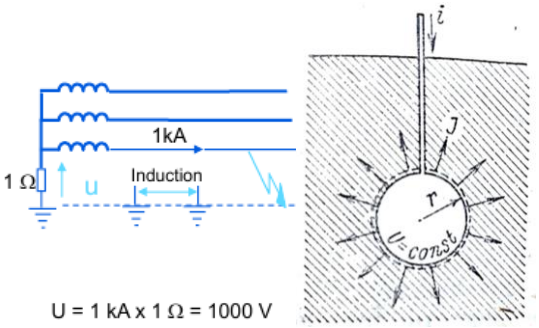
Abstract. This paper presents the results of a study of grounding design for the safety of power supply systems. Information is provided on measures and technical devices to ensure the safety of electrical installations, features of electric shock to a person are noted, factors influencing the outcome of the injury are considered, and the procedure for calculating the protective grounding system is described.

Key words: short circuit, grounding electrode, current spreading, current density, power supply systems

Для осуществления соединения какой-либо точки электрической цепи с землей зарывают в землю металлический проводник, к которому присоединяют соответствующую точку цепи. Систему таких зарытых в землю проводников называютзаземлителем.Например, при соединении в звезду обмотоквысокого напряжения обычнозаземляют непосредственноили через некоторое сопротивление нейтральную точку трансформатора. Этим достигается то, что напряжения проводов линии по отношению к земле при нормальном режиме не могут быть больше фазных напряжений.При повреждении изоляции одного из фазных проводов возникает ток короткого замыкания, проходящий от места повреждения через землю и заземлитель к нейтральной точке трансформатора. Электрический ток, проходя через землю, встречает некоторое сопротивление, называемое сопротивлением заземления. По существу, это – сопротивление земли, которое встречает ток при растекании от заземлителя. Вдоль поверхности земли создается падение напряжения, которое вблизи от мест заземления может достигать опасных для жизни человека значений уже на длине шага человека. Поэтому весьма существенно уметь вычислить сопротивление растеканию тока в земле при различных его конструкциях. [1].

Формулы для проводимости G=iU заземления могут быть написаны на основании метода электростатической аналогии имеющимся формулам для емкости C=q/U соответственно расположенных тел. С заземлением отдельных точек цепи в цепях переменного тока, в земле протекает переменный ток. Распределение переменною тока в проводящей среде,как при постоянном токе в контурах, которые можно себе представить в проводящей средевозникают индуктированные электродвижущие силы, оказывающие влияние на распределение тока. Однако ввиду большого удельного сопротивления земли при вычислении токоввблизи электродов

можно пренебречь,во всяком случае, при промышленной частоте, индуктированнымиэлектродвижущими силами по сравнению с активным падениемнапряжения и вести расчет, как при постоянном токе т.к. основное сопротивление растеканию тока сосредоточено вблизи электрода, где плотность тока большеи индуктируется наибольшее значение шагового напряжения. см. рис.1.[2]



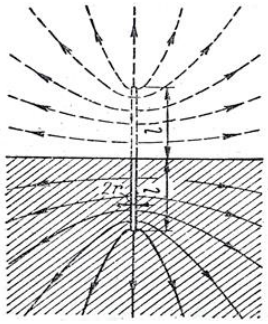


рис.1[4] рис.2 рис.3

Необходимо еще заметить, что в земле линии тока не уходят в бесконечность, а собираются у другого электрода или, у места повреждения изоляции линии. Однако это обстоятельство мало сказывается на распределении тока около данного электрода (см.рис.2) и на значении соответствующего ему сопротивления заземления, так как основное сопротивление растеканию тока будет сосредоточено вблизи электрода, где плотность тока в земле имеет наибольшие значения.Например. Так как емкость уединенного шара см.рис.2 радиусаrравна «C =4πƐr» то проводимость заземления для шарового электрода, погруженного в землю столь глубоко, что можно пренебречь влиянием поверхности земли, должна быть равна

$$G = 1/R = 4\pi\gamma r \text{ r}$$

R—сопротивление заземления по ПУЭ и ПТБ. у источника тока (например, трансформаторной подстанции) сопротивление заземления должно быть не более 4 Ом при линейном напряжении 380 В источника трехфазного тока или 220 В источника однофазного тока [3] у заземления, использующегося для подключения.Если электрод расположен близко от поверхности земли, то линии тока искажаются, как это видно на рис.3.

В этом случаеможно воспользоваться методом зеркальных изображений. Линии тока, у поверхности земли, должны быть к ней касательно. Это условие

останется удовлетворенным, если мысленно заполнить воздушное пространство над поверхностью земли проводящей средой с такой же, как у земли, удельной проводимостью и поместить в эту среду электрод, являющийся зеркальным изображением действительного электрода относительно поверхности земли. Ток, выходящий из мнимого электрода, должен быть равен по значению и по знаку току, выходящему из действительного электрода в землю. Проводимость заземления для действительного электрода, очевидно, равна половине проводимости системы, образованной электродом и его зеркальным изображением.[2] Так, например, проводимость для электрода в форме полушария, расположенного у поверхности земли, равна

$$G = 1/R = 2\pi\gamma r \text{ r}$$

Для уменьшения сопротивления заземления заземляющее устройство часто выполняют в виде рядов забитых в землю труб, соединенных между собой металлическими полосами. Расчет проводимости заземления при таком сложном заземлителе может быть выполнен по аналогии с расчетом емкости системы соединенных между собой прямолинейных отрезков проводников. С этой целью с успехом может быть использован метод средних потенциалов.
В заключении можно сказать, что заземлениесистем электроснабжения имеет некоторую опасностьпри коротких замыканиях(неоднократные замыкания на землю и замыкания в нескольких местах линии электроснабжения) без автоматического отключения сети и срабатывании АПВ. Поэтому,рекомендуетсязащититьустройство от прикосновения человека или произвести изоляцию части заземления находящиеся над землей.

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ИССЛЕДОВАНИЕ ПОТЕРИ ЭЛЕКТРОЭНЕРГИИ

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Аннотация

В данной работе представлены результаты исследования способов снижение потери энергии на воздушных линиях электроснабжения. Для пояснения хода решения задачи приведены необходимая справочная информация.Основными являются:–изучение принципов передачи и распределения энергии; – изучение конструкций электрических сетей; – изучение методов расчета и анализа режимов электрических сетей; – изучение методов и средств управления передачей и распределением энергии; – изучение методов оптимизации систем передачи и распределения энергии.

Ключевые слова:электромагнитное поле,медный экран, ферромагнитный экран, потери энергии, вихревые токи, активное и индуктивное сопротивления линии.

RESEARCH OF ELECTRICITY LOSS

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Abstract. This paper presents the results of a study of ways to reduce energy loss on overhead power lines. To explain the progress of solving the problem, the necessary background information is provided. The main ones are: – study of the principles of energy transmission and distribution; – study of electrical network designs; – study of methods for calculating and analyzing the modes of electrical networks; – study of methods and means of controlling energy transmission and distribution; – study of methods for optimizing energy transmission and distribution systems.

Key words: electromagnetic field, copper screen, ferromagnetic screen, energy losses, eddy currents, active and inductive line resistance.

Для защиты элементов электрических цепей, например, катушек самоиндукции, электронных ламп, электроизмерительных приборов и т. д., от влияния на них переменных электромагнитных полей применяют металлические экраны.[1] Если защищаемый элемент цепи окружить сплошной металлической оболочкой, то при достаточной ее толщине внешнее электромагнитное поле практически не проникает внутрь оболочки, что ясно из произведенного выше рассмотрения процесса проникновения электромагнитной волны в проводящую среду. Подобные оболочки носят название электромагнитных экранов. Ясно, что такой экран оказывается также практически непроницаемым и для переменного электромагнитного поля, созданного элементом электрической цепи, заключенным в его полости, т. е. экран защищает также все приборы, расположенные вне его, от влияния поля, существующего внутри его.[2]

Физически экранирующее действие может быть объяснено возникновением токов в стенках экрана, создающих поле, которое компенсирует их вызывающее внешнее поле, эти токи могут рассматриваться как вихревые токи.[3]

Для получения эффективного экранирующего действия толщину стенок экрана необходимо взять порядка длины волны, в веществе экрана. Обычно применяют экраны из хорошо проводящего материала, например из меди или алюминия. При промышленной частоте f = 50 Гц медный экран оказывается эффективным лишь при значительной толщине стенок, так как длина волны в меди при этой частоте равна 6 см. При таких низких частотах можно воспользоваться экраном из ферромагнитного материала, в котором электромагнитная волна затухает значительно быстрее, чем в меди, если, конечно, потери в ферромагнитном экране не препятствуют его применению.Ферромагнитный экран оказывает экранирующее действие и при постоянном поле, так как при переменном поле его экранирующее действие значительно возрастает вследствие дополнительного экранирующего эффекта токов, возникающих в стенках экрана.

Большие значения емкостных токов вызывают существенные изменения тока вдоль линий, что делает практически затруднительным и нецелесообразным использование. В связи с отмеченными трудностями воспользуемся понятием времени потерь для емкостного тока τс и методикой определения потерь энергии в киловатт-часах по формуле [3]

$$\Delta э_{\text{Н}} = \frac{3I_M^2 \rho \text{L} 10^3}{F} + \frac{I_c^2 \rho \text{L} \pm 3I_\rho \, I_c \, \rho L}{F} \tau_c 10^{-3}$$

где Iм–максимальное значение рабочего тока линии; ρ–удельное сопротивление провода; F – сечение провода; τ – время потерь, ч; τс – время

потерь для емкостного тока Ic, учитывающее возможности компенсации емкостного тока линии в режимах холостого хода и малых нагрузок, ч; Ip– реактивная составляющая рабочего тока линии берется со знаком «+» при емкостном характере и с «–» – при индуктивном.После интегрирования и преобразования получим.[4]

$$\Delta P_{Qc} = I_c^2 \rho_0 L$$

Наряду с расчетом электрических, магнитных и электромагнитных полей имеет большое практическое значение их непосредственное экспериментальное исследование в реальных устройствах, а также их экспериментальное исследование методом моделирования.

