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SECTION 4. Computer science, computer engineering and automation.

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DEVELOPMENT OF AUTONOMOUS ROBOT FOR RADIATION RECONNAISSANCE

Abstract: In this work, we developed algorithms for simulating the actions of Autonomous robot detecting radioactive contamination in inaccessible places. Developed algorithms for remote robot control. The resulting algorithms are tested and implemented on a real robotic platform. Also developed a program for the Arduino microprocessor to control a fully assembled robot, and automated actions according to algorithms or remote control.
Key words: program, radiation, robot.
Language: English
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Introduction

In this work, we developed the mobile robot and the search engine algorithms places of contamination by radioactive particles.

Made testing of the proposed algorithms on a real robot. The algorithms remote control, radiation sensing area and the decision depending on the received data. As well as the possibility of using a robot to analyze the air to determine the temperature and humidity.

The aim of the study was to Develop a mobile robot for radiation detection.

Urgency: the Developed algorithms are of practical importance and relevance, and can find application in military robotics, as well as for local contamination by radioactive materials.

Novelty: Designed an Autonomous robot that implements the search algorithms of radioactive contamination and perform a specific action that accelerates the process of infection. The resulting algorithms tested on self-assembled robot on the Arduino's microcontroller.

Materials and Methods

Implementation of the project:
This work is dedicated to the development and implementation of the search algorithm of radiation contamination. Statement of the problem in the General case is implemented in several stages:
• Build a mobile robot from components
• Development of algorithms for remote control based on Bluetooth,
• The study and use of radiation sensor,
• Mathematical simulation of algorithms for independent decision-making robot
• Testing of mathematical algorithms and robot

Build a mobile robot from components:
• The Assembly robot will be implemented based on the microcontroller ArduinoUno, control leading drivers - driver L298N and a radiation sensor.
• Develop the concept of the robot: In will be based on the ArduinoUno.
• For rapid detection of objects emitting radiation place the sensor on the robot Geiger Tube M4011.
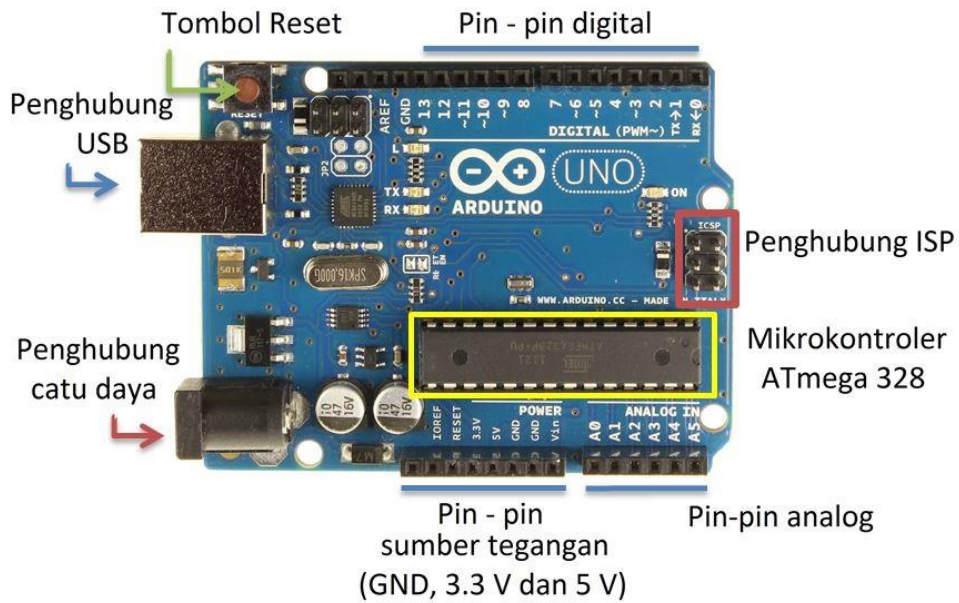
Picture 1 – Arduino Uno.

Picture 2 - Geiger Tube M4011.

Specification of the Geiger Tube M4011:
- tin oxide Cathode, a coaxial cylindrical thin body structure (Wall density is 50 ± 10cg/cm2), the use of pulse-type halogen tube
- application temperature: $-40\,^\circ C \sim 55\,^\circ C$
- can be used for: γRay 20mR/h ~ 120mR/h
- β Rays in the range of 100 ~ 1800 ChangingIndex/min · CM 2 soft β Rays

- (as beta-and gamma-radiation detetion)
- working Voltage: 380-450 In
- working Current: 0,015-0,02 mA
- sensitivity to Gamma Radiation: 0.1 MeV
- own Background: 0,2 Pulses/s
- length: 88 mm
- diameter: 10 mm
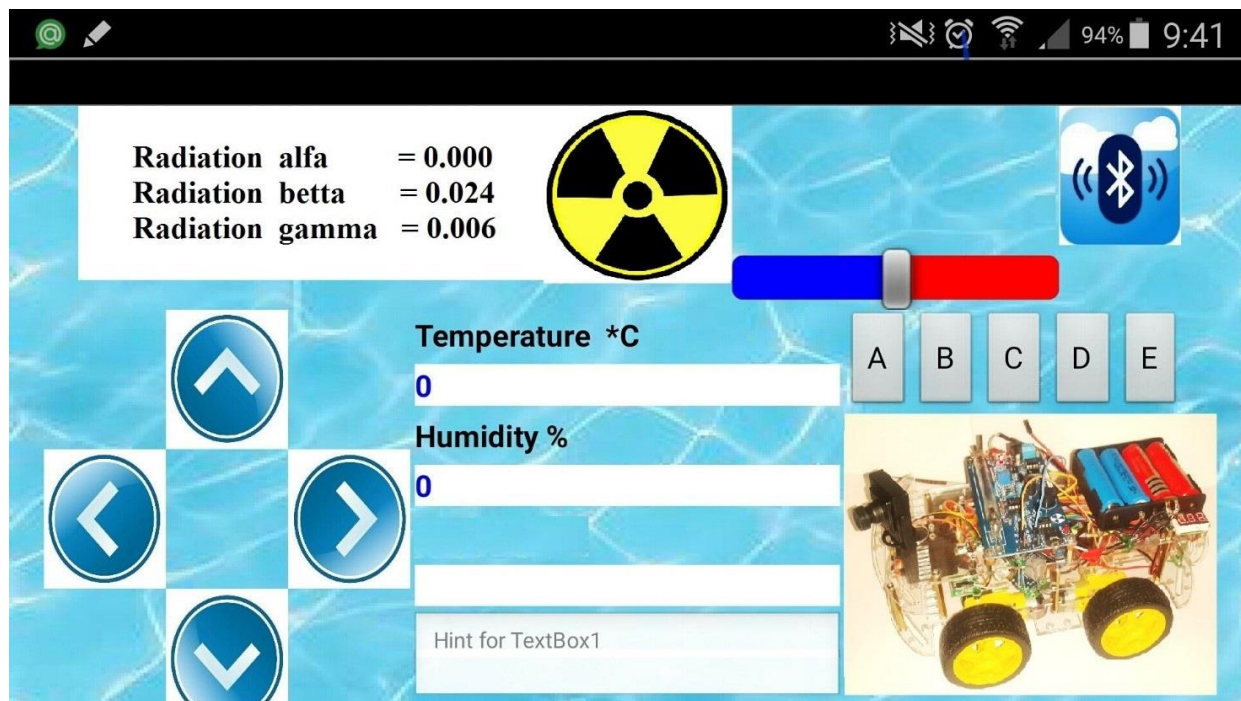
Picture 3 - The robot control program for smartphone based on Android and receive data from the Geiger tube.

Picture 4 - The developed model of the robot for radiation reconnaissance.

Conclusion

The result of this study, created the robot and algorithms for robot movement, and also we can make the following conclusions:

• Developed robotic search engine for objects contaminated by radiation.
• Created an Autonomous robot with remote control.
• Studied the work of the radiation sensor.

• Developed algorithms to alert the operator of the robot about the radiation danger.
• Developed algorithms tested
• Defines the maximum speed of the robot is 1.4 m/s
• Defines the maximum angular speed of the robot $150\ ^0$/sec
• The resulting algorithms are efficient and can have a practical application in robotics for radioactive contamination and radiation leakage.

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SECTION 21. Pedagogy. Psychology. Innovations in the field of education.

«THE LAW MAXIMUM TO MANKIND» - THE BASIS OF SUSTAINABLE DEVELOPMENT OF SOCIETY

Abstract: Consumption becomes a fundamental environmental factor. You can talk about the need for "maximum Law for mankind." In accordance with the "Law" of the world's population, its energy and bio consumption must comply with the biological capacity of the Earth and does not go beyond it. An integral part of sustainable development must be the principle of "vital consumption" as a personal and public level instead of the dominant principle of "increased production and consumption." Index "degree of environmental culture" including the indicator "culture of consumption" of natural resources, both at the individual and at the level of society must come as part of the integral index in the "True measure of progress"(Genuine Progress Indicator – GPI) and "Human development index"(HDI).

Key words: Evolution of the biota and society; psychology of personality; contradiction evolution of society and of the biota in the biosphere; the law maximum to humanity; equation of sustainable development; culture of consumption of natural resources; the principle of self-restraint in the ideology of sustainable development; the principle of vital consumption; Culture of consumption of natural resources as a component of ecological culture.

Language: English

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*We are all children with this Planet -
and the President, and the ordinary.*

Introduction

On the brink of two millennia man has identified the problem of degradation of the biosphere: the past, supplying it with energy, mineral resources and food, and a modern, determining our livelihoods (soil, water, atmosphere, forests, biodiversity, etc...). To paraphrase Julius Caesar, the person may say: came, saw, hurt! Population growth, technological change and the use of huge energy resources clearly define the future of the Earth's biosphere.

Materials and Methods

Life on Earth exists not only because of the biosphere adaptability to changing external conditions, but thanks to the stabilizing effects of these conditions are the opposite of living organisms to their environment. The question of whether the biosphere to cope with all kinds of time to the negative impacts of human activities? As the events, it is man who, although unaware of the extent of his impending environmental disaster, however, in their bulk, set up very strongly to destroy, to begin with, the biosphere, which in itself could even improve matters. Virus "of Homo sapiens" strongly impressed "body" of the planet Earth. Ambition, vanity, selfishness in an individual process socio-genesis passed to ambition of all human society, shaped the psychology of the economy and as a result became the dominating person in respect to the environment and laid the foundation to limit escalating global environmental problems (Fig. 1).

Psychology of the individual   Psychology of **society**   Economics psychology   The path into the abyss
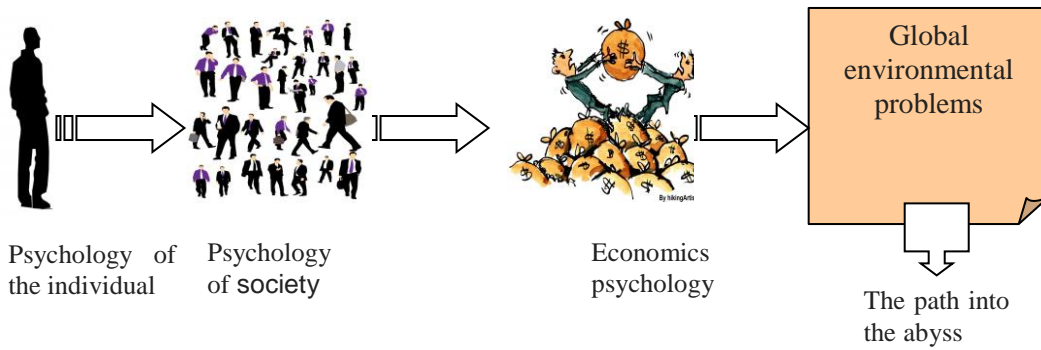
Figure 1 - The individual's psychology - the basis of global environmental problems

It is possible with a substantial share of responsibility note: the evolution of the biota in the space of the biosphere and society have become different directions (Fig. 2). The emergence and growth of environmental issues at all levels are directly related to the lack of correlation between the direction of natural processes and focused thinking and action of people.
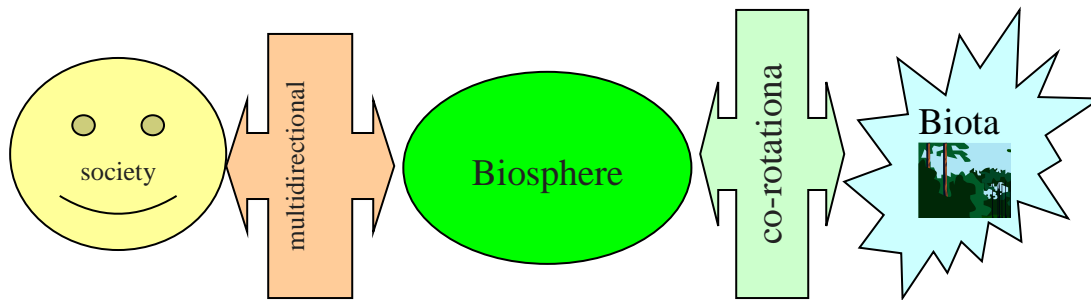
Fig. 2. Contradiction evolution of society and of the biota in the biosphere