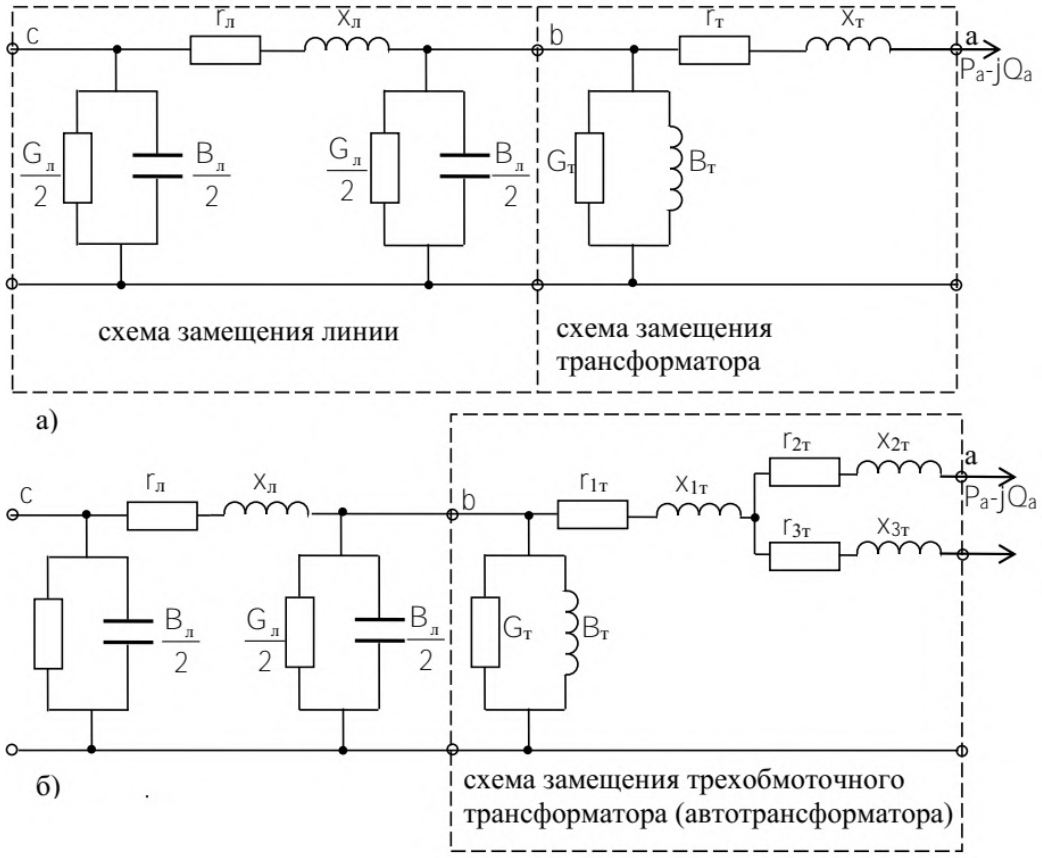

Рис. 1 Схема замещения электрической сети: а – с двухобмоточными трансформаторами; б – с трехобмоточными трансформаторами и автотрансформаторами

Активное и индуктивное сопротивления линий электропередачи определяются по выражениям

$r_л = r_0 \frac{L}{n}$; $x_л = x_0 \frac{L}{n}$;

где r_0, x_0 – удельное активное и индуктивное сопротивления линии, Ом/км, определяемые по справочным материалам ; L – длина линии, км; n – число цепей линии электропередачи. Емкостная проводимость линии рассчитывается, [5]как

$$B_0 = b_0 \mathrm{Ln}$$

где b_0 – удельная емкостная проводимость линии, См/км (см. табл.). Активная проводимость линии рассчитывается по формуле

$$G_л = g_0 . L = \frac{\Delta P_{ук} . L \cdot n \cdot 10^3}{U_н^2}, \text{ См}$$

где $\Delta P_{ук}$. – удельные потери мощности на корону, кВт/км (см. табл.).

Зарядная мощность линии рассчитывается по выражению

$$Q_з = U_н^2 \cdot b_0 \cdot L \cdot n$$

Удельные сопротивление и проводимость линии электропередачи (на 1 км)

Сечение провода, мм^2	r_0, Ом	110 кВ			220 кВ		
		x_0, Ом	b_0, 10^{-6} См	$\Delta P_{ук}$, кВт	x_0, Ом	b_0, 10^{-6} См	$\Delta P_{ук}$, кВт
70	0,42	0,44	2,55	-	-	-	-
95	0,31	0,43	2,61	-	-	-	-
120	0,25	0,43	2,66	-	-	-	-
150	0,20	0,42	2,70	-	-	-	-
185	0,16	0,41	2,75	-	-	-	-
240	0,12	0,41	2,81	-	0,43	2,60	2,70
300	0,098	-	-	-	0,43	2,60	2,50
400	0,075	-	-	-	0,42	2,70	1,70
2x240	0,06	-	-	-	-	-	-
2x300	0,05	-	-	-	-	-	-
2x400	0,04	-	-	-	-	-	-
2x500	0,03	-	-	-	-	-	-

Для экспериментального исследования электрического поля, например электрического поля в воздухе около изолятора высокого напряжения, можно воспользоваться тем обстоятельством, что удлиненное тело из металла или из диэлектрика с **e > p₀**, внесенное во внешнее электрическое поле, стремится расположиться вдоль линий напряженности этого поля. При внесении небольшого экрана в концах проводов у изоляторовЛЭП располагая вдоль

линий напряженности поляи снизить влияния электромагнитных волн, таким образом можно будет сократить потери энергии на воздушных линиях электрических передач. Так как эти потери увеличиваются вблизи их металлических опор линий электропередачи от электромагнитного поля протекающего тока.

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APPEARANCE OF PHOTOVOLTAIC EFFECT IN POLYCRYSTAL SILICON BASED RECEIVER

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Annotation: Polycrystalline silicon-based receivers is an article on the topic of the manifestation of the photovoltaic effect. In this study, the manifestation of the photovoltaic effect for polycrystalline silicon-based receivers is studied. Photovoltaic effect is used to convert light energy into electrical energy and it is very important to choose materials that will have this property. And receivers based on polycrystalline silicon are highly efficient in converting light energy into electrical energy and offer opportunities for widespread use. The results of this research show the possibilities of developing polycrystalline silicon-based photovoltaic receivers with innovative technologies again in accordance with mass goals in the average production and production process. This will lead to a sharp increase in energy consumption and strengthen cooperation on alternative energy sources.

Key words: photovoltaic effect, photoelectric effect, Dember effect, photoelectric effect, solar cell, photon, silicon

Photovoltaics is a technology for converting solar energy directly into electricity. The conversion of sunlight into electricity is based on the photovoltaic phenomenon. Its essence is that due to the impact of photons falling on the p-n junction, free electrons are separated and accumulated. If the p-n junction is filled with two electrodes (anode and cathode), we can already talk about a photovoltaic cell that can pass electricity. Photovoltaics are the energy future of mankind. Hydrocarbon and fuel reserves are not as large as optimists claim. You should also understand that even if hydrocarbon reserves are not completely exhausted, they will be in short supply, and therefore the price of such energy resources will increase sharply. Photovoltaic effect is the generation of an electric current (photocurrent) when illuminating a semiconductor or dielectric sample connected to a closed circuit, or the generation of an emf in a sample illuminated by an open external circuit [1-3].

The first type of photoelectric effect occurs only when light simultaneously creates mobile charge carriers of both types (electrons and holes) and is caused by

the spatial separation of these carriers. Separation is caused by sample inhomogeneity (the surface can play the role of homogeneity) or light inhomogeneity (illumination of part of the sample or absorption of light near the surface). A photoelectric module under non-uniform illumination can also occur due to the "heating" of electrons by the light. This mechanism is similar to the "normal" thermoelectric effect and may be important for band and intraband absorption [4-6].

Tashuvchilarni fazoviy ajratish bilan bog'liq fotoelektrik modul quyidagilarni o‘z ichiga oladi:

The Dember effect occurs when a sample is uniformly illuminated due to differences in the diffusion coefficients of electrons and holes. It can also appear under the same light due to differences in surface recombination rates on opposite faces of the sample.

The photoelectric module is formed by the separation of electrons and holes at the metal-semiconductor contact by the electric field of the near-electrode Schottky barrier, p-n junction or heterojunction field.

The contribution to the electric current comes from both carriers generated directly in the p-n junction region and from those excited in the regions close to the electrode and reaching the high-field region by diffusion. As a result of separation of the pair, a directed flow of electrons to the first region and holes to the p- region are formed. Photocells based on heterojunctions are used as very sensitive, low-frequency radiation receivers, as well as for direct conversion of light energy into electrical energy (solar cell). When recording radiation, the photoelectric module is connected directly to the external circuit or an external source is turned on in series with the circuit, which creates a significant turn-off in the p-n junction. This allows to significantly increase the sensitivity of the device. When the surface of an insulated semiconductor is illuminated, a change in surface potential occurs due to separation of pairs with the nearby electrode barrier area and a change in charge on the surface traps. The potential of the illuminated surface is called floating potential, and its change is called surface emf. The latter can be measured by the vibrating electrode (Kelvin method) or by the capacitor method using intermittent illumination. The measured change in the contact potential difference between the semiconductor surface and the metal electrode includes, in addition to the surface photovoltaic module (the main contribution), the Dember photovoltaic effect that occurs in the near-surface region [7-12].

Volume photoEMF is caused by the separation of inhomogeneous carrier pairs in the volume of the sample caused by changes in the concentration of dopants or

changes in the chemical composition of complex semiconductors. The reason for the separation of the pairs is called the built-in electric field. It is formed as a result of changes in the state of the Fermi level Ep depending on the impurity concentration and as a result of changes in the band Ee (semiconductors with different gaps) in samples with variable chemical composition. For the photovoltaic effect to appear, it is not necessary to have regions with different types of conductivity in the sample. Usually, it is observed when the inside of the sample containing the area where the photoelectric module is installed is illuminated with dark contacts, and when the properties of the semiconductor differ at these limits, it appears as a result of the lack of compensation for the photovoltaic effect of Dember at the opposite limits of the illuminated area it can [13-15].

The photoelectric effect is the appearance of a photocurrent or photovoltaic effect during sample deformation. One of its mechanisms is the appearance of volumetric photovoltaic effect during non-uniform deformations, which leads to the change of semiconductor parameters, primarily Ee, depending on the sample. Another photoelectric module mechanism is the transverse Dember photoelectric module, which occurs during uniaxial deformation, which causes anisotropy in the diffusion coefficient of charge carriers. The last mechanism is the most effective for deformations of multi-valley semiconductors, leading to the redistribution of carriers between valleys. will bring.

The high-voltage photovoltaic effect occurs under non-uniform illumination and is characterized by the fact that the electric field is directed along the surface of the sample, its value is proportional to the length of the illuminated area. Unlike valve and volume photovoltaic modules, whose values do not exceed the bandwidth, a high-voltage photovoltaic module can exceed 10^3 V.

The photoelectric module of the second type arises from the asymmetry of the elementary processes of photoexcitation, scattering and recombination of carriers. This photoelectric module does not require the formation of pairs of free carriers and is observed both during interband transitions, during the excitation of carriers from impurities, and during the absorption of light by free carriers. The described photoelectric module includes:

The impact of the penetration of electrons by photons is related to the asymmetry in the momentum distribution of photoelectrons caused by the transfer of photon momentum to them. In two-dimensional structures during the optical transition between minibands. The gravity of the photocurrent is caused primarily by

electron transitions with a specific momentum direction and can significantly exceed the corresponding current in bulk crystals.

Linear FE does not involve the transfer of photon momentum to electrons, and therefore does not change when the direction of light propagation is reversed (in strictly linear polarization). This is due to the asymmetry of the distribution of photoelectrons created by two mechanisms:

ballistic due to the appearance of a directed pulse during a quantum transition; displacement caused by the shift of the center of gravity of the electron wave packet during the transition. In this case, both light absorption processes and scattering and recombination contribute to the current (these contributions are compensated in the case of thermal equilibrium). In general, the direction and magnitude of the current depends on the position of the plane of polarization of light.