Mankind as a species from the very beginning, in fact, "fell" from the total mass of biota, went its own way and began to evolve independently. The results of his evolution and that of the rest of the biota were different directions. The result of the evolution of the biosphere - the formation and maintenance of quantitative and qualitative indicators of a stable ecosystem, the end result of the evolution of society - the increase in instability in the biosphere. In general, human society is not functioning in accordance with the laws and regulations of the biosphere itself, formed over millions of years of its own evolution. All human practical activities contrary to the fundamental laws of the functioning of the biosphere and therefore they are not perfect, as the very biological nature of man. Efficiency of development is below 100%, resulting in environmental accumulate the so-called "Waste", which is not and can not be in the biosphere, functioning in the framework of natural laws. Society is in constant conflict with the environment, digs, drains, burns and destroys the bowels of the planet, changes the structure of water and air, depletes soil fertility (Fig. 3). Human activities acquired such proportions that violated all the basic principles of the natural biosphere device: energy balance, the established cycle of substances, the diversity of species and biological communities, population stability and adaptation of living organisms to the environment. This is the main reason for the formation and aggravation of how global environmental problems, and related in the most direct way of economic and social. In general, at the global level is expanding the space of economic, social and environmental stress, increases the degree of tension and uncertainty, there is erosion of the systems, the world is becoming unmanageable in many ways. In all areas of growing disharmony, bloody, mass violence, trickery, vandalism, destruction of ethics, observed in this century is undoubtedly linked to this phenomenon.
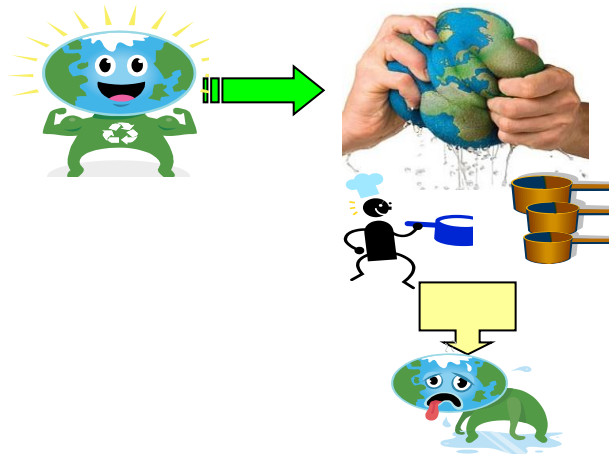
The rapid rise in population, bio and energy consumption of the world in the past century, expresses the essence of the dynamics of the modern world [9]. Mankind in numbers, biomass today already passed the critical threshold beyond which begins the countdown of his stay as a biological species on Earth. The man identified himself increasingly converging space of the biosphere - in

the qualitative and quantitative levels - not only for other biological species, but also for himself.

Figure 3 - Social squeezes all the juices out of the Earth to replenish the increasing number of the population, respectively pans - big and small

The report of the Club of Rome's "Limits to Growth" has been shown that the development of society by now firmly established rules inevitably end in the near future the global collapse. In this regard, humanity is experiencing a time of revision of the whole system of values, the most fundamental outlook on life. It entered into the era of the collapse of social utopias and ideals degradation. Man should again reflect on their attitude to nature, and how will build a relationship with her, the future depends. The fate of all humanity ceased to be a lot of lonely thinkers and public organizations. All social and spiritual issues are subject to review on the environmental viability. In the first place it must be carried out profound social and economic reorganization of the society, changing its values and orientations.

The researchers who developed the problems of ecology [7] concluded:

• People can not always exploit the limited supply of Nature's livelihood without having to one day create the conditions that could be the beginning of an irreversible environmental protection restructuring, reorganization, which would put an end to human life and the world;

• Technology alone will not be allowed the dilemma of population growth and environmental degradation. It is necessary to make active moral, legal, economic and environmental constraints. They must be generated profound and clear awareness of humanity to the fact that the man himself and his environment constitute a unity.

The paradigm of "sustainable development" was developed under the leadership of L. R. Brown researchers of the Institute of global observations (Washington city), further approach was the basis for "Our Common Future" report of the World Commission on Environment and Development (1987). The outcome of the Commission 11 December 1987, the UN General Assembly adopted a resolution entitled "Environmental Perspective to the Year 2000 and Beyond", according to which sustainable development should be the guiding principle of the activities of the UN, governments and private institutions, organizations and enterprises. The Earth Charter [6, s.4] found the scientific basis of biotic regulation of nature, the principles of sustainable development.

For the functioning of the biosphere is characterized by many laws and principles. Similarly, and for humanity as a part of the biosphere should be determined laws and principles that will help the society re-integrate into the natural biospheric processes, sustainable development is not in isolation but together with the biosphere. The economy is a dependent component of the natural environment within which it exists and is a part of it. So, the theory of a green economy is based on three axioms:

• it is impossible to infinitely expand the sphere of influence in a confined space;

• it is impossible to demand satisfaction endlessly growing demands with limited resources;

• all on the surface of the Earth is interconnected.

In this regard, starting from positions of globalistic science [9], we can talk about the need for the adoption of the "Law for the maximum of humanity." The acceptance of the "Law" - a historical public demand at the global level. It can provide, at least, for a long time, maintaining the heartbeat and breathing human on Planet Earth. It is expressed in terms of man-made borders of the land - the permissible density of power bio- and energy consumption.In general, sustainable development

(SD) of mankind under the proposed "Law" can only be achieved provided that the following relationship:

$$Sd = \frac{BcE}{m \bullet [pc + bc]} = const \qquad (1)$$

where: BcE- the biological capacity of the Earth; m- human population; pc-power consumption; bc- bio-consumption.

According to this law, 99% of generating capacity of the civilization and 99% of human labor, aimed at the management capacity of civilization, must be expended on the stabilization of the environment. On the personal needs of the person should be spent not more than 1% of the total generating capacity of the biosphere [1;2]. No species of fauna not consumed within the food chain longer inherent in his nature, vital needs. But unless a person is not part of this circuit?

To improve the current situation, it is necessary that the following conditions are met:

$$(Wб + Wэ)\, S < P \qquad (2)$$

where Wb + We - respectively bio- and energy consumption per person; S – numerical of population; P - reproducible potential of natural resources.

Allowable population of the Earth - to the extent not to exceed 7 billion people. This range corresponds to a range of anthropogenic load density of 15 kW / km^2 up to 125kW / km^2. The average value of anthropogenic load density is taken as valid: Dsd = 70 kW / km^2 [9, s.96].

The degree of non-fulfillment of this relationship brings humanity to the critical point beyond which begins a complex, long-lasting and painful for him the process of extinction. Thus, the performance of this ratio - the pledge to human survival as a biological species on the planet Earth in the long-term scale.

"The law of maximum" forms the principles that contribute to the transformation of the economic logic of capitalism in its Western model in environmental and attempts to integrate these logics in the social mechanisms of modern society. It is consistent with the statement of the Nobel laureate in economics Jan Tinbergen: "This world can not and does not need ... to believe in what he can - an illusion; try to translate it - madness " Organizers of the Forum in Stockholm (1972), in the city of Rio de Janeiro (1992), Chairman of the Earth Council M. Strong, said: "Western model of development is not suitable for anyone over".

Strategically important on a global scale implementation of two fundamental conditions for sustainable development in the framework of the "Law of the maximum":

• maintenance of the population at the level of the demographic capacity of the biosphere;
• stabilization of energy and bio - consumption on the social and vital level, and the alignment of these indicators for all countries of the world.

Global natural balance must be maintained all the time - otherwise, the type of feedback humanity threaten catastrophe and disasters of a global nature, degree and extent of which will grow and which will eventually affect the world population and quality of life.

Unfortunately, since the end of the last century indicators ecological footprint of humanity exceeded the total bio-capacity of the Earth and from this time over-expenditure continue to increase. According to the WWF report, in 2005 the use of natural resources exceeds the Earth's bio-capacity by 30%, the development trend remains unchanged. By the beginning of 2016 the population of the world has already exceeded the allowable limit and amounted to 7.3 billion. The fate of humanity has begun the own countdown.

Society needs to grow faster than its population. Population growth arithmetically changed at the same time increased consumption - geometrically. In this regard, consumption is becoming a fundamental environmental factor.

The most important indicator of the environmental burden on the biosphere is the product of the world's population upon the amount of consumption of natural resources and life support systems of the population per capita. Thus, the regulation of anthropogenic load on the biosphere can be done by numerical control of the population, or the value of consumption, or both ways at once. At the same time, consumption is based on centuries-old traditions, it is difficult to change overnight. The liberation of the mass consciousness of "consumerism", the level of which is many times the biological limits of the biosphere and the transition to a "regulated" by the Society of reasonable consumerism is the first step towards mitigation of anthropogenic impact on the biosphere. In this regard, and the Earth Charter encourages radically reconsider the ruling is now a consumer way of thinking and a way of life and calls on appeal to the moral and ethical values, and to choose the best path to the future.

Currently being developed and formulated the idea of sustainable consumption in the world. Of the United Nations Environment Programmer (United Nation Environmental Program -UNEP) in collaboration with the Youth Advisory Council has launched the International Youth Campaign on sustainable consumption. It involves youth groups from more than twenty countries. Campaigners will discuss the role of youth in promoting of sustainable

consumption idea, organized action among youth to promote the concept of sustainable production and consumption. Developing strategy for sustainable consumption for young people.

20-22 June 2012 in Rio de Janeiro hosted the Fourth Summit to implement the concept of sustainable development. According to the principle №8 of the final document of the meeting, "To achieve sustainable development is necessary not only to reduce the population, but also to reduce the level of consumption." It is necessary to put an extreme barrier for the ever-increasing consumption, to learn to control the instincts of desire, reduce consumption and wasteful consumerism, to understand the inevitability of the transition to the principle of moderation necessities of life, to the average living standards of all people without exception, regardless of their current financial and social status. Only this way we can successfully solve the problem of the subsystems of the principle of sustainable development - social, economic and environmental. It is rightly said: "Moderation - an ally of nature and guardian of health. So when you drink when you eat, when to move and even when you love - observe moderation "(Abua -l-Faraj). And of course extremely important control mechanisms of the cult of consumption at the global and regional levels. Join in this era only highly intelligent society will, which each member will be able to understand and feel the responsibility for the present and future of the entire human race, and to behave in accordance with this responsibility. But this development strategy can not be spontaneous, but deliberately controlled. The ultimate goal of the development of society - the statement of the principle of harmony in the biosphere: it is the reconciliation of individual and public interests and the interests of Nature, which is the basis of the principle of sustainable development (Fig. 4). After all, quite correctly noted that "self-regulation relations system and super-system (homeostasis" human "system within the limited super system" biosphere ") - a necessary condition for long-term existence of the system" [8, s.331]. Sustainable human development can not be without the constant maintenance of sustainable development of the biosphere.The connection of economy and ecology, and their interdependence - a basic condition of harmoniously developing society.

Thus, an integral part of sustainable development must be the principle of "consumption at only vital necessary" as a personal and public level instead of the dominant principle of "extended consumption".
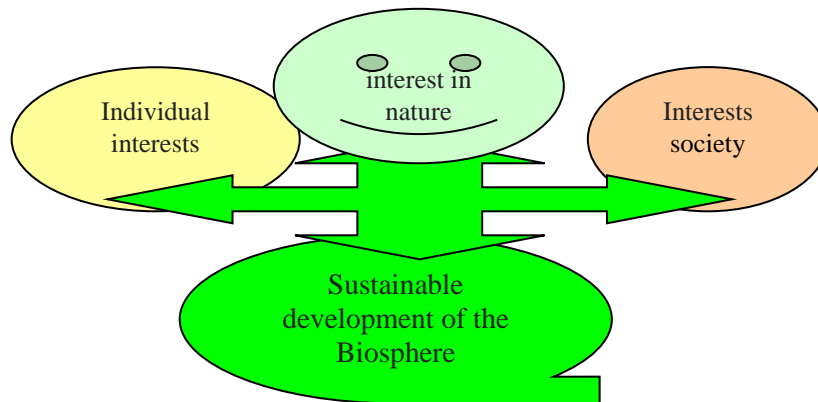
Figure 4 - Harmonious relations between individual interests and society - guarantee sustainable development of the Biosphere

At the level of the international community must move from a global policy of increased production and consumption to the global pragmatic policy fixed number of population and stable production for lifeline consumption. One of the environmental imperatives for the society is becoming all-round resource conservation. At the level of each individual, without exception, should be adopted by the fundamental principle of self-restraint in the use of natural resources. Ecology, economy and sustainability - key words business - model across the globe: the economy only to provide the average standard of living.

The principle of voluntary refusal of excesses (in the words of Lucretius' kills excess ") deliberately adopted self-restraint in the level of consumption of natural resources - it is a necessity and a reflection of reality, it is a call of the biosphere in order to preserve the stability of the Planet. Change of mankind to self-restraint and the adoption of the principle of self-restraint in the use of natural resources of each and every individual has to mark the arrival of post-consumer society in which spirituality and spiritual development will prevail over the material, rather than vice versa. This principle is not in any way contradict the United Nations Universal Declaration on the Rights of the

current generation of people. Moreover, it protects the rights of future generations to live in a quality clean environment.

But to achieve this is possible only evolutionary, gradual methods of transformation of the society and all its components through national development ideas, the implementation of which will achieve the desired state. Objectively, this will require generations. But better late than never!

Popular wisdom says: if you do not know where to go, no wind is favorable. But…. the road by walking! The man stood in front of the dilemma of selecting the strategic development priorities - or continue path of the growth number, biomass and energy consumption, the volume of the economy for mass-consumption economy, or the adoption of the paradigm of consumption restrictions in the framework of "The Law of maximum". Suffice it to note that the achievement of the level of the "golden billion" of life only to modern India and China could fully deplete natural resources. Half a century ago, Mahatma Gandhi, leader of India, which led the fight for independence from England, was asked: Would you care to residents of India reached the level of life in England. To which he replied: "To achieve prosperity, Britain took myself half the resources of our planet. How many planets will take to India? ". Currently, as a fundamental component of the ideology of sustainable development, above all in practice (and as quickly as possible) at the global level, on a global scale should be realized principle of culture moderation in all aspects of living space. In the words of Democritus "Moderation multiplies the joy of life and makes the pleasure even greater." Moreover, to paraphrase Shakespeare ("Excess soon live to see gray hair, and moderate long live"), moderation in all things will prolong the life of man as a biological species on Earth and give him time and opportunity for self-evolution of the dominant material for spiritual development.

Logically, the person should be placed at the heart of "Sustainable development" paradigm angle, his conscious, deliberate self-restraint in their personal life needs. This will limit the scope and degree of use of natural resources by orders of magnitude. It is the understanding and awareness of its imperfections cause the person to move to self-development. The cult of consumption - consumerism - is characteristic of the current state of development of the society, and lead to increased use and depletion of natural resources should be replaced with the concept of "vital minimum", and, above all, for the so-called "golden billion", which has more than 60% of world income.

Formation and approval of the principles of sustainable development comes down to the human person (as the saying goes, "all roads lead to Rome"!). The human factor becomes fundamental in the development and widespread among the general

population principles of sustainable development, at both the global and local level (Fig. 5). Only by changing itself, being able to manage and limit their necessities of life (take the fundamental principle of "moderate supply and consumption"), a person decides of environmental, economic and social problems underlying the "sustainable development" paradigm. Human nature is designed so that a person can achieve their improvements, only working to improve his contemporaries, for the sake of their good [10, s.4]. Total perfection, perfection of yourself freely used by us to influence others, and improving others by the reverse effect on them as free citizens - everybody's affairs. Only by this way, it is possible to provide a qualitative change of the society at all levels that will ensure in practice the progressive affirmation as global sustainable development paradigm. This is the only way to create a global society that meets the requirements of the sustainable development paradigm. Other way simply does not and can not be.

According to the law, formulated by the founder of the Cultural Studies, American scientist Leslie Alvin White "Human behavior changes with a change in its culture". It can be argued that this fully applies to all spheres of human life and society, including the culture of consumption of natural resources, which should be adopted under the "The Law of maximum to mankind" as an essential element of culture in general and as a component of ecological culture. Culture of consumption of natural resources, both on the personal and public levels once and for ever should always be an integral part of the ecological culture, which itself, in turn, being an integral part of human intellectual culture, should be the result of intellectual activity. Achieving this is primarily due to the development of human capital.

The term "human capital", put into circulation in the second half of the 20th century by Theodore Schults currently has a wide range of measurement and interpretation [12, s.57]. It is assumed that embodied in man of human capital - is his knowledge, skill, discipline, moral purity, and creative activity. This is the main source of income and national wealth of each country. The peculiarity of the human capital that is both a factor and the goal of development of the individual and society. Taking into account that developed countries consume the majority of global natural resources, and that it is in developed countries, human capital exceed 70-80%, in contrast to the rest of the world in which human capital does not exceed 20-30% of the national wealth, the it is in the developed countries in the first place and should be recognized and approved by the evolutionary new paradigm "culture of consumption" as part of the "The Law of maximum to mankind". Adoption of the paradigm of "culture of consumption" and must be the historical task of the developed countries, which will follow the example

of developing countries. And to achieve this historical strategic of goal humanity must develop a methodology and strategy, which involves the analysis of factors: natural resources present and the future, technology, morality, ethics, time, cultural values, analysis of historical blunders associated with this process, opportunities and risks. The objectives and priorities of development should be monitored for relevance, effectiveness and compliance with national and global interests. The development of the society - the achievement of a new level, and at the same time the formation and universal adoption of the "Law for the maximum of humanity" and its everyday performance of all and each will occur as the attainment of new truths by enough people.

Currently, within the framework of the United Nations Development Programmer report on human development published "Human Development Index" (HDI) - an integral index, calculated each year for comparison of individual countries and measuring the level of life expectancy, literacy, education and longevity as the main characteristics of human potential the study area. It is a standard tool for comparing general standard of living in different countries and regions.

Another integral indicator is the "True measure of progress» (Genuine Progress Indicator, GPI) - which is a concept in the "green economy" and the well-being of the economy offered to replace GDP as a measure of economic growth. Many defenders of the GPI note that in some situations, economic growth can turn into a disaster for society, in this connection, is required indicator, which take into account factors such as environmental conditions, social tensions, the nation's health.

It is likely that, along with the index of the "degree of environmental culture", including, in particular, and the indicator "culture of consumption" of natural resources, both at the individual and at the level of society must come as part of the integral index in the "True measure of progress" and "Human development Index". Indicator of progress of modern society, along with other indicators - standard of living, literacy, education and longevity, ecological status, and etc. should include the indicator "culture of consumption of natural resources" as a part of ecological culture. Life within the ecological limits

of the Earth requires to bring global consumption in line with the bio-capacity of the planet. As if foreseeing the meaning of the life of this man, the ancient Roman philosopher Musonius warned: "It is our duty - to eat to live, not for pleasure ...". One small step for each one of us in the assertion of the principle of self-limiting consumption of natural resources is a great step of mankind as his striving to prolong his historic stay at the Earth as a biological species. It is rightly said: "In life, one must strive to overtake is not others, but himself" (M. Babcock).

But by itself the free market can lead to whether society free from excessive consumerism? And what the world in which mankind will have to live?

However, it is clear that human society is unlikely ever to reach the highest ideal of perfection, otherwise it would have to assume offensive stagnation in its aspiration to technical and technological, and economic development. This is an evolutionary, long, ongoing process of self-improvement of its *I*. Become a model may be, for example, the great writer Lev Tolstoy, rejected in their daily lives all the luxury, or our contemporary Chuck Finn - the founder of the company Duty Free, and many -many others.

But be able of the majority of people, ordinary the average man-conformists, standing at the bottom of the pyramid Maslow A. [5], to take this fundamental paradigm of life behavior? At least for the majority of such aspirations is not visible, and it is an absolute fact (Fig. 5). In every historical period there is always the majority, that will not be able, perhaps, to even notice there is a public need. In general, while the society underestimates, in terms of the global environment, the number of inhabitants and the destructive power of conformists, too far from mastering the basics noo-spherology. It is necessary to carefully look around to agree: striving for of truth has its limits. When willpower presence can achieve everything, but tell me, get this willpower? It is given is not for everyone. In this context, "high society to law" with the quantitative parameters of the system as part of the world managed to be considered and adopted at the global level - at the UN! But this task is virtually impossible.

Figure 5 - The majority of the inhabitants, unfortunately, are not aware of the dilemma: either a transition to a new paradigm of life - moderation in their material needs, or .... bye Bye!

Ideally, you can for a moment imagine that the majority of people within the "The Law of maximum" accepted - voluntarily or by law - the principle of self-restraint in the use of natural resources. In this case, human society can be doomed to stagnation, losing the opportunity to acquire a new quality and originality. Did he put a barrier to further development of scientific and technological progress - time, and secondly, whether it is sooner or later the transition to a global level to a card system, similar to that which was already in the former Soviet Union, for many years operating in several countries such as Cuba, North Korea?

And, sensing the impending food shortages, the society enters consciously? As a rule introduced strict control over the distribution of material needs. Thus, in a society are the ones who will need to distribute, and those who will distribute these needs. Thus, it is likely that the normal mechanism involved, for a long time said: "Who that protects, he then has, and who does not protect anything, he has nothing." But if humanity will be on the psychological and social levels is ready for such a development? And what to do with inherent human craving for creativity, self-development, healthy ambition, selfishness, and other natural instincts? After all, in fact, a healthy ego - is the foundation of spiritual, scientific, cultural, technological, technical and social progress of society, and only thanks to the care of each person about himself can create a society of strong, free and happy people.

And not prevail of life strategy defined by innate natural instinct - "Save oneself how can" in the time transition to the socially necessary level of consumption?

Millennium evolution and no world religion and have not managed to change the essence of man: for there is a well-established scientific term «Mixed Evolutionary Stable Strategy», abbreviated «MESS», which means that the favorites in the evolutionary selection are healthy people, rather selfish, so if necessary, to lie, smart enough to appreciate the truth, and conscientious enough to help others as much as possible [12]. In this regard, possible to man, sooner or later will be a challenge to take the fate of mankind into your own hands and carry out this historic task of global scale - with the help of genetic modification to change its essence - to destroy the genes greed (Bdnf gene), cynicism, meanness, falsehood, aggressiveness (in the human aggression control many genes, including the monoamine oxidase gene) and other low-lying animal passions and leaving only positive genes -.. hard work, kindness, healthy ambition, altruism, honesty, etc., and create a new type (breed) "human"- of the" homo sapiens", rather than" homo destructor "how it really is for himself, and for Nature [3]. To solve these problems in the near future may be a need for coordination of human health on a psychological level in special psychogenetic hospitals for "cures" of people, especially from the greed and hoarding (Fig. 6) - the only way you can stop the psychosis of "mass consumerism" bled biosphere.

Figure 7 - The spiritual crisis of modern civilization - consumption..consumption ... before infinity

Conclusion

Maybe humanity to save their own species in the near future with the use of medical technologies really go to a massive "self-cleaning gene" by eliminating all newly born children "satanic genes" for the formation of a qualitatively new society within the managed world? He learned to clone dogs and sheep? Is it possible, hypothetically? At least, the Office of Human Fertilization and Embryology UK has allowed scientists from the London Institute of Francis Crick genetically modified human embryos(https://news.mail.ru/society). And perhaps only on planet Earth there a new generation of people, which will ensure a sustainable balance between the ages noo-spheric minded humanity and the biosphere - a original of earth Elysium! And only it is then we, the people will build a qualitatively different society, a different world, a world in which will be not entered into the struggle for power and resources! This must be done in the next decade! But what are the prospects of such an artificial "evolution"? Yes, genetics and molecular biology offer great opportunities of intervention in the mystery of life and the manipulation of human nature. However, an attempt to genetically manipulate the genetic apparatus - is a very great danger, ultimately, it is possible to destroy the essence of the person. As it will be perceived by different religious confessions, whether society as a whole, it would be contrary to the so-called "Human rights"? Of course it will be! And that - the same: continue to live and to do what we are doing for thousands of years?

It is hoped that the " The Law maximum for mankind" will be the first phase of a step-by-step to acquire the status of international "soft law", will become the moral and ethical status, and eventually more practical international support and, in the end, an official "hard" international law.

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SECTION 32. Jurisprudence.