In gyrotropic crystals, when illuminated with circular (elliptical) polarized light, a circular photovoltaic effect occurs, and the sign changes when the sign of circular polarization changes. The reason for this effect is the connection between electron spin and its momentum in gyrotropic crystals. Electrons, when excited by circularly polarized light, cause their spins to become optically oriented, while simultaneously having a directional momentum. The opposite effect was also observed - current-induced optical activity; it is caused by the orientation of the spins in the gyrotropic crystals when the current passes.

Linear and circular photoelectric modules, as well as the gravity effect, are used to create inertial receivers of intensive (laser) radiation. In dielectrics, linear optical memory is the main mechanism because it causes a change in the refractive index that persists after the light is turned off and depends on its intensity. This change is caused by the electric fields frozen by recharging the traps with photocurrents.

The surface photoelectric module results from the scattering of light-induced charge carriers on the surface. With interstitial absorption, it occurs under conditions where a significant fraction of excited carriers can arrive without scattering. In this case, due to the reflection of electrons from the surface, the ballistic current appears normal to the surface. When the excitation of carriers occurs, they are aligned along the pulse, that is, if their distribution function is anisotropic, a current flowing along the surface can also appear. For this, the average values of the momentum component along the surface for electrons moving towards and away from the surface should be non-zero and differ in sign. Such distribution occurs, for example, when carriers are excited from the degenerate valence band to the conduction band of cubic crystals. During inelastic (diffuse) scattering on the surface, the electrons that reach it lose the

momentum of the direction along the surface, and the electrons moving from the surface retain it, which leads to the appearance of current along the surface. When light in semiconductors and metals is absorbed or reflected by free carriers, surface PE occurs at oblique incidence of light, as well as normal incidence, if the surface normal does not coincide with one of the principal axes of the crystal. to the transmission of a photon pulse. Photovoltaic refers to the direct conversion of sunlight into electrical energy through a physical reaction. This electrification process is carried out by solar panels, which are usually connected in series to form photovoltaic modules. Photovoltaics is a method of generating electricity by using photosensitive cells to convert solar energy into electricity. This is the simple mode of operation of a photodiode, in which the electric current comes only from the converted light energy. Almost all photovoltaic devices are varieties of photodiodes. In photovoltaic systems, the conversion of solar energy into electrical energy is carried out in photovoltaic converters. Depending on the materials, design and manufacturing method, it is customary to distinguish three generations of photovoltaic module cells:

First generation solar cells based on crystalline silicon wafers;

Second generation solar cells based on thin films;

Third generation solar cells based on organic and inorganic materials.

To increase the efficiency of solar energy conversion, solar cells based on cascaded multilayer structures are being developed. The first generation solar cells based on crystalline wafers are currently the most widely used. Over the past two years, manufacturers have been able to dramatically reduce the cost of producing such solar cells, which has strengthened their position in the global market.

Types of first generation solar cells:

monocrystalline silicon;

polycrystalline silicon;

Based on GaAs;

tape technologies;

thin film polycrystalline silicon.

The production technology of the second generation of thin film solar cells includes the application of layers using the vacuum method. Vacuum technology uses less energy than crystalline solar cell production technology and is characterized by low capital investment. This allows the production of flexible, inexpensive solar cells with a large area, but the conversion coefficient of such cells is lower than that of the first generation solar cells.

Types of second generation solar cells:
amorphous silicon;
micro and nanosilicon;
silicon on glass;
cadmium telluride;
copper-(indium-)gallium selenide.

The idea behind the creation of third-generation PV cells was to further reduce the cost of PV cells by abandoning the use of expensive and toxic materials in favor of cheap and recyclable polymers and electrolytes. An important difference is also the possibility of applying layers using printing methods, for example, using roll-to-roll (R2R) technology. At the moment, the main part of projects in the field of third-generation solar cells is at the research stage.

Types of third generation solar cells:
dye photosensitized;
organic;
inorganic.

PV cells are assembled into modules with standardized installation dimensions, electrical parameters and reliability indicators. Solar modules are equipped with current inverters, batteries and other elements of electrical and mechanical subsystems for installation and transmission of electricity.

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OBTAINING ELECTRICAL ENERGY USING DEVICES COLLECTING SUNLIGHTS

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Abstract: Today, the demand for electric energy is increasing, and traditional fuels are not inexhaustible. That is why we are trying to find different ways to get electricity from renewable energy sources. One of these methods is to obtain electricity through solar concentrators. Using theoretical data, we can see the possibilities of obtaining electricity from solar concentrators.

Key words: solar concentrators, temperature, radiation, parabolic concentrators, Stirling engine, electric current, voltage.

Recently, the energy sector is facing a number of important problems. More specifically, the ever-increasing demand for energy [1] due to new lifestyles and population growth [2]. In addition, climate change is mainly related to CO_2 emissions, as a result of which the events of sudden changes in the weather have increased, the temperature has increased around the world, and changes in the sea level and ecosystem [3] have started to occur. Many studies aimed at preventing these incidents are being carried out.

Currently, the use of renewable and alternative energy sources is one of the ways to solve problems in energy systems. One of these sources of energy is the sun, and the use of highly efficient methods for the effective use of its energy leads to achieving high results in the field [4-6].

Solar concentrators are one of the main devices in the use of solar energy. The advantage of solar concentrators is that they collect the rays from the sun and create a high temperature at the focus of the device. This helps to increase the efficiency of the system. The analysis of articles on solar concentrators shows that the research conducted in this field is increasing year by year, and at the same time good results are being achieved [7-9].

At the moment, as a result of the increasing need for electricity, humanity is becoming dependent on alternative energy sources. In order to meet these needs, a cheap, high-quality, low-cost energy source is necessary. Due to the scarcity and high

cost of non-renewable resources, many countries are trying to ensure their energy consumption through renewable resources. Therefore, the development of solar energy remains one of the urgent issues. About 120000 TW (terawatt, 1012 w) of energy from the sun enters the Earth's atmosphere annually. True, not all of this energy can be absorbed, but even 0.002% of it is enough to completely cover the world's energy needs [10-12].

Figure 1. Solar concentrator

The use of solar energy is beneficial for countries in many ways. First, this type of energy is absolutely free. Secondly, energy from the sun can be obtained both by building large stations and by creating small economic networks. Thirdly, obtaining solar energy is absolutely harmless, it does not harm the atmosphere and hydrosphere at all. Fourthly, solar energy can be used not only for obtaining electricity, but also for utility services (home heating or hot water supply). That is why many countries are trying to use solar energy in a comprehensive way.

Solar concentrators receive the sun’s rays and concentrate them into a single point of energy. A parabola is the ideal shape for a solar concentrator. This is familiar to us from when we tried to heat paper and small wooden children as children. It is a simple biconvex lens. This device is capable of concentrating a part of the diffuse radiation that increases the light energy to a high level and is resistant to fire [13].

The net efficiency of converting solar energy into electricity for the Stirling generator system reached 29.4% in 1984. Additionally, in 1984, two 17m diameter Stirling dish systems (capacity =50kW each) were installed and commissioned in Riyadh, Saudi Arabia. The systems achieved an electrical output of 53 kW and a net conversion efficiency of 23%. A large Stirling plant was recently built in Arizona, USA. The construction of a station consisting of 60 engines with a capacity of 25.0 kW each is included in the plan. When using solar energy, a temperature of approximately 600-750°C is collected in the focus of the solar collector. The ability to use the Stirling engine as a hybrid makes it a more efficient form of energy [14].

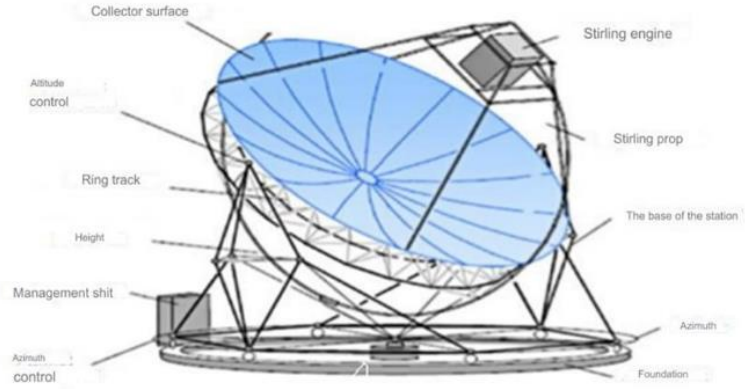

Figure 2. Solar concentrator construction

Solar energy is lost before it reaches the collector and receiver. Most of the thermal losses of a Stirling engine occur in the receiver of the system. Heat losses of the receiver are distributed through the receiver body and through the convection cavity to the environment. Conduction losses are relatively small and can be effectively reduced by proper application. About 40% of the total is lost by the receiver through natural convection and can be significantly reduced by placing a glass or quartz mirror.

A Stirling engine is a heat engine, a type of external combustion engine, in which the working fluid in the form of gas or liquid moves in a closed volume. The principle of operation is based on the periodic heating and cooling of the working fluid, releasing energy as a result of pressure changes due to heat. It can work not only from the combustion of fuel, but also from any heat source [15].

In the Stirling engine, a Stirling cycle is used, which in terms of thermodynamic efficiency is not inferior to the Carnot cycle and even superior. The fact is that the

Carnot cycle consists of isotherms and adiabats that are not very large from each other. The Stirling cycle consists of four phases and is distinguished by two transitions: heating, expansion, transition to a cold source, cooling, compression and transition to a heat source. Thus, the gas in the cylinder expands and contracts during the transition from a warm source to a cold source. At the same time, the pressure changes, as a result of which useful work can be obtained.

Heating and cooling of the working fluid is carried out by the regenerator. Ideally, the amount of heat released and received by the regenerator is the same. Useful work is done only due to isotherms, that is, it depends on the temperature difference between the heater and the cooler, as in the Carnot cycle. An external heat source heats the gas at the bottom of the heat exchanger cylinder. The created pressure pushes the working piston up (displacement, i.e. displacement) the piston does not fit tightly against the walls). The flywheel pushes the displacement piston downwards, thereby transferring the heated air from below into the cooling chamber. The air cools and contracts, the working piston falls. The displacement moves the piston upwards, thereby transferring the cooled air to the bottom, and the cycle repeats.

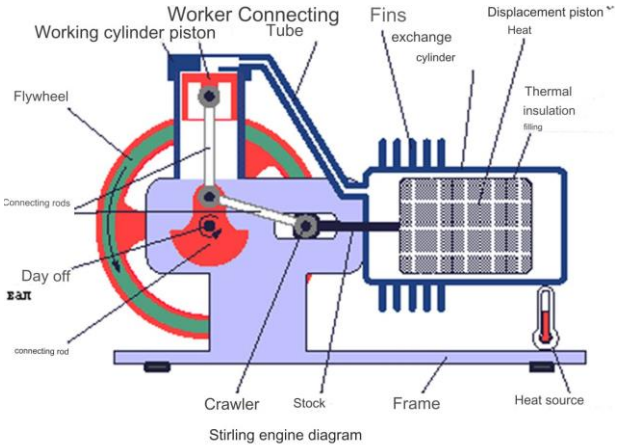

Figure 3. Stirling engine structure

In a Stirling engine, the working piston motion is offset by 90° relative to the displacement piston motion. Depending on the sign of this displacement, the machine can be a motor or a heat pump. With a 0° shift, the machine does no useful work.

In conclusion, it can be said that in order to bring the work activity of the structures of the entire world energy system to a higher level, further reforming of energy systems, obtaining alternative energy sources, facilitating people's life is an important cross-cutting task. In this regard, large-scale work is being carried out all over the world. We can save millions of dollars in solar energy alone. Increasing the

number of solar furnace power plants and increasing their efficiency is one of the priority areas before us.

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DEVICES COLLECTING SUNLIGHTS

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Annotation: In this article, the geometrical design of a paraboloid concentrator that concentrates sunlight to a single focal point is considered. Such solar concentrators are distinguished by their convenience and ease of application in the public and agricultural sectors.

Key words: Parabola, paraboloid, solar concentrator, focal length, surface, size of focal length, mirror, temperature, radiation.

Wide use of alternative energy sources is in accordance with the priority goals and tasks of energy security of each country and is one of the rapidly developing areas of the energy sector. In the future, the use of renewable energy sources is undoubtedly necessary to ensure energy, environmental, economic security and sustainable development of the energy sector in the Republic of Uzbekistan. A prerequisite for preserving natural resources and protecting the environment for future generations is the development of renewable and alternative energy sources.

This article provides information on a solar kitchen designed for home use, especially for making tea or cooking for a small family. the device consists of a concentrator in the form of a paraboloid, which consists of a large number of mirrors. The base of the solar concentrator is made of gypsum (alabaster) [1-4]. Since gypsum is a substance that hardens within 1-2 minutes after being mixed with water, the mold used to create a paraboloid shape was cut from a metal plate to make it simpler, lighter and easier to move. For this, a drawing of a parabola with a focal length of 70 is drawn on a metal plate. In the process of cutting a parabola-shaped mold from a metal plate according to a parabola drawing, accurate work in millimeter order is required, otherwise the mold may not meet the requirements [3-6].

Regarding the geometric shape of the paraboloid, we first determine that it is circular (neither elliptical nor hyperbolic), that is, a spherical paraboloid can be formed by the rotation of a parabola about its axis. The only remaining parameter is the focal length, which serves to define the parameters of the circular paraboloid.

Determines how wide or narrow it is. An analytical circular paraboloid can be represented in the Deckard coordinate system [7-9].

We see drawings of different parabolas of different focal lengths with a single axis of symmetry [Fig. 1].

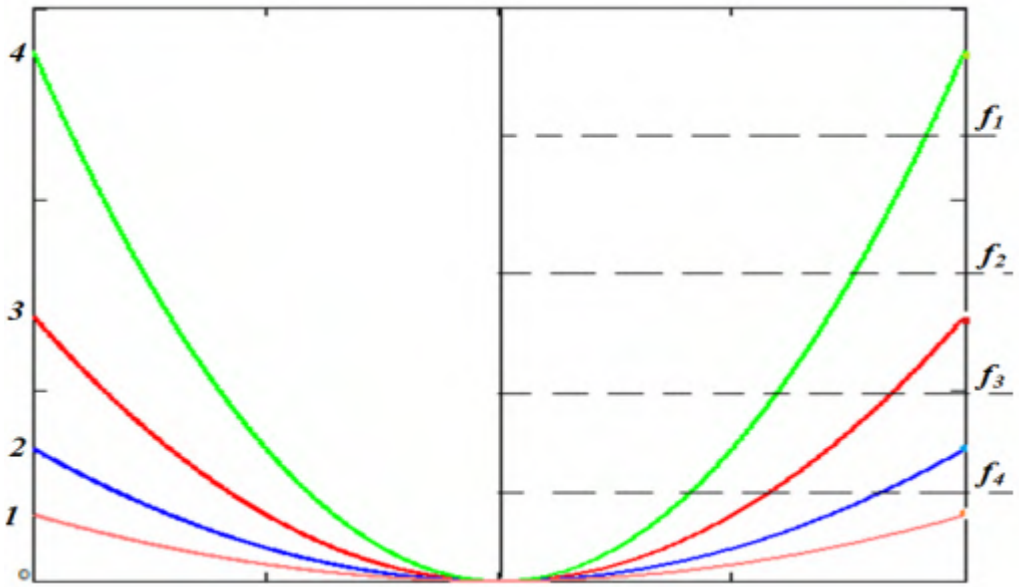

Figure 1: Array of parabolas with different focal lengths

The proposed device is designed for household work, especially for making tea or cooking for a small family. The device consists of a paraboloid concentrator and is cast from gypsum. Since gypsum is a substance that hardens within 1-2 minutes after being mixed with water, the mold used to create a paraboloid shape was cut from a metal plate to make it simpler, lighter and easier to move. We know the equation of drawing a parabola with its coordinates when the central point F is given [10-11].

$$y = \frac{x^2}{4f}$$

If the values of X are matched to the values of Y, it is possible to assign appropriate points to each pair of X and Y values in the rectangular coordinate system. A drawing of a parabola with a focal length of 70 cm is drawn on a metal plate [12-15]. This parabola is shown in Figure 2 below.

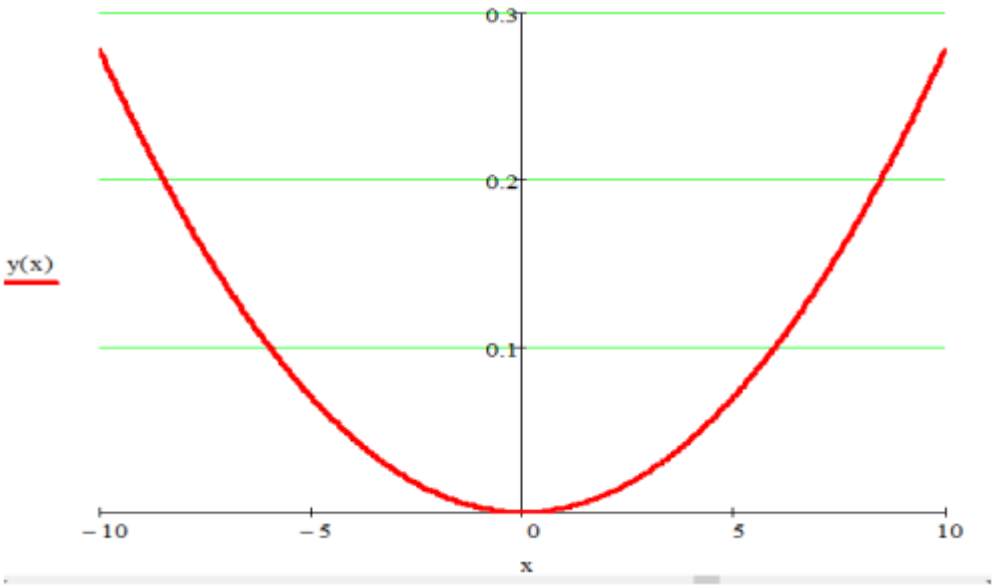

Figure 2. A drawing of a parabola with a focal length of 70 cm.

There are several ways to draw a parabola, and we will consider some of them. Let's assume that the point M lies on the parabolic line Lp. In this case MF= MD Figure 3.

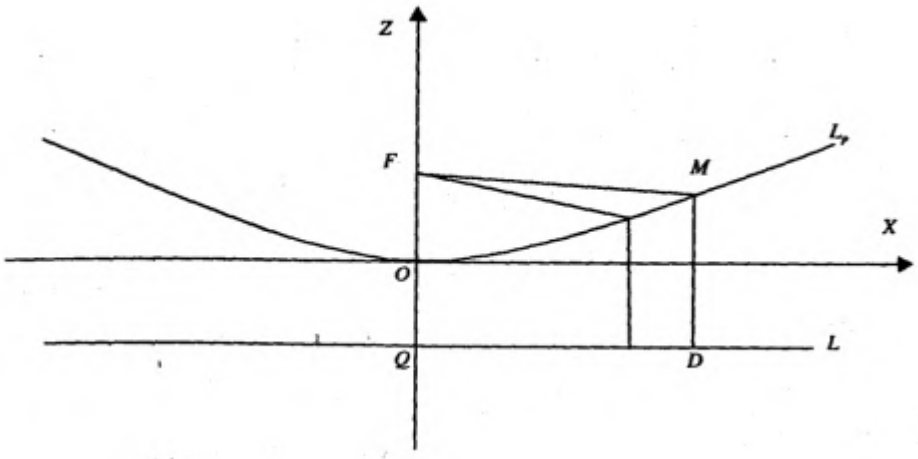

Figure 3. The process of drawing a parabola line.

From the equation to determine the parabolic focus distance

$$X^2 = 4f \cdot Y$$

Or $$x^2 = 2p \cdot Y$$

Here, p=FQ is the distance from the focal point of the parabola to the standard line; f=0F=p/2 is the focus distance of the parabola; F is the central point of the parabola; 0 is the tip of the parabola.

A straight line through the central point and the tip of the parabola is the main axis of the parabola.

$$\tan\psi = \frac{x_0}{f - \frac{x_0}{4f}}$$

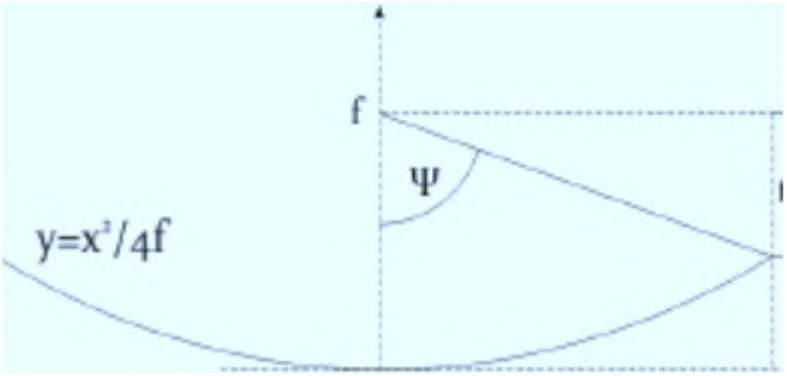

Figure 4: Representation of an angle in the intersection circle of a paraboloid

The time taken to boil 0.5 liters of water in the device and the dynamics of temperature change are considered.

Figure 5. A real view of a paraboloid whose surface is covered with 5x5 cm mirrors.

Conclision

Information on the creation technology of the paraboloid solar kitchen was presented to obtain and analyze the results. In the process of making the device, some information was given about the raw materials used and suggestions were made.

Additional information about the technology of creating the device using the literature was given. Thermal technical parameters of the device were analyzed in the process of conducting experiments on the broken device. We calculate the relationship between the time and temperature of 0.5 liters of water until it boils. It is recommended to further improve the device and start production for its use in agriculture.