RESERVATIONS TO TREATIES: THE EMERGENCE, THE PROGRESSIVE DEVELOPMENT AND IMPORTANCE IN THE MODERN PERIOD

Abstract: *The article is devoted to formation and development of the rights of States to reservations to international treaties in international law. The author notes that the institution of reservations was formed in parallel with the development of modern international law. But it is still early to talk about the final design of the institution of reservations - this institution continues to evolve. The author notes that the regime of reservations and other unilateral statements of participants settled enough detail. The author considers the reservation as a consensus decision of increasing the universality of international treaties.*

Key words: *International Treaties, the codification, the International Court of Justice, the United Nations International Law Commission, the compatibility of a reservation with the object and purpose of the treaty, the Vienna Convention on the Law of Treaties of 1969.*

Language: *English*

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Introduction

The world practice shows that at the conclusion of multilateral treaties interests of subjects of international law do not always coincide, and therefore the right to declare the reservation is an important tool for their support.

Today reservations are applied in practice quite widely. However, the institution of reservations is a relatively new element in the system of international law. It was formed in parallel with the development of modern international law [1-2] and has gained widespread in the treaty practice of States only at the beginning of the XX century. Its prosperity is related to the increasing role of the international treaty as a whole and the increasing number of multilateral treaties [2].

Materials and Methods

Before World Wars approach to reservations was determined by the principle of unity: reservations to treaties required a unanimous decision by all participants. State - party to a treaty could not unilaterally make the decision to derogate from the terms of the contract.

At the same time, in parallel to the existing regional system adopted in the Pan American Union, the unanimity principle has not been applied. The Pan-American system has been a departure from the classical model. It has established a procedure of individual acceptance of a reservation to a treaty. Each state recognized the right to determine what the consequences will be considered a reservation for the commitments contained in the agreement at the time of its signing. State participation in the agreement did not depend on the mere fact of agreement or disagreement with the reservation of other states. The objectives of the Pan-American system was to allow the greatest possible number of states take part in the agreement [1-2].

After the Second World War, the state considered it appropriate to ask for an advisory opinion in the International Court of Justice on reservations to the Genocide Convention. The conclusion of the International Court of Justice in 1951 in the case of reservations to the said Convention has laid the "first stone" in the foundation of the modern regime of reservations [3].

The turning point was 1951, when the question of reservations was raised again by the UN General

Assembly before the UN International Law Commission. To date, the Commission's Special Rapporteur made six reports on the topic "Reservations to treaties".

Today we can assert the existence of the existing mechanism of its international legal regulation, including rules as the contract and customary nature governing the procedure for the application and adoption of States and international organizations reservations to various instruments.

The basis of this legal regime consists of three universal conventions:

1. the Vienna Convention on the Law of Treaties 1969;

2. the Convention on the Law of Treaties between States and International Organizations or between International Organizations, 1986;

3. the Vienna Convention on Succession of States in respect of contracts in 1978 for these three conventions characteristic of a common approach to the regulation of questions of reservations, and this situation is not surprising.

The Conventions mentioned above regulate issues statements and making reservations and reinforce the overall system for regulating reservations, known as the "Vienna regime". The provisions of these Conventions are the result of a long evolution in contract law, aimed at maximizing the participation of States in multilateral treaties, while maintaining the object and purpose of these agreements [4].

The Vienna Convention on the Law of Treaties in 1969 was the first universal international agreement governing the institution of reservations to treaties. It establishes a flexible system of reservations, as opposed to the principle of unanimity, applicable to it in the framework of the League of Nations [5].

The "Vienna regime" provides a flexible regulation of the institution of reservations, which is due to:

1) the sovereign right of States to declare reservations and objections against them, and to determine the effects of the objection;

2) the adoption of such an objective criterion for formulating reservations as their compatibility with the object and purpose of the treaty;

3) dispositive norm of reservations (Article 19 -. 23) enshrined in the Vienna Convention of 1969, providing in each specific contract opportunity for States to set their own legal regime of reservations. This regulatory flexibility creates opportunities and conditions for widespread use of reservations to treaties for the protection of state interests [5].

The flexibility of the Vienna Convention regime is determined by introducing such a criterion of admissibility of reservations as their compatibility with the object and purpose of the treaty. Given the flexible nature of the Viennase system, it seems inappropriate to make a change in the well-established definition of reservations to treaties. Despite some disagreement on certain aspects of it, we can say with confidence that on the definition of reservations in general there was a doctrinal consensus.

In addition, It should be noted that the Vienna reservations regime is universal. It applies to all international treaties, irrespective of their legal nature and object. The authors of the Vienna Convention sought to create a regime of reservations, which could be applied to all international treaties. Today, many contracts do not contain any articles devoted to reservations, since the participants prefer to be guided by the Vienna regime.

Nevertheless, it would however be wrong to assume that the regime of reservations and other unilateral statements of participants settled in sufficient detail. In particular, after the adoption of the Vienna Conventions there were significant doubts as to the legal regime of reservations. This is confirmed by the fuzzy, changing the practice of States and international organizations. The essential disadvantages of the Vienna Convention are, above all, uncertainty, vagueness, ambiguity of many of its provisions, causing differences in their interpretation and application. The problems mainly lie in the ambiguous understanding of the provisions of the Vienna Conventions and the lack of regulation of certain aspects of the legal regime of reservations. In this regard, it requires the development of specific rules on reservations in the Law of Treaties and further work on reservations to treaties.

The above-mentioned difficulties and shortcomings in the regulation of the Vienna Convention of reservations, as well as lack of coordination State practice determine the necessity of further research and development of reservations in modern international law.

The need for further improvement of the regime of reservations is determined by the importance of the institute of reservations in the modern period. Reservations to treaties were caused by the needs of the international community. They retain the dynamism of international treaties greatly facilitate their conclusion, and ensure the participation of a wide range of countries. In practice, a reservation gives the opportunity to become a party to the treaty states that accept the basic provisions of the contract, its object and purpose, but for various reasons can not agree with some, most, minor, parts of the contract. At the same time, the proper use of the reservations is an important resource in ensuring the protection of state interests [6]. On the other hand there is always a risk that the clause may reduce the effectiveness of the international treaty.

The issue is of practical importance for Uzbekistan as well. Today Uzbekistan has ratified a number of international agreements with a

reservation. In particular, with reservations Uzbekistan ratified by the Republic of Uzbekistan United Nations Convention against Corruption, the Agreement on the Establishment of an International Fund for Agricultural Development (Rome, 13 June 1976), the Additional Protocol to the CRC, the Protocol to the UN Convention against Transnational Organized Crime on the Suppression and Punishment of the trafficking in persons, especially women and children.

Uzbekistan made reservations to some regional agreements. So, with reservations Uzbekistan acceded to the Treaty on CIS free trade zone agreement on cooperation of the CIS member states in combating illegal migration.

Uzbekistan ratified with a reservation agreement between the governments of states - members of the Shanghai Cooperation Organization (SCO) to combat the illicit trafficking in arms, ammunition and explosives. Uzbekistan, with reservations also ratified the SCO anti-terrorism convention. The reservations were made taking into account national interests of the country. On the one hand, Uzbekistan having ratified these treaties made a great step in the development of international

cooperation, on the other hand, it derived from its national interests.

Conclusion

In conclusion, it should be noted that in the Republic of Uzbekistan since the proclamation of state independence is an active process of formation of the national doctrine of international law of the Republic of Uzbekistan. Theory of reservations to treaties is a promising trend in the domestic international legal science, and therefore it does not have relevant scientific and theoretical development. Review of the problem of reservations to treaties in the foreign policy practice of the Republic of Uzbekistan is of great practical importance. Knowledge of the theoretical foundations of guidelines on reservations to treaties and its regulation is necessary for the conclusion and execution of various international treaties, agreements and conventions. The study of treaty practice of the Republic of Uzbekistan will contribute to a proper international legal position, corresponding to the national interests of our country while expressing reservations and a statement of objections against them.

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SECTION 25. Technologies of materials for the light and textile industry.

INVESTIGATION PHYSICAL AND MECHANICAL PROPERTIES OF ELECTRICAL CONDUCTING FABRIC FOR FOOTWEAR AND COMPREHENSIVE ASSESSMENTS

Abstract: The work is devoted to the research of physical-mechanical and electrical performance of textile fabrics with conductive properties for safety footwear with conductive properties. The article compares the results of a comprehensive evaluation of performance of conductive fabrics taking into account weighting coefficients and without taking them into account. The studies made an informed choice of conductive tissue samples for footwear parts.

Key words: conductive antistatic shoes, textile materials based on conductive fiber, physical properties, integrated assessment, weighing indicators.

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Introduction

Static electricity is one of the most common harmful production factors, the potential danger that exists in many industrial fields associated with high-speed processing of raw materials and processing of dielectric materials, such as Oil and gas, defense purposes of the enterprise, electronics, production of synthetic materials, textile etc.

Wearing shoes with special physical properties is one of the main measures to prevent the accumulation of electrostatic charges [1]

It is used a wide range of materials of various structures in footwear. Along with the development and improvement of technology of materials for footwear, it is carried out investigations intensively on giving these materials special properties such as: heat resistance, high strength, electrical conductivity, etc. One of such materials is electrically conductive fabric based on fibers conductive fibers [2]. These fabrics have unique properties: high electrical conductivity characteristic of metal; lightness, flexibility, and other valuable characteristics peculiar to textile materials such as good breathability, dimensional stability, durability, flexibility, comfort and light weight.

Whatever method for producing a metalized fibrous material there are two types of metallic

coatings [3] solid - electrical conductivity relatively little differ from the corresponding bulk metal, and the "islet" - with the hopping mechanism of transfer of charge carriers through multiple energy barriers.

Conductive fibers and materials derived from them are used in various sectors of the economy. One of the widest applications of conductive fibers - is the production of anti-static material not electrified. Tissues with low electrical resistance are used for creating special conductive footwear.

In 1990 in the Republic of Uzbekistan by professor D.N.Akbarov has been developed the technology for producing electrically conductive fiber (EPVN) (TU 40-02-90) and established a unique CIS pilot production line for its production. EPVN on the physical and mechanical properties close to the well-known natural and synthetic fibers, so that can be processed into yarn mixed with cotton or other fibers on the cotton spinning series equipment

Objects and methods of investigation

In this paper the properties of two groups of electrically conductive fabrics are investigated in order to identify the most optimal variant for creating footwear designs with physical properties [5]. It is also

studied the physical, mechanical and electrical performance of conductive fabrics' samples based on a blend of cotton and EPVN specifications, which are listed in the table 1.

Table 1

Structural characteristics of samples of fabrics

№	Designation of fabrics samples	Structural characteristics				
		Linier density, tex		Fabric density, th/dm		Weave pattern
		warp	weft	warp P_o	weft P_y	
	Fabrics for prolonged insole					
1.	Sample 1.1	25□4	50	110	150	Plain
2.	Sample 1.2	25□4	50	110	150	Twill 1/3
3.	Sample 1.3	25□4	50	110	150	Satine 5/3
	Fabrics for the main liner					
4.	Sample 2.1	25□2	50	220	150	Plain
5.	Sample 2.2	25□2	50	220	150	Twill 1/3
6.	Sample 2.3	25□2	50	220	150	Satine 5/3

Before testing the properties of fabrics the normal atmospheric conditions are created in the laboratory rooms, the relative humidity should be 60 ± 5%, and the temperature of -20 ± 3° C (according to GOST 10681-75). The obtained physical and mechanical characteristics and properties of determining the specific volume and surface electrical resistance of the right and wrong sides of samples are given in Table 2

Table 2

Methods of testing and dimensions samples of fabrics

№	Controlled Quality	Equipment identification	Sample size, mm
1.	Breaking load, cN Elongation at break,%	Autograph AG-1	50×300
2.	Abrasion cycle	M235/3	Ø 80, Ø 140
4.	Surface density, g/m^2	GX-400	100×100
5.	Surface resistivity, Om/m	laboratory setup	50×100
6.	Volume resistance, Om·m	ИЕСТП-1	50×50
7.	Breathability g/cm^3	AP-360-SM	100×100
8.	Electrified,V	RS-101D	60×60, 25×170

Surface resistivity of fabric samples is determined by a constant current potentiometer method at a given current strength (5 mA) and a fixed distance between the current collecting electrodes Fig.1

A sample of material and is clamped between the electrodes A and B, which voltage is supplied from the constant current source. To the electrodes C and D connected voltmeter with high input impedance (and the digital valve). The voltage drop is measured at the site of the CD. Therefore, contact resistance values of the current electrodes has AB.