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HIGH TEMPERATURE SOLAR CONCENTRATORS

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Introduction. This article examines the technology, advantages and disadvantages of high-temperature concentrators that concentrate sunlight.

Keywords: Technology and Working Principle, Advantages and Limitations of High Temperature Solar Concentrators, Recent Developments and Future Prognosis, Parabolic Cylindrical Concentrator.

The latest innovations in the field of energy include many technological solutions, but some of them are high-temperature solar concentrators in the field of solar energy, as well as other innovative technologies. The latest innovations in the field of solar energy are being created in various forms such as solar concentrators, improved and efficient solar panel devices, solar energy recycling technologies and the possibility of using other alternative energy sources. These innovations are designed to ease energy challenges, interconnections and energy storage.

High-temperature solar concentrators in the field of solar energy are one of the innovative technologies with high efficiency in converting solar energy into energy sources. They are used to bring the sun to a high temperature by focusing it in an optical line. These concentrators include their importance in solving severe energy problems and as clean and efficient energy sources in the energy supply sector [1-3].

At the same time, the use of other alternative energy sources is one of the latest innovations in the field of energy. These technologies include, for example, intensive heating, wind and water energy, biogas, gel-gas and other highly efficient and clean energy sources.

The technology of high-temperature solar concentrators is one of the innovative technologies used to bring solar energy to high temperatures. They are based on bringing the sun to a high temperature by focusing or concentrating it in an optical line. These concentrators are used to concentrate solar energy and process energy.

The working principle of high temperature solar concentrators involves harvesting energy by focusing and concentrating the sun. In this technology, in the process of concentrating the sun, optical elements and devices are used to concentrate

the light energy of the sun. Optical elements are similar to solar panels that are important in focusing and concentrating the sun.

The working principle is that the optical lines intercept the sun from its surface and bring it to a high temperature of its combined focusing. Optical lines are used to concentrate the sun, extract energy from long distances, or create heat. Proper selection and alignment of optical systems, as well as the geometry of the concentrator, are important to ensure good performance and efficient energy harvesting [4-6].

The main principle of the technology of high-temperature solar concentrators is to increase the energy mask, concentrate the sun and ensure its efficient use. Concentrators created on the basis of these principles have high efficiency in transferring solar energy to energy sources and help to solve problems in the energy sector.

1 - Figure parabolosylindrical concentrator

As one of the huge constructions built using parabolosylindrical concentrators, it is possible to show the water discharge device of Schuman-Boys in 1913 (Egypt). The surface of the mirror collector in the device is 1277 m^2, it consists of 5 large parabola cylindrical concentrators with a length of 62.5 meters and a width of 4.1 meters.

High-temperature solar concentrators have several advantages in the field of energy, but they also have limitations. The advantages of solar concentrators include the ability to process solar energy more efficiently and accurately, but their limitations, such as weather conditions, inconsistencies in technology, or problems in the process of conducting experiments, are firmly established. should be shown [7-8].

Advantages:

Efficiency: One of the advantages of high temperature solar concentrators is efficiency. The optical elements and technologies used in them ensure a high level of efficiency in concentrating solar energy.

Clean energy source: These concentrators are a clean energy source because they harness solar energy by focusing it. As a result, the energy obtained through concentrators is clean and ecological.

Various fields of application: The advantages of high-temperature solar concentrators are distinguished by a wide range of applications compared to other energy sources. They can be successfully used in electricity, heat, water heating and other fields.

Low costs: Through the use of high-temperature solar concentrators, the costs of obtaining energy are light, because they use the cancellation of the sun, and it is light on the input part of the energy supply, and does not require light limited service personalities to serve them.

Limitations:

Weather conditions: Weather conditions in the design and operation of solar concentrators can be an important limitation. Water, clouds, cleanliness and other weather conditions can affect the performance of concentrators.

Technological mismatch: Another limitation of high temperature solar concentrators can be technological mismatch. These technologies are still developing and may require experimentation and technological solutions at their operational locations.

Location problem: There is also a problem with location of solar concentrators. During their development and installation, location issues may arise, such as the geographic location of the location and the orientation of the sun's location against the full day.

Land requirement: Land may be required for installation of solar concentrators. Their effectiveness may depend on the conditions needed on the ground to install the concentrators.

As these develop further, the advantages and limitations of solar concentrators are expected to increase.

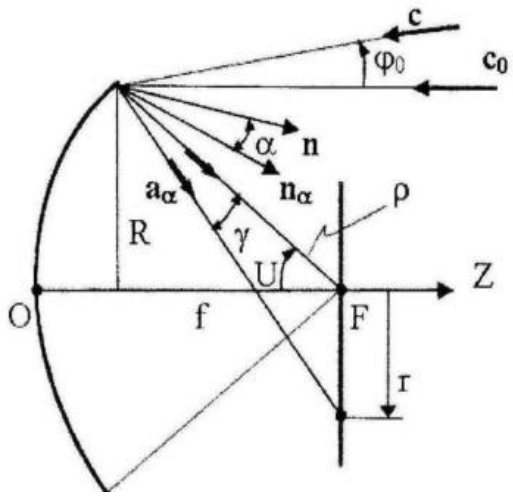

Fig. 2 is a paraboloid concentrator located at the focal point of a flat beam absorber

Let the sun's rays fall parallel to the optical axis of the parabola $\varphi_o=16'$. It is known that the Sun is a light source with an angular radius for the Earth.

Concentrators can be paraboloidal, parabola cylindrical, ellipsoidal and conical according to the geometrical structure of the sun's reflecting surface. However, in practice, paraboloid and parabola cylindrical concentrators have a larger scale. The surface of the mirrors is made of highly polished glass covered with a thin layer of silver or aluminum, A95 pure aluminum and even polymer materials through thermal, mechanical and chemical processing. The reflection coefficient of such mirrors is around $\rho=0.85\div0.90$. Solar radiation concentrators can be divided into single-mirror and multi-mirror types depending on the number of mirrors. Optical schemes typical for the use of single-mirror concentrators are shown in Fig. 3 [9-12].

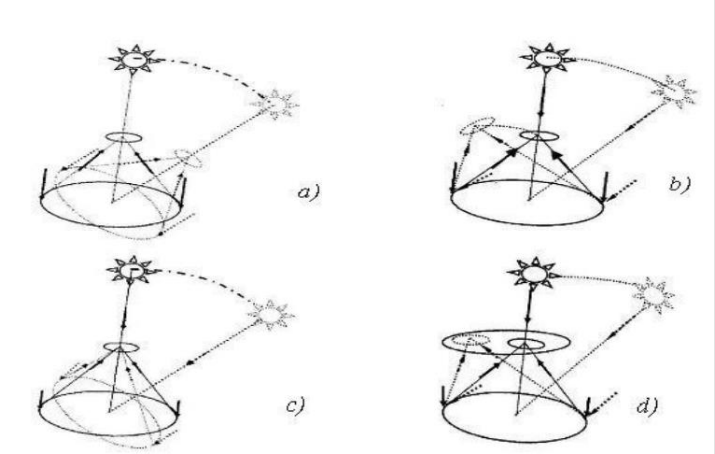

Figure 3. The optical scheme of single-mirror solar radiation concentrators: a)-the concentrator and the absorber are interconnected and move according to the

visible movement of the sun; b- concentrator is fixed, light absorber is mobile; c) – the concentrator is movable, the absorber is fixed; d) - concentrator and light absorber are fixed.

Recent developments and future prognostications can be an example of a time frame regarding the challenges and prospects of high-temperature solar concentrator technology. Recent developments and future prognostications of solar concentrators are concerned with the interrelationships and limitations of using solar energy with more efficient and improved solar concentrators. A study of the recent developments and future prognostications of solar concentrators teaches that solar energy will play a major role in the energy supply.

Materials and Technologies: Recent developments have focused on the materials and technologies used in solar concentrator technology. New materials and technologies are used to achieve high efficiency and simplify production processes, to provide more efficient development of the solar panels needed for energy collection, and also to improve the improvement of energy production obtained by concentrators.

Efficiency: In the future, increasing the efficiency of solar concentrators and the use of appropriate materials and technologies will be required. This is essential for improving efficiency, ease of converting solar energy into energy sources, and reforming manufacturing processes.

Clean and Renewable Energy: Recent developments seek to increase the use of solar concentrators as sources of clean and renewable energy. In the future, the energy obtained with the help of solar concentrators should be more efficient, clean and ecological. For this, concentrators and their used materials must be properly selected and adjusted [13-15].

Energy Supply and Consumption Ways: In the future, the energy supply and usage areas of solar concentrators will expand. This is due to the expansion of their wide use in the supply of electricity, heat energy, water consumption and other areas.

Future prognostication shows the importance of solar concentrators in the energy sector. Their good development and widespread use play an important role in solving energy problems and ensuring the use of environmentally clean energy sources.

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GROUP CONNECTION OF TRANSFORMERS

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Abstract: For a three-phase electric transformer, the connection group refers to the specific arrangement of the primary and secondary windings of the transformer. This determines how the windings are connected to form a particular configuration and is necessary to ensure the correct voltage and phase ratios between the input and output.

Key words: Y-Y and Star connection, Y-D connection, harmonic reduction, Z-connection group, electric micromachines, single operation mode, short circuit mode, load operation mode.

Introduction: A transformer is a static (non-rotating) electromagnetic converter that converts alternating current voltage (frequency f = const in this process). However, since the working principle of the transformer is based on the phenomenon of electromagnetic induction, like that of electric machines, and the physical processes in alternating current machines are similar to those of transformers in many ways, studying the basics of the theory of transformers in this course allows for a deeper understanding of the theory of alternating current machines.

Electric machines are classified as.

By power:

1) up to 500 W - electric micromachines;
2) 0.5< P<10 kW — low power;
3) 10<P< 200 kW — medium power;
4) power P>200 kW — high power;

according to the rotation frequency:

a) n = 300 rpm. to - low speed;
b) n = 300 + 1500 rpm - medium speed;
d) 1500 < n < 6000 rpm - high speed;

e) n > 6000 rpm - high-speed electric machines.

In the process of using transformers, there are mainly three types of operating modes.

1. Normal operation mode. The mode in which the primary winding of the transformer is supplied with rated voltage and the secondary winding is unloaded is called its pure operation mode.

2. Short circuit mode. If the secondary winding of the transformer operating at nominal load is accidentally short-circuited, then this mode is called short-circuit mode. In this case, a current 10-20 times larger than the rated current can pass through the circuit breaker. In this case, the relay protectors will be activated and disconnect it from the electrical network at once, otherwise, major malfunctions may occur in the transformer.

3. Download mode. In this mode, loads of its characteristic sizes are connected to the transformer, and it works in the nominal state. To determine the parameters of a short-circuit transformer, a short-circuit experiment is used. If a Zn load is connected to the secondary winding of a transformer in a single-mode operation, the load current (I) 2 is generated. In this case, it is not necessary to take into account the voltage drop in the primary coil chain, since it is small. This mode of operation is a load mode. A transformer whose secondary parameters are equal to the primary can be replaced by an equivalent circuit. Therefore, the electrical circuit equivalent to the given transformer is called the equivalent circuit of the transformer. On the basis of the equivalent scheme, the analysis of the electromagnetic processes in it and the calculation of the power network connected to the transformer are much easier. The main factor in the distribution of electricity from long distances to consumers, measurement works and the creation of a general energy system is the use of transformers.