The distance between the AC and BD is 2 cm.

$$R_n = U/IL \text{ Om/m}, \tag{1}$$

where, R_n - surface resistivity of material Om/m; U – voltage, B; I - current, A; L - the distance between the current collecting electrodes.

For the result of the determination of the specific surface and the front of the sample surface the wrong side of the electrical resistance of the samples the arithmetic mean value for each of these indicators the five samples.
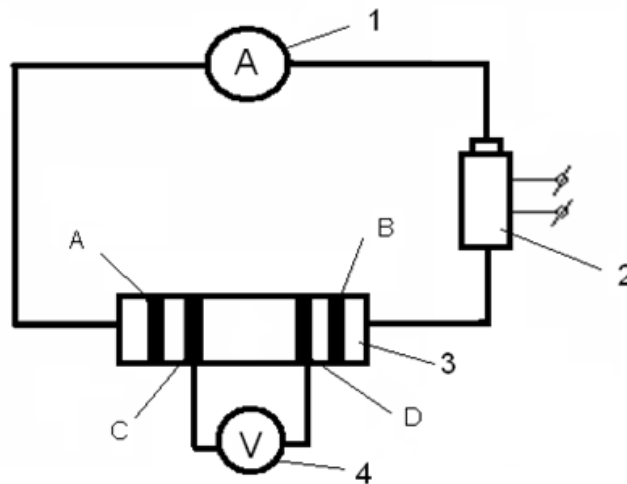
Figure 1 - Scheme of measuring the electrical resistance of the fabric strips.
1- ampere meter, 2- laboratory autotransformer; 3- measuring cell, 4- Digital DC voltmeter, A,B-C,D current and potential electrodes

The test results were processed using the methods of mathematical statistics. At 0.95 the error experience did not exceed 5%.

Results and discussion

Definition of the complex index of industrial production features many papers [6]. Based on a comprehensive assessment of given possible rank investigated samples of materials on the most important properties in view of their significance.

For the generalized results of a comprehensive evaluation of performance and clarity, using the graphical method, providing for the polygon vertices are located on the axes of a circle centered at the intersection of the axes. On the charts beams laid the experimental numerical data in natural units, such as the weight in grams, and the demand and aesthetic properties in points, assigned to them by expert.

The diagram represented in such a way that each of the axes in a limited circle, plotted the best

(or standard) indicators for the largest and smallest positive to negative.

Resulting in a polygon a graphic visualization of a complex system, it allows the designer or customer to make the right decision on the comparative assessment of different materials (product model), ranking them in the preferred number by comparing the areas of polygons Figure 1. Polygon, contoured lines connecting points on the radius vector corresponding to the values of parameters, having a large area, have the best complex refractive properties [7].

It should be noted that this technique is well known and widely used in practice, however, is not considered the importance of the outcome parameters in it, i.e. on the radar chart axes laid metric values without taking into account their weight and relevance. Results of this choice may be adequate in the event that all the studied properties of materials and have the same equivalent weight.

Table 2

Physical and mechanical properties of samples and weighting coefficients

№	Indicator name	Weighting factor	Value of the indicator					
			sample					
			1.1	1.2	1.3	2.1	2.2	2.3
1	Electrical Resistivity of front surface, Om	0,253	191,8	154,4	141,8	226	206	201,2
2	Specific volume electrical resistance, Om m	0,199	19,3	18,4	18,4	17,5	18,8	19,7
3	Resistance of the electrical parameters to the effects of sweat, %	0,178	107	109	105	106	104	108

4	Surface density g/m^2	0,151	329,9	327,9	310,8	294,9	289	279
5	Electrified, V	0,058	67	52	40	48	39	29
6	Breathability, g/cm^3 s	0,123	17,41	25,4	27	40,5	51,6	50,5
7	Abrasion, cycle	0,023	23510	21600	20550	18500	16800	16300
8	breaking load by warp, N	0,015	1265	1188,5	1086	676	587	520

Several authors emphasized the necessity and importance of the weighting coefficients of individual properties when determining the comprehensive quality index.

Of the existing methods of determining the weighting factors (cost, the probabilistic expert, mixed), the most widely expertise that is based on taking into account the views of experts. The importance and weight of rates is determined by known methods of a priori ranking [8].

In a comprehensive assessment of performance of conductive fabrics choice of nomenclature of properties and determine their weighting factors produced by the method of expert questionnaire survey of experts. The consisting of the expert group of 10 people, which shall be sufficient to obtain reliable estimates. For experts were presented eight most important indicators of the properties of materials for antistatic, conductive footwear among the groups of physical and mechanical, electrical and sanitary properties.

Performances were placed according to their degree of preference on the table - the most important in terms of expert property and were assigned the number 1, the least important -8. Results of the calculation are displayed in Table 2

Construction of the integrated diagrams indicators of material properties is made with regard to their validity. After determining the weighting coefficients of each axis of the chart must be corrected by multiplying the best indicator in the weighting factor. In this case, the best values of the indicators will be located at different distances from the center of radiation diagram. As a result, the diagram will look like, 2, where the best result of each property will be located at different distances from the initial position of the center of the circle, and as close as possible to the sound of the issue of choice, based on a comprehensive evaluation of materials.

Construction of the integrated diagrams produced in AutoCAD graphic environment. Polygons complex properties of electrically conductive fabrics formed serial connection command POLYLINE (polylines) points located on the radius vector corresponding to the values of the properties of indicators. The area of each polygon is determined automatically PROPORTIES window (Properties) in the AREA line (Surface).

Table 3 shows the values of the areas of complex polygons indicators diagrams conductive fabrics properties for the two groups of samples.

Table 3

The values of the areas of polygons of complex diagrams indicators electrically conductive fabrics properties.

№	Samples of conductive fabrics	The value of areas of polygons (mm^2)	
		excluding weighting factor	considering weighting factor
Conductive fabric for protraction insoles			
1	Sample 1.1 (plain weave)	13113,8	3943
2	Sample 1.2(twill weave 1/3)	12996,8	4404,7
3	Sample 1.3 (satin weave 5/3)	12708	4384
Conductive fabric for the main liner			
4	Sample 2.1 (plain weave)	10237,5	3630,5
5	Sample 2.2(twill weave 1/3)	9876,64	3647,0
6	Sample 2.3 (satin weave 5/3)	9979,2	3526

The table shows that the greatest polygon area (4404.6 mm^2) of the first group has a 1.3 twill weave pattern, and the second group -3647 mm^2 sample 2.3-twill weave pattern.
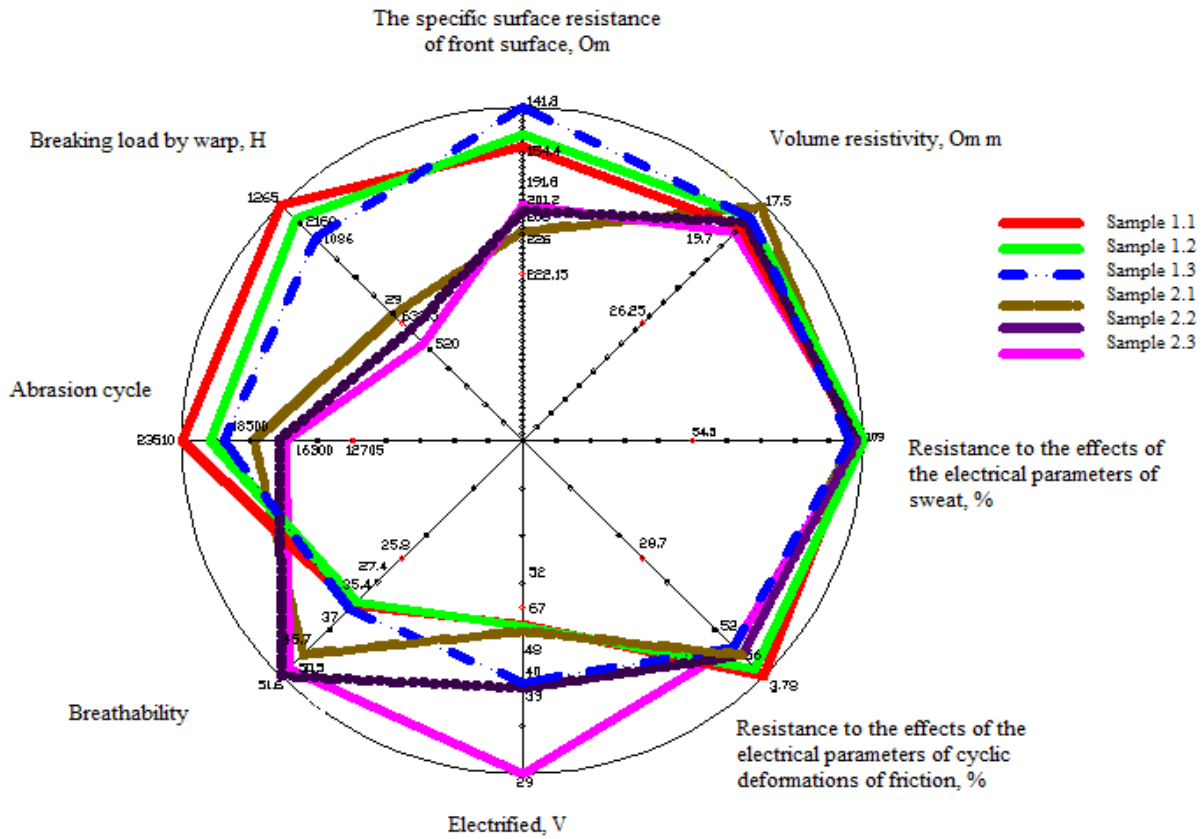
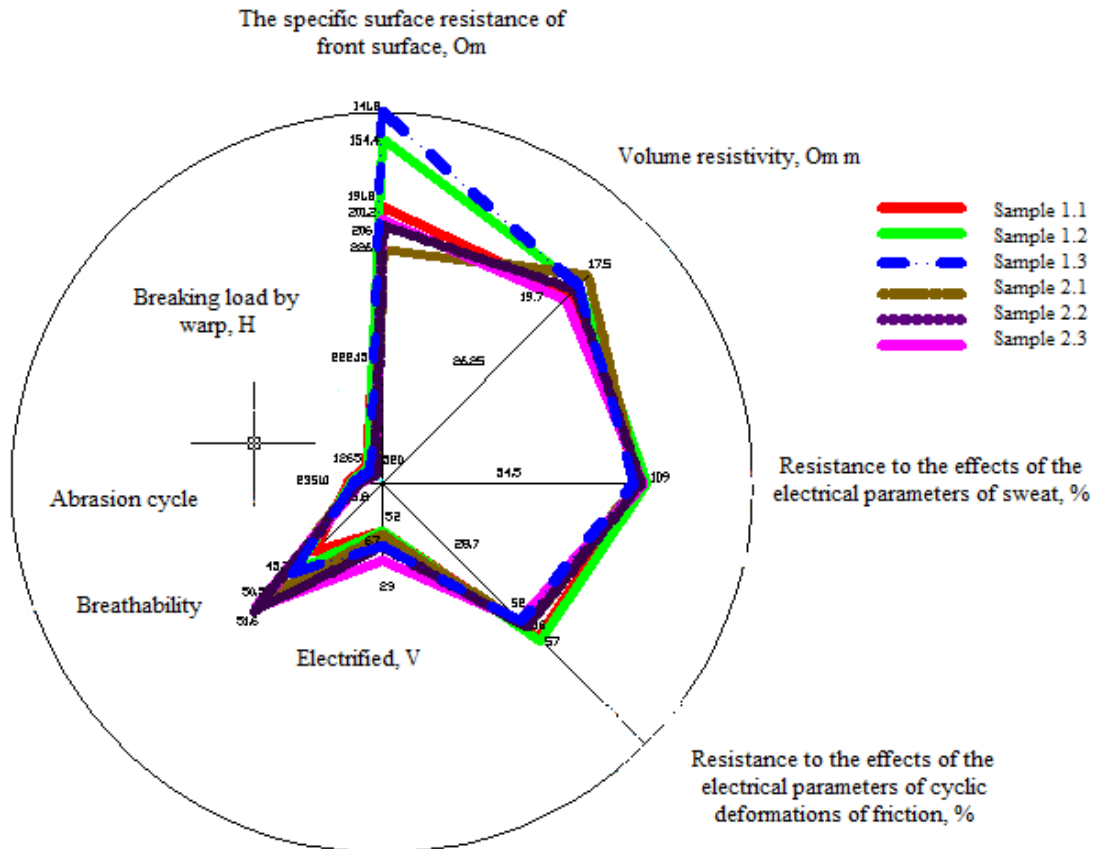**Figure 2 - Comprehensive evaluation diagram properties of materials.**

Figure 3 - Comprehensive diagram indicators material conductive properties of fabrics based on their weighting coefficients

Conclusion

The tests and complex assessment of the properties of materials by taking into account the indicators weighting coefficients allowed to choose for further research samples conductive fabrics under the number 1.2 twill (1/3) with a linear density, respectively, based on 4 × 25 tex by weft 50 text, a fabric density with 110 warp and 150 weft, as a protraction insoles and sample with 2.2 twill weave pattern (1/3) with a linear density based on 2 × 25 tex by weft 50 tex, and fabric with density in warp 220 and weft 150 yarns for the main liner of conductive footwear.

Thus, a comprehensive assessment of the properties of electrically conductive fabrics for footwear allows choosing one option from a number of visual presentations by the technical advantages of fabric samples with higher "summary" complex properties, which is difficult to be comparable with each other.

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SECTION 32. Jurisprudence.

THE LEGISLATIVE FRAMEWORK AND THE PRINCIPLES OF CIVIL-LAW REGULATION OF RELATIONS CONNECTED WITH THE COMPUTER PROGRAMS AND DATABASES IN THE REPUBLIC OF UZBEKISTAN

Abstract: The article deals with the legislative framework and the principles of civil-law regulation of relations connected with computer programs and databases in the Republic of Uzbekistan. The author analyzes the relevant legal regulation of relations related to computer programs and databases, sources of legal regulation, the role and importance of secondary legislation, the principles of civil-legal regulation of relations related to computer programs and databases, as well as legal support for further development in the Republic of Uzbekistan production software. In conclusion, the author gives suggestions for improving the legislative framework.

Key words: computer software, software for computers, software, software, legislative framework, the source of law, the law, by-law, the principle of law, legal security.

Language: English

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Introduction

At the present stage of civilization development of the intellectual property rights play a fundamental role. Creation and implementation of intellectual property rights, their use in a variety of socio-economic, legal order has a positive effect on the effective solution of certain problems. Therefore, an important task is to study and analyze the mechanism of legal regulation of relations connected with intellectual property.

Recently, more clearly seen in the developed countries of the world economy, new segments for the production of software products. Without them, unthinkable a normal functioning of modern information and communication technologies, the development of the economy and the cultural and social life. Software industry can be characterized as an economic sector which provides design, implementation, use and legal protection of software products.

Technology development requires us to use information and communication technologies in various spheres of our life. This makes it possible not only to make life easier for people, but also makes it possible to effectively cope with life, scientific and other problems.

As noted by the first President of the Republic of Uzbekistan Islam Karimov "We must be aware that without a radical, I would say explosive move towards wide implementation in all sectors of the economy, in our daily lives of modern information and communication systems, it is difficult to see the future. We need as soon as possible not only to eliminate the backlog occurring in many kinds of information services, but also to enter into the category of advanced countries with a high level of information and communication technologies. " [1].

Sources of legal regulation

In the Republic of Uzbekistan established the legal framework to protect intellectual property. An important root of this essential, the basis of regulation of relations connected with intellectual property is Article 42 of the Constitution of the Republic of Uzbekistan. This article states that "everyone shall be guaranteed the freedom of scientific and technical creativity, the right to enjoy cultural benefits. The State shall promote the cultural, scientific and technical development of

society. " Recorded generally "freedom of scientific and technical creativity" guarantees to every person engaged in scientific and creative activities in different sectors of social life. Everyone has the right to engage in creative activities, such as the creation of computer programs and databases. Also, people in various conditions and states have the right to engage in creative activities. For example, the author, the creator of the software does not require a higher education, state registration activities.

According to article 1031 (section 4) of the Civil Code of the Republic of Uzbekistan, the program for electronic computers and databases are the intellectual property. The Civil Code contains fundamental rules on intellectual property. Specific rules concerning intellectual property found its reflection in special laws dealing with that or other intellectual property.

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The improvement of section IV (intellectual property) of the Civil Code have been studied by many scientists jurists. In particular, according to O.Okyulova many negative opinions were expressed in the scientific literature regarding the Section IV of the Civil Code. After the adoption of the new edition of the Law "On Copyright and Related Rights" has not solved the problem on 20 July 2006. Also, the Law on Amendments and Additions to the Civil Code of 11 October 2006 did not prevent existing problems and further aggravated the situation. All this seriously disrupted the structure of the Civil Code, a vacuum and there were repeated legal norms. These circumstances have made urgent questions to revise and improve the section IV of the Civil Code [2].

According N.F.Imomova simultaneous presence and repetition in the two laws the same rules creates difficulties for enforcement and interpretation and endless dispute between the subjects. When this phenomenon continues, the problem may not be solved and it will still go on. For example, if in section IV of the Civil Code to include rules concerning the topographies of integrated circuits, nanotechnology, genetic engineering and innovation, and individual duplicate laws will exist simultaneously, and in the future will continue inconsistency of legal rules [3].

In foreign countries concerning the legal regulation of computer programs and databases on the basis of the application of the legal form of protection of copyright laws apply. In particular, the practice of the European countries [4], USA [5],

Japan [6], Canada [7], Spain, Ukraine [8], Belarus [9], Moldova [10], Kazakhstan [11] relations related to computer programs and databases, is governed by the copyright laws.

According I.Nasrieva prior to the Civil Code of the Republic of Uzbekistan the right to disclosure of the product is formed as the right to publish. While in the Civil Code, the term was used to completely cover the content and essence of the right to publication of the work. The right of publication is used mainly for works with the written form, and did not apply to a product which could be perceived by hearing and vision. In our opinion there should be pay attention to the systematization of the rules concerning the property and personal non-property rights. It should in particular provide for separate laws and rules for the application of these rights.

According B.Tosheva, legislation in the field of copyright based on the theory of law and understanding, you can organize the subsequent:

1. The legislative framework governing copyright (Civil Code);

2. The Act covers all the rules of copyright law (Law on copyright and related rights);

3. The law provides for certain types of copyright (Law "On Legal Protection of Software and Databases", the Law "On the activities of journalists" and other laws);

4. International legal instruments on copyright (conventions, treaties, etc..) [12].

n this case, B.Toshev pays attention to the general rules of copyright. In our opinion, it is important that, at this time you must have a legislative system containing common patterns and characteristics of the various intellectual property to which the copyright and legal form of protection. In particular, the law governing the contract of author's order, which applied copyright and legal form of protection should contain rules on the creation of computer programs and databases.

Hierarchy of legal sources

In the hierarchy of legal sources regulating the relations related to computer programs and databases is essential special laws. In particular, the laws of the Republic of Uzbekistan "On Copyright and Related Rights" dated 20 July 2006 and "On Legal Protection of Software and Databases" on May 6, 1994. According to Article 6 of the Law "On Copyright and Related Rights" are subject to copyright for electronic computers of all kinds of software, including application programs and operating systems that can be expressed in any language and in any form, including source code and object code. Copyright in a work of science, literature and art arises by virtue of the fact of its creation. The origin and exercise of copyright does not require registration of the work or compliance with any other formalities. The person indicated as the author on the

original or copy of the work shall be considered its author, unless proven otherwise (Article 10 of the Law).

It should be noted that the Law "On Copyright and Related Rights" dated 20 July 2006 Adoption of the new edition due to the ratification and the resolution of the Oliy Majlis of the Republic of Uzbekistan of 27 August 2004 "On accession to the Berne Convention ". The Act established rules concerning the works that are subject to copyright, the objective form of copyright, contractual relations, the free use of a work-free playback and adaptation programs for electronic computers and databases, and is a kind of universal law.

Law of the Republic of Uzbekistan "On Legal Protection of Software and Databases" on May 6, 1994 is a special law regulating relations related to computer programs and databases. These law being a special law, apply to the first generation of laws adopted for the protection of intellectual property. In it were some changes and additions to the adoption of the new edition of the Law "On Copyright and Related Rights" dated 20 July 2006. In this special law, there are also basic concepts about computer programs and databases. In particular, given the concept of determining the source code and object code. Source text - the text, written in any programming language, is not subject to processing in any compiler. And object code is - the program, resulting in conversion of source code into machine code that is here understood as a ready-made and used a computer program.

The data definition includes special concepts regarding object code and source code. Written code expert with special knowledge in the field of programming is - source code, and the code understandable computer or other electronic device with the help of software and hardware is the object code. The user or licensee installs the program in the form of an executable file that is object code that contains a set of instructions understood by the computer of the licensee (user) [13].

Usually, the source code be kept secret by the producers, companies and authors. For example, Microsoft word program introduced into commercial circulation with the object code.

The role and importance of secondary legislation to regulate the relations connected with computer software and databases

The next step in the hierarchy of legal sources are subordinate legal acts regulating the relations related to computer programs and databases. In the Republic of Uzbekistan to pay close attention to the comprehensive support of software vendors. In particular, to further developments in software production country for information and communication technologies in accordance with international standards, to strengthen the motivation of domestic developers to expand production of high-

quality, competitive software products, as well as assist in the promotion of the internal and external markets was adopted Resolution President of the Republic of Uzbekistan from September 20, 2013 № PP-2042 "on measures to further strengthen the incentives of domestic software developers."

In accordance with the Decree provides that, in the National Register of software developers created on the basis of a national catalog of developers and software hosted on the Internet portal software.uz. The entities whose revenues from the development, introduction and implementation of proprietary software are not less than 50 per cent of the total volume of sold goods (works, services) on the National Register of voluntary and free of charge are included.

It should be noted that software developers listed in the National Register, up to January 1, 2020 are exempt from all kinds of taxes and mandatory contributions to the Republican Road Fund and off-budget fund of reconstruction, refurbishment and equipping of schools, professional colleges, academic lyceums and medical institutions under the Ministry of Finance of the Republic of Uzbekistan. Also exempt from customs payments (except customs clearance fees) for imported equipment for their own use, part of the components, parts, components, technical documentation, software that is not manufactured in the Republic of Uzbekistan, on a list approved by the Cabinet of Ministers of Uzbekistan.

Is it right to use the term "electronic computer programs"?

The term "programs for computers" were used in the original titles, in particular the law of the Republic of Uzbekistan "On legal protection of programs for electronic computers and databases", which was adopted in the early stages of the development of information and communication technologies. In our opinion, these laws are much out of date, as it was taken as far back as the early stages of development and implementation of software. The law is almost no amendments except amendments and additions have been introduced mainly technical in nature. When adopting the law of the Republic of Uzbekistan "On legal protection of programs for electronic computers and databases" market reforms only began to implement, there were computers, mobile devices, and computer software. And these technologies have not been applied on such a scale as today. Scope of the innovation and technology of data was also poor. Similar laws have been adopted and although at the time of the Commonwealth of Independent States, and later lost their force [14].

Law of the Republic of Uzbekistan "On legal protection of programs for electronic computers and databases" contains 16 articles and reiterates many provisions of the law adopted in the new edition of "On Copyright and Related Rights". In particular, the

conditions for the recognition of copyright in the program for electronic computers and databases (Article 4), the terms of copyright (Article 5), authorship, personal and property rights (Article 6), the transfer of property rights (Article 7), property the rights to the program for electronic computers or database created in the performance of official duties (article 8), the right to register and registration programs for electronic computers and databases (article 9), program registration for electronic computers and databases in other countries (article 10), the use of the program for electronic computers and databases under a contract with the owner (article 11), and others.

The Law of the Republic of Uzbekistan "On legal protection of programs for electronic computers and databases" also has fundamental rules that make it possible to identify the computer program as an intellectual property right. In particular the rules governing the concept of a computer program, database, free use of computer programs and decompilation, protection of computer programs, and others.

Today widely used software in mobile devices (usually on android platforms). According K.Nizamatdinova between the telephone operator and the subscriber is a contract which provides for the provision of telecommunications services and payment of services rendered by the subscriber. If a user has a need to provide other services (eg, transmission of a variety of photos, games, music, etc.) The operator shall specify in the contract conditions that these commitments will be provided by third parties [15].

It should be noted that to date the bulk of the services provided by mobile operators is the transmission of data. Through mobile devices are introduced into circulation various types of intellectual property -. Movies, music, songs, audio-visual, artistic works, works of science, art, etc. With these objects can only be used, with appropriate software. That is, this phone - must have smartphone capabilities. Since the smartphone has a fully functional operating system (for example, Symbian OS, Windows Mobile, Palm OS, GNU / Linux, Android, Apple iOS, MeeGo, etc.) and these operating systems are installed on the smartphone memory. Operating system installed on the smartphone is more complicated and closed.