Let's take a closer look at the simple operation mode of the transformer. In salt mode, the current in the secondary circuit is zero, but the current in the primary circuit is not zero. When the secondary circuit is disconnected, the current in the primary circuit is called the operating current and is denoted by λ s. In the technical description of the transformer, the value of the primary circuit voltage equal to the nominal value is given as the operating current. The operating current is 2-10% of the nominal current In. Power loss in salt mode means loss in the steel core. This waste is the residual currents in the core and the power lost in the process of remagnetization. This is denoted by the letter israf and is referred to as steel israfl. The parameters necessary for the operation of the transformer are calculated only by

the operating current and steel consumption. Therefore, these two quantities are necessarily given in the technical description of the transformer. The power loss of the transformer is only 0.2-0.8% of the rated power.

Primary Section: For a three-phase electrical transformer, the connection group refers to the specific arrangement of the primary and secondary windings of the transformer. It determines how the windings are connected to form a specific configuration and is necessary to ensure the correct voltage and phase ratios between the input and output. The choice depends on the specific application, voltage requirements and electrical system design. Different countries and regions may have their own standards and preferences for transformer connection groups, so local practices should also be considered.

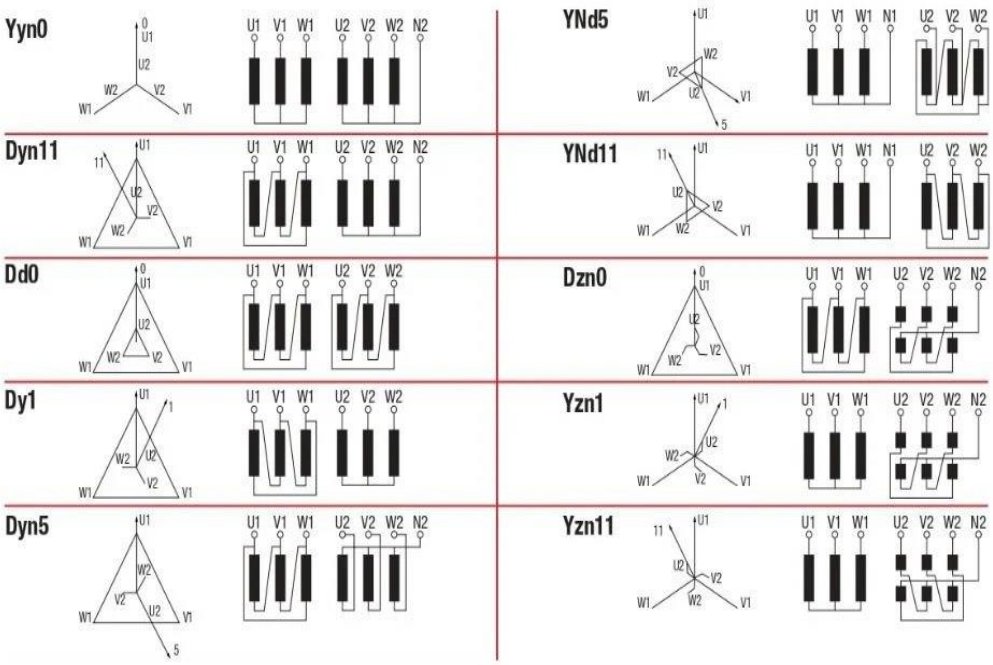
Common applications and connection groups are as follows: The phase windings of three-phase transformers are interconnected to provide a three-phase, three- or four-wire supply through three different connection modes.

A) mesh or delta connection

B) star connection

C) zigzag connection

Each of them can be reached in two ways. Primary and secondary can be treated in two ways, so at least twelve ways of connection are possible. Twelve methods are shown in Fig



They are divided into the following four main groups according to the phase shift that exists between the line voltages on the two sides of the transformer.

Group 1: zero phase shift (Yy 0, Dd 0, Dz 0)

Group 2: 180° phase shift (Yy 6, Dd 6, Dz 6)

Group 3: 30° delay phase shift (Dy 1, Yd 1, Yz 1)

Group 4: 30° lead phase shift (D y11, Y d11, Y z11)

It was observed in group 4 that if the voltage of the HV line is maximum, the voltage of the lv line is increased by 30°. With group no. 1 has no phase shift, but group 2 gives a 180° phase shift. Group 3 leads to a delay of lv line voltage by 30 °. The main requirement for parallel operation of transformers is that the transformer connections belong to the same basic group.

A Zig-Zag connection is an example of a partial winding, and its effect is to reduce third harmonics in the line-to-neutral voltage as well as in the line voltage.

Ezoic: Compared to a normal phase connection, each phase requires 15% more turns for a given total voltage, which may require an increase in the size of the frame typically used for a given rating. Nevertheless, the advantages of the zig-zag arrangement may offset the costs; unbalanced loads on the secondary side are better distributed on the primary side. Zig-zag-star connection is used in HV transformers in cases where delta connections are mechanically weak (due to the large number of turns and small copper pieces); also for rectifiers.

Yy or Y-Y: This configuration connects the primary and secondary windings in a "Y" or "star" configuration. It is characterized by a neutral point in the primary and secondary windings.

Distribution Transformers: Yy is commonly used in distribution transformers that supply power to residential, commercial and industrial areas. The yy configuration allows for a grounded neutral point, which is important for safety and handling unbalanced phase loads.

Grounding: The Yy configuration provides a neutral point that can be connected to ground for safety and protection against fault currents.

Low Voltage Systems: Yy connections are often used in low voltage systems where a neutral point is required for practical and safety purposes.

Dd or D-D: In this configuration, the primary and secondary windings are connected in a "delta" configuration. There is no neutral point in this arrangement. Isolation transformers: in situations where electrical isolation is critical, such as in sensitive electronics or where there are strict safety requirements, the Dd configuration is used to provide electrical isolation without a grounded neutral point.

Industrial Applications: Dd transformers can be found in industrial settings, especially where it is important to maintain a constant voltage ratio between the primary and secondary sides. This is often found in manufacturing processes and heavy industry.

Special voltage ratios: In cases where a specific voltage ratio must be maintained without neutral connections, the Dd configuration is a suitable option.

Yd or Y-D: This arrangement connects the primary winding in a "Y" configuration and the secondary winding in a "delta" configuration.

Phase Splitting: The Yd configuration can be useful when a three-phase supply needs to be split into two-phase sources. This can be useful in certain industrial processes or loads that require such adjustment.

Neutral Current Reduction: In cases where the load on the secondary side is unbalanced and produces significant neutral current, using a Yd setting on the primary side can help reduce this neutral current.

Transformer Taps: Some transformers have multiple taps on the primary winding, which allows the turns ratio to be adjusted. Yd connection can be one option that offers versatility in transformer application.

Dy or D-Y: Connects the primary winding in a "delta" configuration and the secondary winding in a "Y" configuration.

Voltage step-down: Dy settings are often used when it is necessary to step down the voltage from the primary side to the secondary side of a transformer while providing a neutral point on the secondary side.

Load balancing: It helps in balancing unbalanced loads on the secondary side and limits the flow of zero sequence current in case of earth fault, which can be useful in certain industrial applications.

Harmonic Reduction: A D-Y connection helps to smooth out harmonics in the electrical system. A delta winding can suppress some of the harmonics that may be present in the load.

Conclusion: Why is a three-phase system preferable to higher phases? The three-phase system is universally used for the generation, transmission and distribution of electricity.

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ГИДРОТЕХНИЧЕСКИЕ СООРУЖЕНИЯ БЕЗОПАСНОСТЬ

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Аннотация: Необходимо иметь навыки оценки безопасности гидротехнических сооружений, декларирования безопасности, кадастра, разработки критериев безопасности.

Ключевые слова: Должен знать систему контроля при проектировании, строительстве, вводе в эксплуатацию, эксплуатации, реконструкции, восстановлении, консервации и достройке гидротехнических сооружений;

- За последние годы анализ крупных аварий с катастрофическими последствиями в разных странах мира показал, что основные причины их возникновения связаны с человеческим фактором, при котором неподготовленные пользовательские службы не смогли ликвидировать аварии, произошедшие на гидротехнических объектах. . Около 50% аварий и связанных с ними аварийных происшествий происходят из-за низкой квалификации эксплуатационного персонала, неправильной работы.

организация, нарушение норм и правил безопасности гидротехнических объектов, а также неэффективный контроль за их безопасностью.

- Следует отметить, что обеспечение безопасности гидротехнических сооружений - это, прежде всего, вопрос соблюдения производственным персоналом эксплуатирующих и строительных организаций, органов государственного контроля, проектировщиками и специалистами научно-исследовательских организаций требований, вытекающих из действующего законодательства, нормативно-правовых актов. и нормативно-технической документации, а также соответствия гидротехнических сооружений вопросам качества, контроля безопасности и контроля технического состояния.

- После обретения независимости нашей страны были созданы эффективные и действенные меры по обеспечению надежности и безопасности технического состояния существующих гидротехнических

сооружений республики, а также их правильного использования. В частности, приняты законы «Вода и водопользование» (1993 г.), «О безопасности гидротехнических сооружений» (1999 г.).

- В нашей стране накоплен определенный опыт использования гидротехнических сооружений, но этот опыт необходимо обогащать и применять на практике на основе современных научных работ с учетом того, что существующие гидротехнические сооружения устарели.

a) По мнению ряда ученых и экспертов, система рисков зависит от возможного результата (риска) в случае опасного события и делится на две большие группы: возможность получения чистого, природного, экологического, отрицательного или нулевого результата;

b) спекулятивный (финансовый) – получение как положительных, так и отрицательных результатов - возможность.

- По данным ГТИ, опасные события связаны с использованием платной воды или несвоевременным финансированием ремонтных работ. Понятие риска – это универсальная количественная мера потенциального риска, которая обеспечивает:

- По экспертной оценке ученых и ведущих специалистов установлено, что ежегодно в среднем происходит более 100 аварий на ГТИ. Их основными причинами являются: неудовлетворительное техническое состояние объектов и низкий уровень эксплуатации, дефекты строительства, неправильный прогноз объемов паводков, ошибки в проектировании. В связи с этим в нормативных документах повышены требования по обеспечению безопасности ГТИ.

Процесс управления рисками определяется рядом основных задач, стоящих перед проектировщиками, строителями, эксплуатантами, представляет собой единую систему и позволяет выявить возможные угрозы. Риски оцениваются путем анализа вероятности и частоты их возникновения, а также анализа их последствий. На основе аналитических данных аварий и прорывов плотин и по методике ряда ученых проведен расчет риска аварий ГТИ по 4 классам. Сравнивая результаты расчетов, произведенных по методике зарубежных ученых для капитальных сооружений 3 класса разного уровня безопасности, фактически разные методы дают примерно одинаковые результаты.