Based on the foregoing, we note that of Computer programs, computer programs, software, software product are identical to the concept, synonymous. Considered obsolete term "electronic computer programs." It is used in the legislation, the term corresponding to the international standards such as "computer software", "software", "software". With the introduction of computer programs into circulation must comply with the rights and legitimate interests of authors and copyright holders. Also, not least important is consumer protection in this area.

The principles of civil-law regulation of relations related to computer programs and databases

The principle of the right being the main source, the beginning of legal novels are an important component in the regulation of social relations. The main value of the data has started (the principles of) is that together they form a civil law as a holistic education system of a democratic type, capable of the most effective way to regulate the property and non-property relations [16].

According D.Habibullaeva "the principle of the right to judicial protection is - the data to all interested parties a guarantee in any stage of civil proceedings access to the Courts for protection of their rights and legitimate interests."интересов» [17]. It is important to distinguish between the principles of civil law and the principles of civil procedure law as enshrined in codified acts (Civil Code and the Civil Procedure Code of the Republic of Uzbekistan).

N.Imomov exploring the principles of legal protection of selection achievements proposes to create a single organizational infrastructure for the creation of intellectual property, compulsory identification of breeding achievements, etc. [18]. O.Okyulov exploring the objects of intellectual activity relation to the development of innovation considers that there are several types of intellectual property principles. In particular, the freedom of creativity, the ability to use the works of science, literature and art, enshrined in the laws of personal and property rights, the formation of national legislation in accordance with international standards, etc. [19]. In fact, every intellectual property needs in the implementation in practice of the principles of legal regulation.

According S.Borodina "copyright system consists of the principles of the principles of protection of intellectual property, not alienability moral rights of authors, access to cultural values and artistic freedom" [20]. In this case, it is considering S.Borodin narrowly copyright principles system. So, in theory and in practice, there are many other principles of copyright, which express the essence of the legal institution and having generally binding in nature.

In our view, the following principles of civil-law regulation of relations connected with computer software and databases:
- Freedom of creativity of creating computer programs and databases;
- A combination of the personal interests of the creator of a computer program and database with the interests of the state and society;
- Are inalienable moral rights of the creator of computer programs and databases;
- The freedom to enter into a different type of contract of the relevant legislation;

- Free (gratuitous) the reproduction and adaptation of computer programs and databases in accordance with the law;

- The transition of computer programs and databases as a work in the public domain;

- Consolidation and protection of property and personal non-property rights holders in accordance with international and national law;

- The existence and mass use in civil turnover of exclusive rights in respect of computer programs and databases;

- Collective (co-author) to create complex, bulky, requiring significant financial investment of computer programs and databases;

- Repetition of some parts of the code (source code) of a computer program;

- Development and improvement of national legislation in accordance with international standards;

- The impact of science and technology, software products in the development and improvement of the legal framework;

- Copyright and legal form of protection;

- The author's interest in the creation and use of computer programs and databases.

Questions of legal support further development in the Republic of Uzbekistan made software

Further development in the Republic of Uzbekistan made software, information and communication technologies in accordance with international standards, to strengthen the motivation of domestic developers to expand production of high-quality, competitive software products, as well as assist in the promotion of the domestic and foreign markets is a priority development of our country. In this respect, an important role is played by the legal provision.

Public authorities should have its place in the implementation and protection of rights and legitimate interests of copyright holders of computer programs and databases. It is necessary to create legal mechanisms to combat software piracy.

It should focus on relevant international standards for the creation and implementation of software products. Ensuring that the competitive environment in the development and implementation of software products in different sectors of the economy. It is necessary to develop and introduce new contractual structures for the creation and introduction into circulation of computer programs and databases.

In the field of legal support of this sector should note the lack of a single system-legal instrument. Existing regulations are scattered, they are characterized by fragmentation, locality, and they are mainly of the nature of regulations that do not provide their supreme legal force.

The new law will ensure the formation of a unified state policy in the sphere of development and strengthening of the production of software products of our country. It will create a favorable climate for expansion and strengthening of the role of programmers and developers in dealing with various socio-economic and political problems, coming to our country. Facilitate the full effective use of the achievements of the production of software products in all areas of public life contributes to the development of interactive public services. Will open new avenues in the development of entrepreneurial activity, create a comfortable environment in the implementation of business activity.

Conclusion

The legal system of the Republic of Uzbekistan belongs to the Romano-Germanic legal system. Legal basis of civil-legal regulation of relations related to computer programs and databases should be seen in public law and private law character.

Development does not cost on a place, and it is advisable to find solutions to existing problems. Therefore, it should be in the Civil Code to define common rules on intellectual property rights and further development of its standards. With the development of the foundations of legal regulation of relations related to computer programs and databases it is closely related to the modernization of the social life of the Republic of Uzbekistan and the impact of foreign experience. On this special laws governing these relations.

In our opinion, it is necessary to take special and flexible law covering the basic rules and the novel of the Civil Code, laws of the Republic of Uzbekistan "On Copyright and Related Rights" dated 20 July 2006 and "On Legal Protection of Software and Databases" 6 May 1994, and other regulations.

Novels and legal structure applicable to computer programs and databases should be determined in a special law. The special law it is advisable to consolidate the rules regarding further development of the market of software, support software developers in accordance with international standards, to support and stimulate the programmers, programmer defining the legal status, provide benefits and preferences, improving the training system in the industry.

The new law has a higher legal force, would effectively regulate civil relations relating to computer programs and databases, relevant international standards, covering the interests of the state and society.

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SECTION 32. Jurisprudence.

THE ROLE OF THE COURTS IN PREVENTION OF OFFENSES: IN EXAMPLE OF JUVENILES

Abstract: In this article, the author provides scientific-theoretical and practical analysis on the role of judicial authorities in implementation of delinquency prevention. Furthermore, the possible resolution for the goals set by the reforms in the field of law enforcement, the courts, measures taken to prevent crime rates and conditions contributing to the increase in the amount of crimes are discussed; the article also points out the importance of measures taken to suppress crime rates among the youth, especially, juvenile delinquency. According to the present article, educational activities carried out to raise the awareness of the young people are paid a serious attention; also, the courts are serving educational purposes while reviewing the cases. Besides, the article urges that despite the preventive activities, variety of law violation among the young generation are observed, such as crime of socially less importance, small crime, attempted and violent crime.

Key words: law violation, legal education, crime, court, judge, prevention of crime, suppression of crime.
Language: English
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Introduction

Today the conditions that cause crime and implementing a set of measures that seek to serve in every aspect of the judicial and legal reforms can compared with the realization of the objective.

Youth in this issue, especially in prevention of juvenile offense, they carried out with the emphasis increasing educational aspect in work with youth. However, although the cases of juvenile between the different types of offenses, even if they have not only a social danger or less serious crime, but very serious types of cases leads to the commission of crimes. In most cases, a penalty against them, the current legislation is also a less strict application of sanctions, if possible, their imprisonment; with no kind of punishment procedures are clearly defined [1].

Materials and Methods

The issue of human rights violations committed by juvenile, which legal scholars J.Muxtorov that up, "youth crime prevention effective operation of the system: first, the organization of the activity of preventive services, and secondly, they are required to clearly define the objectives, thirdly, depend on

ensuring internal affairs effective interaction with other departments and public bodies" [2].

The prevention of juvenile crime, it is usually based on long-term efforts to reduce the complex closely related to each other, provides for the implementation of legal measures. This activity provides by prevention education institutions, internal affairs agencies, juvenile delinquency prevention departments, committees and courts of general jurisdiction as juvenile by the subjects of special and non-special prevention.

It should be noted that youth crime prevention is one of the most important problems is that, they are under the influence of law enforcement bodies and non-governmental organizations in preventive into it after having committed the offenses. In the field of justice and healthcare as a measure of responsibility for human rights violations committed by him to avoid certain mechanisms to develop and implement more effective. It means that to prevent tort or crime is better and social useful.

One of the important issue in justice specialty is what will be the role of the judicial authorities in this aspect, and what makes the position of this government is a network of independent courts

attention among other government bodies and law enforcement agencies.

It should be recognized that the elimination of criminal and other offenses to happen as the body directly engaged in the activity. As prevention of offenses among the youth of its population and activities are an example. A court during the criminal case, which related to juvenile delinquency, it should take concrete measures. In the case, the court appointment of a penalty against the person who committed a crime or other offense not only to justice, but he will be able to prevent other crimes.

The first reason of the main objective of criminal punishment is to train the juveniles. It means the purpose of the punishment is individual training. Typically, courts in educational role characterized as an open and transparent manner to ensure the participation of the other juvenile during their upbringing.

In this context, transparency of the legislation in court cases can be recognized as a positive condition. However, Article 19 of the Criminal Procedure Code, this is contrary to the interests of transparency, a hearing on criminal case shall be public, except for the instances inconsistent with the reasons of protection of state secrets, or connected with hearing on sexual crimes. In addition, the cases on Procedure for proceedings on the criminal cases of persons aged under eighteen at the moment of committing the offense shall be envisaged by the general rules, as well as information on the private lives of citizens or their failure to disclose the information humiliating honor and dignity of the victim, witness or other persons participating in the case, as well as the need to ensure the safety of their family members or close relatives of the cases, in other cases by the court ruling is allowed to see the closed session of the court.

Private postal and telephone correspondence can be disclosed during the open court hearing only upon the consent of the sender and receiver. Otherwise they shall be disclosed and a closed session of the court [3].

The principle in Criminal procedural law in many ways gives priority to courts, based on the facts of the case that they have the right, which allows providing hearings open or closed. However, in our opinion the proceedings in this case, for further improve the effectiveness of their activity, as well as its educational requirements of the increasing importance of the work should be open sessions of the court. Cases involving crimes committed by juvenile in closed court session in our educational process weakens a bit of a warning function. Of course, many experts in this case in open court the defendant is a juvenile as a person and the way of life may be affected by the level of its development, the statement said. However, in our view, a fair judicial process, which conducted a comprehensive and

reasonable which based on the evidence and judge, it strictly comply with the above requirements and cannot be produced, then nobody would be upset, and contrariwise the juveniles who had a crime make an appropriate inference.

Therefore, the judge who makes decision should have individual approach for each case, measures to eliminate the conditions that facilitated (by way of private admonitions) degree of guilt of the defendant, there are circumstances excluding the have or not crime, as well as to explore his family condition and other cases in making the crimes and then make an appropriate inference that truly represents the obvious educational value.

In protection of the rights of juvenile Russian scientists G.I.Zabryanskiy L.V.Emelyanova emphasized that their rights and interests are more common in the activities of law enforcement agencies. According to the scientists, control activities carried out by the prosecutor's office found that the bodies of internal affairs in the process of preliminary investigation in relation to juvenile implements prison without any base evidence. This error and the violations of the law corrected in time of completion of the investigation or the court of first instance or cassation procedure [4]. Prior to that, if the duration of the preliminary investigation of the criminal case, the time of the court hearing, upheld fixes of the high court for the selected scale measure, this is a very long period and, as a result of these can lead to negative demerit in juveniles.

One of the unique features of the liability of juvenile have the limit of assigned to administrative and criminal sanctions. It means the current penalty system established by the Criminal Code of the Republic of penalties imposed on a juvenile in case 5 in 9 [5]. In prevention of crime and delinquency by these measures appropriate and evidentially carried out by the courts will serve as one of the primary factors.

According to research by A.X.Valeev, to use a suspended sentence them more efficient than sentenced to imprisonment [6]. Nevertheless, O.V.Demidova thinks that criminal liability of juvenile, 70% used a suspended sentence for their crimes during the trial period [7].

Without denying the views of the researchers listed above, it necessary to continue the practice based on liberalization of criminal sanctions which realizing in Uzbekistan as for juveniles to use less of criminal or other sanctions against persons who have committed offenses or other legal measures. However, while the inevitability of punishment of the criminal law, justice and humanitarian principles as well as the suspended sentence, taking into consider the objectives of its educational juvenile need to further strengthen the control measures during the trial time. Because the person who has committed a crime and should be serving inevitably

be worthy of the punishment to the crime, and to prevent his over the edge of the penalty would be vicinity example for the other juveniles, it will be useful to determine the effectiveness of the educational effects.

The execution of inspection of internal affairs activities have significant place in realization of this the most important and profoundly serious task. It should be cooperation that is more effective and interaction between activities of citizens, self-governance, social organizations and governance.

Conclusion

In conclusion, it should be noted that the terms of the judicial and legal reforms in the country to further enhance the role of the courts, especially the abuse of juveniles by their crimes to further strengthen the preventive activity of any human rights violations and give appropriate legal assessment of the actions, it should need to show effect of realization of educational practice in real.

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SECTION 31. Economic research, finance, innovation, risk management.