Водоотводные сооружения гидроузла расположены на левом берегу шахтная вода с общим водозаборным трактом кран и второй ярус состоят из крана с водой.

Аварийный (катастрофический) расход воды (1200 м3 / с) через гидроузел пропускная способность через тоннель II яруса - 450 м3/с, через ГЭС – 500 пропуск воды м3/с, а в водохранилище - путь удержания воды 250 м3 / с это делается с помощью.

Основным водосбросным сооружением гидроузла является шахтная вода метатель служит. 14, который закрывается сегментными затворами m.li Вход в виде неполного даганака (воронки) с 4 пролетами (оголовье), состоящий из круглой конической шахты. Даганака общий угол поворота 910, длина входа в даганак по кругу - 91 м, сама шахта 11 m.li 80 м с постоянным внутренним диаметром. ли состоит из вертикального цилиндрического стержня (ствола), стержень представляет собой сжатое отверстие (горловина) и от нее поток воды изогнут 11 m.li от локтя отходит сжимающая выпуклость-пятка (vistup-носок). Шахта железобетонная, с покрытием толщиной 1,5 м, а в локтевом отделе, учитывая высокую степень изменения давления воды толщина несущего покрытия увеличена до 2,0 м.

Второй ярус водонапорного сооружения в виде тоннеля, диаметр-9 м, вход помещение для работы затворов в секции и далее без открытого давления построен в виде трубы. Водосброс сбрасывает воду с гидроэлектростанции и воду в ирригацию служит для отвода талых и катастрофических паводковых вод.

Гидроэлектростанции расположены на правом берегу реки Чирчик водозабор, напорный двойной туннель, ГЭС состоит из здания и водозаборного канала. Порог водоприемника вода на 80 м ниже нормального уровня для тушения, грили решетчатый с запасным следом(клином), предназначенный для сменного литья оборудован. Ремонт ниже туннеля по течению для управления затворами установлена шахта. Носители воды на двух уровнях: верхний - на отметке водоприемника, а нижний - турбина выполнена по спиральной схеме. Напорные туннели имеют длину 770 и 852м, каждый из тоннелей с сепараторами, подающими воду на два агрегата конец.

Водозаборное сооружение включает водозабор башенного типа, головная трубопроводная часть водовода от водоприемника - участок тоннеля водовода, камера ремонтных затворов (ТЗК), вода участок тоннеля укладчика, основные и аварийно-ремонтные затворы входит здание.

Водоприемник, трубопровод и часть туннеля водоприемник совмещен с конструкцией. Длина туннеля вместе с водозабором - 964,5 м. В частности, туннель отделен от 3+98,1 ПК водозабором идет. Эксплуатационная вода сбрасывается по левому берегу реки Бурея, Он спроектирован так, чтобы пропускать 300 м3 / с воды. Здание ГЭС относится к предпрудинному типу, установленная мощность 175 МВт. Строительство ГЭС и плотины еще не завершено. Резервуар 100 млн. m3.ga запущен. Плотина и водозабор Бурейского гидроузла Из Буйлонского водохранилища, принадлежащего РБ» узсувтамирфойлыш" управление эксплуатацией, в то время как незавершенные ГЭС (2 малых агрегата сбрасывается) в условиях временной эксплуатации на стороне» Сувэнерго " РБ используется.

Список использованной литературы

Bakiev M.R. - доктор технических наук, профессор, учебный руководитель
Yangiev A.A. - доктор технических наук, профессор, учебный руководитель
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Halimbetov O.A. - PhD методическое пособие

APPLICATION OF LIGHT AND TEMPERATURE SENSORS IN DEVICES OF ALTERNATIVE ENERGY SOURCES

Andijan machine building institute,
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"Energy saving and energy audit" direction
Scientific supervisor: Assistant. ***Q.Sh Mamarasulov.***
Candidate: ***To'ranazarov Xayrullo***

Annotation

I am in this article on light and temperature sensors in devices of alternative energy sources. Advantages of using sensors in alternative energy devices. Problems in the introduction of sensors in alternative energy devices. Application of temperature sensors in alternative energy devices. Like the application of light sensors in alternative energy devices . I covered the data.

Keywords.

- Types of light sensors. Light and temperature sensors. Types of temperature sensors. Temperature sensors provide optimal performance.

Introduction to Light and Temperature Sensors.

Light and temperature sensors are essential components in devices utilizing alternative energy sources. These sensors help in optimizing the efficiency of solar panels and other renewable energy systems. By accurately measuring light intensity and temperature levels, these sensors enable devices to operate at their peak performance. They play a crucial role in ensuring optimal energy output and sustainable energy production. The utilization of light and temperature sensors in

alternative energy devices underscores their significance in the transition towards a greener and more sustainable future. These sensors contribute to the advancement of renewable energy technologies.

Types of Light Sensors.

Light sensors play a crucial role in devices for alternative energy sources by detecting and measuring light intensity. This helps in optimizing the use of solar panels to maximize energy production. There are different types of light sensors commonly used, such as photodiodes, phototransistors, and photovoltaic cells. Each type has specific characteristics and applications in the field of alternative energy. Temperature sensors are also essential in monitoring and controlling the temperature of devices used in alternative energy sources. They ensure efficient operation and prevent overheating or underperformance of the devices.

Types of Temperature Sensors.

Light and temperature sensors play a crucial role in devices harnessing alternative energy sources. These sensors help monitor and optimize the performance of solar panels and wind turbines. Types of temperature sensors commonly used in these devices include thermocouples, resistance temperature detectors (RTDs), and thermistors. Each sensor type offers unique benefits and accuracy levels in measuring temperature. By utilizing these advanced sensors, alternative energy systems can operate more efficiently and effectively. This allows for better control and management of energy generation, ultimately leading to increased sustainability and cost savings.

Applications of Light Sensors in Alternative Energy Devices.

Light sensors play a crucial role in alternative energy devices by optimizing the efficiency of solar panels and enhancing output based on light intensity. Temperature sensors are essential in monitoring and regulating the heat generated by devices such as geothermal systems and solar water heaters for optimal performance. The

integration of these sensors in alternative energy devices ensures sustainable energy production and improves overall system functionality and reliability.

Applications of Temperature Sensors in Alternative Energy Devices.

Temperature sensors play a crucial role in alternative energy devices by monitoring and regulating the temperature of various components to ensure optimal performance. In devices such as solar panels and wind turbines, temperature sensors help prevent overheating, which can lead to reduced efficiency and potential damage to the system. By accurately measuring the temperature, these sensors enable the devices to operate more efficiently and effectively, ultimately improving the overall performance and longevity of the alternative energy systems.

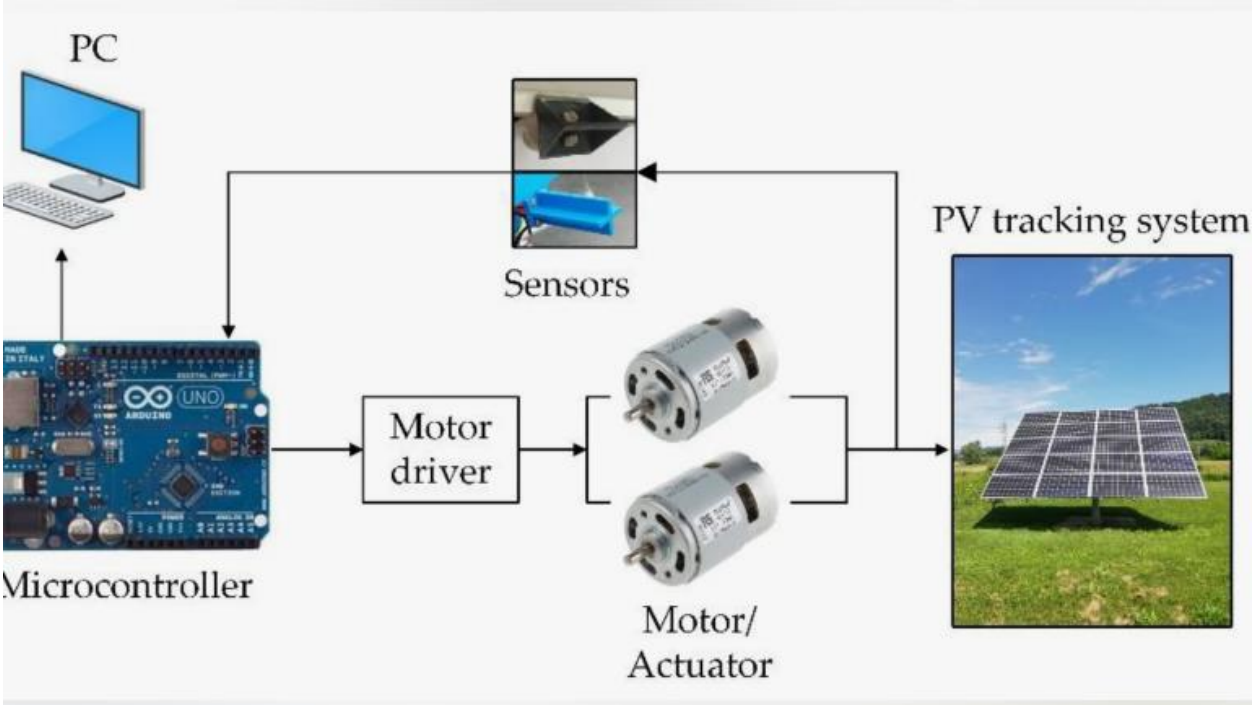
Integration of Light and Temperature Sensors in Alternative Energy Devices.

Light and temperature sensors play a crucial role in enhancing the efficiency of devices utilizing alternative energy sources. By integrating these sensors, energy devices can optimize their performance and adapt to changing environmental conditions. The application of light sensors allows alternative energy devices to effectively harness solar energy, maximizing conversion rates and improving overall energy production. Temperature sensors, on the other hand, help regulate and maintain optimal operating conditions, ensuring consistent performance. Overall, the integration of light and temperature sensors in alternative energy devices offers numerous benefits, including improved efficiency, reliability, and sustainability. By utilizing these sensors, energy devices can operate more effectively and contribute to a greener future.

Challenges in Implementing Sensors in Alternative Energy Devices.

Light and temperature sensors play a crucial role in maximizing the efficiency of alternative energy devices. However, implementing these sensors comes with unique challenges. Despite these challenges, advancements in sensor technology continue to improve the performance and reliability of alternative energy devices,

making them more efficient and sustainable. One of the main challenges is ensuring the sensors are durable and able to withstand harsh environmental conditions. Another challenge is accurately calibrating the sensors to provide precise and reliable data.



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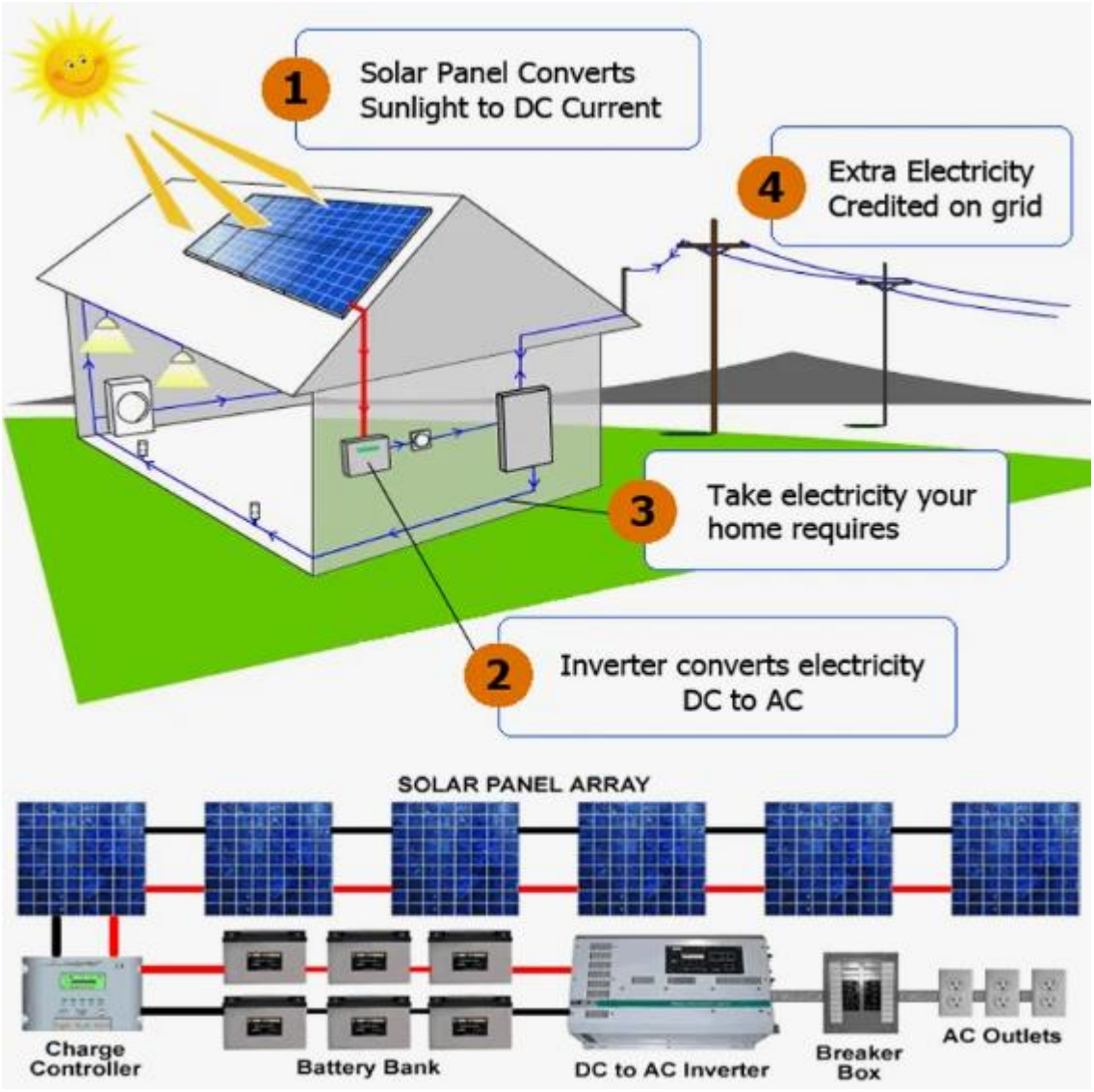
Light and temperature sensors play a crucial role in devices utilizing alternative energy sources. These sensors help optimize energy production by adjusting performance based on environmental conditions. One of the main advantages of using sensors in alternative energy devices is improved efficiency. Sensors allow for real-time monitoring and adjustments, increasing energy output and reducing wastage. Additionally, sensors enhance safety and reliability in alternative energy devices. By detecting temperature fluctuations and light levels, sensors help prevent damage and ensure consistent performance of the devices.

Future Trends in Sensor Technology for Alternative Energy Sources.

Light and temperature sensors play a crucial role in devices harnessing alternative energy sources. They help optimize energy output and efficiency, paving

the way for sustainable energy solutions. As technology advances, the future of sensor technology for alternative energy sources looks promising. Innovations in sensor capabilities and integration will drive the development of more efficient and reliable energy devices. From solar panels to wind turbines, the application of sensors is revolutionizing the way we harness clean and renewable energy. These sensors enable real-time monitoring and control, ensuring optimal performance and stability.



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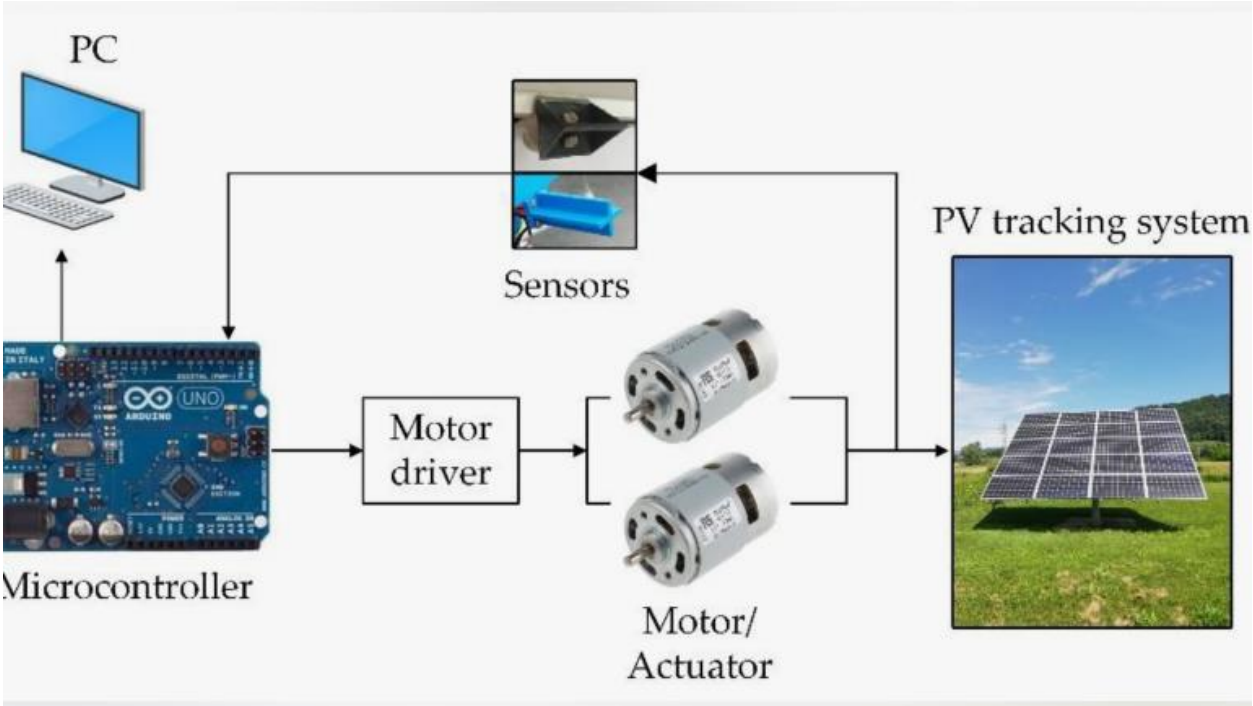

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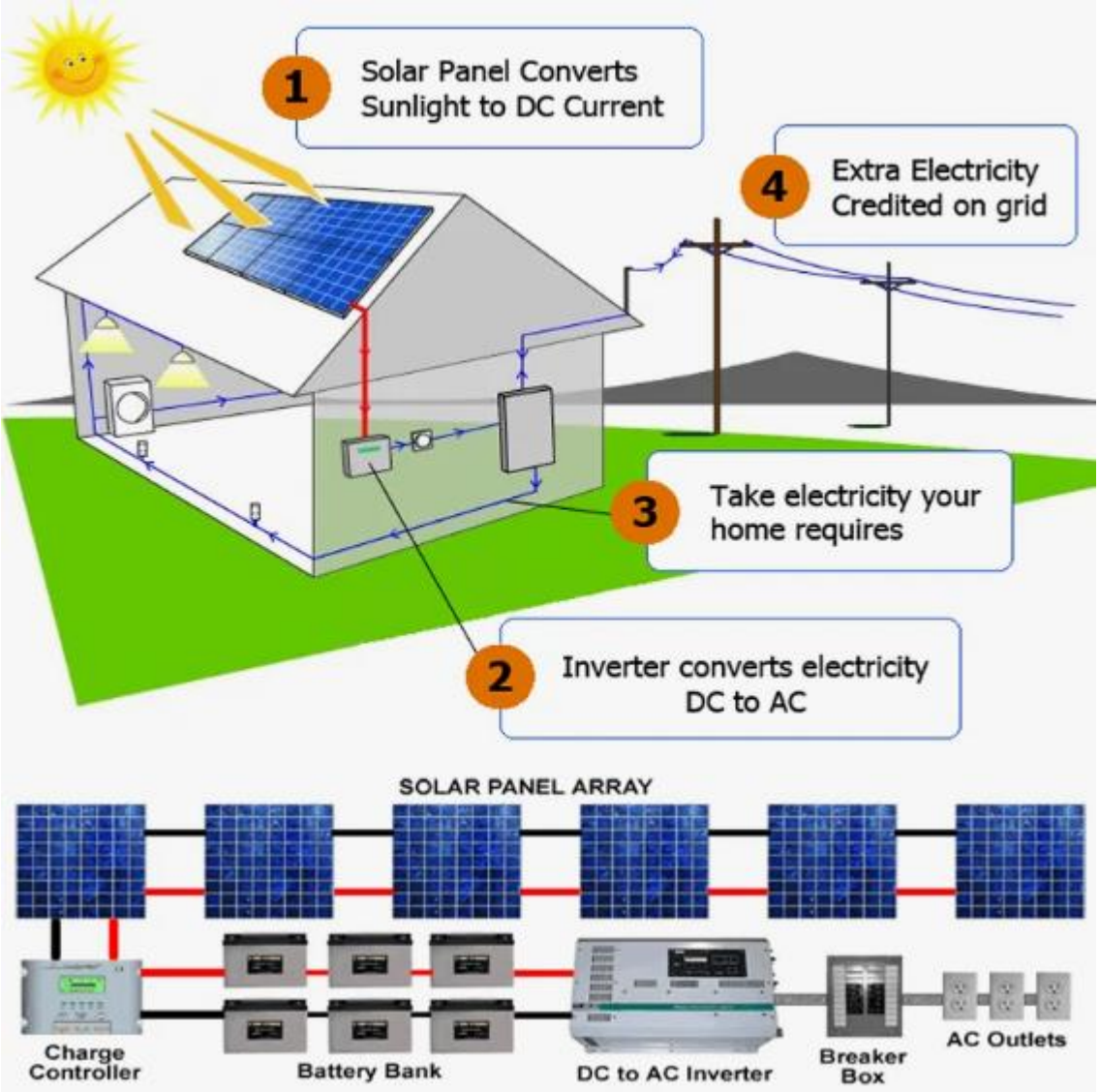

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