IMPACT OF DIVIDEND POLICY ON STOCK PRICES OF FIRM

Abstract: *Dividend is the part a firm's total net profit earned during a specified period of time. The net profit of a firm is divided among investors (the shareholders of the firm) according to their respective share of investment. Dividend policy is the most important dimension of a firm which directly influences stock prices of a firm. The firm's Board of Directors makes and implements its dividend policy with regards to profit management, distribution of profit among shareholders and to retain a part of profit in company account to avail some better investment opportunities in future. This study focuses on analyzing the impact of dividend policy on the stock prices a firm. To study the impact of dividend policy on the stock prices the banking sector firms were selected. The 10 year (2005 to 2014) financial data of five banks were collected from their financial reports and websites of State Bank of Pakistan and Karachi Stock Exchange. The results revealed that a rational dividend policy plays an important role in attracting reputable investors and contributes a lot in strengthening capital structure of a firm. The study was initiated by literature review conducted around relevant texts and journals to get awareness about previous research in the area. To get a critical view of dividend policies of different firms and relevant impact on stock prices, a large scale secondary data was taken about capital structure and relevant dividend policies of these firms. Secondary data was gathered through internet and personal visits of selected sample of respondents. The findings of the study revealed that dividend policies of a firm might have a positive and desirable impact on stock prices of a firm if devised and implemented after in-depth study of capital structure of the market and dividend policies of different firms. The results of the study are expected to help business institutions, business students and researchers to understand a distinct interdependence between dividend policies and stock prices of a firm.*

Key words: *Dividend, dividend policy, stock prices, investment, dividend payout.*
Language: *English*
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1. INTRODUCTION

Dividend policy is recognized as one of vital strategic decisions of a firm. The dividend policy describes what amount of dividend should be paid, when to release dividend in which form, when and how much to retain for future investment and to deal with situational issues. A decline in release of dividend can reduce the value of share. Dividend is the return on investment made by an individual, group or organization. According to Fama.et al. (1996), share prices remain under direct influence of dividend policiy of a firm (either positively or negatively). Under the traditional practices it was believed that a sober dividend policy helps in acquiring the attention of investers. The financial manager works with an aim of capitalizing the wealth of the stockholders. For this financial

manager formulates a fit dividend policy to boast the value of firm. A sensible dividend policy works on creating the favourable circumstances for the firm which in return is expected to boost its value in the market and gain attention of investors. The preliminary studies highlighted the fact that declaration of hike in dividend payments are expected to make positive response from investers or negative response from them in the case of fall in dividend payout. Allen and Rachim (1996) believed that there is strong relationship between dividend policy and stock prices. Whereas, Miller and Modigliani (1961) emphasized that the investor is not excited in getting the dividend and price benefits, as dividend announcement and share price are not free from each other. The information benefit and signaling effect may cause control in return and share

prices by dividend (Gordon, 1963; Friend and Puckett, 1964; Kalay, Asquith and Mullins, 1983; Ambrish et al, 1987; Baskin, 1989). Miller and Rock (1985) argued that the announcement of dividend provides maximum information about funds flow and it helps the market to calculate the approximate earnings of firm in current period. Under the influence of signaling effect, the increase in share price is not equal to the estimated dividend and under or over valuation of prices may occur (O'Higgins, 1991).

Dividend policy and stock prices

Organization's dividend policy becomes long-standing financial strategy option during investment decision making process. A dividend policy showing high return in the form of dividend will get more attention of the shareholder. At the same time a dividend policy becomes more popular among shareholders when instead of releasing dividend in cash form, a firm holds a substantial amount of shareholders' money in stock form to avail some conducive investment opportunities. A joint study conducted by Nishat and Irfan Chaudhary (2004) concentrated to discover some facts about impact of dividend payment policies on stock prices. They took a sample of 160 companies registered at Karachi Stock Exchange for this research. The observed evaluation depended on a cross-sectional regression analysis of the relation between dividend policy and stock prices instability. Dividend policy measures both the dividend yield and payment ratio has important impact on stock price instability. The study discovered a nuber of factors which influence the divident policy and potential stock prices. These factors include investment opportunities, capital structure (annual and targetted), expected and actual financial planning and earning of the firm. Also the changes in government policies and reforms in tax agendas may also affect these policies.

2. LITERATURE REVIEW

There is high debate among scholars and professionals on the topic of dividend policy and its potential impact on stock prices. A number of studies found the positive link between dividend policy and stock prices. At the same time some other studies found this link negative at a given time. According to scholars dividend policy plays an important role in share price determination. At the same time dividend policy may discourage the shareholders' interest. In today's swift expansion in the stock market, organizations have to establish the most constructive policy related to dividend matters. An organization that wants to be the market leader needs to focus on dividend payout and dividend supervision issues. In the past a number of studies were undertaken to investigate relationship between dividend policies

and stock prices. On dividend policies a profound work was done by Linter (1956). Linter (1956) raised the question, which is continuing essential, "which choice of manager does change the size, form and schedule of dividend payment?" In 1961 Miller and Modigliani also commenced the perception of Irrelevancy Theory of dividends. They were found of the opinion that there is no impact of dividend policy on price structure of shares. Several other researchers like Black and Scholes (1974), Chen et.al. (2002), Adefila et.al. (2004), Uddin and Choudhury (2005), Denis and Osobov (2008) and Adesola and Okwong (2009) also acknowledged the dividend irrelevancy theory and were found reluctant to accept any relationship between dividend policy and stock prices.

Contrary to the above researchers Gordon (1963) revealed a close relationship between dividend policy and stock prices. During first decade of 21st century a number of research studies echoed the viewpoint of Gorden. Travlos et.al. (2001), Baker et.al. (2002) and Dong et.al. (2005) were found in favor of the Rellevancy Theory of dividends. In 2009 Ahmed and Javaid carried out a research to investigate the measures of dividend policy in the rising economy of Pakistan. For this research they took a sample of 320 listed companies in Karachi Stock Exchange from 2001 to 2006. In this study consequences explain that most of Pakistani firms take a decision to make payment of dividend on the basis of profits i.e. current year or preceding year profits. Those firms have large net profits distribute high amount of dividend. So the firms having high net profits pay larger dividends amount to their investors. Moreover, outcomes proved that market liquidity is positive relationship between dividend payout ratio and negative relationship was found between firm's size and payment whereas expansion opportunities and dividend payments have no relation. Outcome of the research carried out in 2009 by Adesola and Okwong that based on dividend policy, wherein they practically experienced the issues impacting the decisions of dividend of Nigerian firms prove that policies of dividend payment have significant connection among income, per share income and preceding year dividend; however, growth of firm and size contain no consequence on dividends policy.

In 2010 Akbar and Baig choose a sample of 79 corporations registered in Karachi Stocks Exchange to investigate how dividend announcement impact on share prices. This study clarifies that announcement of dividends either Cash Dividend or Share Dividend or both have positively impact on Share Price. In 2010 Nazir et.al. explored the impact of dividends payment policy on share prices. This research shows the result that dividend payment and dividend yield

contain considerable change on share price while volume and leverage contain harmful insignificant change and income and expansion contain optimistic considerable change on stock price. Khan et.al. (2011) investigated the consequence of dividends payment policy on stock price by choosing a trial of fifty five firms registered it Karachi Stock Exchange. The Results of this study prove that dividends yield, per share income, returns on equity and after tax profits have optimistic impact on share price while retention percentage has negative relationship with Share Prices.

Nazir et.al. (2010) conducted the study to explore that how the corporate disbursement policy impact the stock price instability. From KSE a test of 73 companies was examined. The observed evaluation depended on a fix cause and random cause model regression analysis among dividends payment policy and stock prices instability beside by control inconsistent of volume, leverage, expansion and income. They established mutually the dividends policy procedures (dividend yield and payment ratio) that have an important force on the stock prices fluctuation. This proposes the share price fluctuates due to dividend policy and it gives proof behind the judge recognition effects, time cause and information cause in Pakistan. Outcomes of dividends yield to share prices instability rise for the period of 2003 to 2008, while payment percentage cover a considerable collision on minor impact level. Generally, volume and leverage contain unconstructive and no significant force on share prices insecurity. While the end result is not well-built for residential market other than dependable with the manners of growing share markets similar to Pakistan. Ahmad Kaleem and Chaudhary Salahuddin (2010) suggested that payment of dividends must have no collision on shareholders worth in the lack of dues and market limitations. Instead of paying out dividends companies must invest their excess money in different ventures that contains optimistic disposable present worth. They also propose that anticipated upcoming dividends are the source of market estimation of stocks. In spite of these abstract opinions which pay no dividends, firms frequently provide dividend to stockholders probably that shows information about the potential earnings forecast. The firms are preferred on their high share yield basis. Results proved that the shareholders do not rise worth from declaration of dividend. Definitely, investors lost a little value over a time of one month previous to dividends declaration during seven days later than ex-dividend day. Generally, fact leans toward sustain the dividends irrelevance assumptions.

Ahmed et.al., (2008) conducted a research to explore that how the dividend yield, dividend payment ratio, income per share, return on capital and net profits impact the share prices in rising markets of the Pakistan. Outcomes proved the dividends yield and dividends payment percentage has major impact on share prices. Dividends acquiesce has negatively impacted the equity prices while dividends payment percentage has optimistic considerable impact on prices of share. Outcomes are opposite to dividend irrelevancy hypothesis. While per share income and net profit have considerable positive link with share prices that shows the companies who have large per share income and net profit has higher share prices. Returns on capital have inconsequential positive change on share prices. These findings are consistent and appropriate only in promising markets like Pakistan. This investigation targeted on companies which are registered at Karachi Stock Exchange. For this analysis a section of 63 firms listed in KSE were selected, but in coming time the model volume might be improved and also other sectors and firms can be used which are registered at Islamabad and Lahore Stock Exchange. This research includes five independent variables for investigation. Some important sectors including Sugar, Chemical, Energy and Food were selected for the reseach. In 2012 Kanwal Iqbal Khan conducted a study to investigate the relationship between Dividend and Share Prices later after calculating the retention ratio, income per share and return on capital variables. For this research example of twenty five firms registered in KSE were selected. The experimental assessment on fixed and random effect Model supported the relation between cash dividend, retention ratio and return on capital among shares market price, whereas income per share and share dividend contain negative and irrelevant relationship with stock price. This investigation also explains that Dividend Irrelevancy theory is not valid for chemical and pharmaceutical firms in Pakistan.

Nazir et.al., (2010) performed a work to investigate the impact of dividend policies on share prices. They identified the feasible factors those were reasoning impact on the stock prices whichever in rising or downward way. A number of further aspects like convertible issues, permanence issues and stability in the dividends payment are also considerably effecting the stocks estimation for banks. Dividend policy has larger impact on share price instability of the company during our present result of the research they can terminate that the deviation in share prices of the chosen banks from the economic segment has been biased by integer of dividends and associated issues. Companies who have a number of investment chances illustrate that the upcoming prediction of the company is very brilliant, so the dividend policy has a positive impact on share prices. Another study accomplished by Chen et.al., (2000) expressed that organizations that

possess a number of investment opportunities have a considerable positive impact on share prices, on the other hand companies that have low investment opportunities have a negative reaction towards share prices. Abdullah Al Masum (2014) conducted a study to explore the relation among Dividend payment policies and Share Prices of profit-making banks of Bangladesh registered at Dhaka Stock Exchange. The pragmatic evaluation based on the fixed effect and random effect Model explains considerable pessimistic relationship between Dividends Yield and Stock Prices, whereas Retention Ratio has negative relation with Share Market Prices. This study also proves that Return on Capital and Income per share have numerically considerable positive impact on share prices and net profit has a significant negative impact on share market prices of profit-making banks of Bangladesh.

3. METHODOLGY

To study the impact of dividend policy on the stock prices the banking sector firms were selected. The 10 year (2005 to 2014) financial data of five banks were collected from their financial reports and websites of State Bank of Pakistan and Karachi Stock Exchange. Hypothetical statements were designed to provide direction to the study which are;

H_1 = Dividend payout has significant positive impact on stock prices.

H_2 = Dividend per share has positive significant impact on stock prices.

H_3 = Retention ratio has significant negative impact on stock prices.

Econometric Equation

$SP = \lambda o + \lambda_1 DPR + \lambda_2 DPS + \lambda_3 RR$

Whereas

SP = Stock Prices

DPR= Dividend Payout Ratio

DPS= Dividend per Share

RR= Retention Ratio

4. FINDINGS AND DISCUSSION

The analysis was done to find out relation between independent and dependant variables. Correlation and regression analysis tools were applied to check the impact of dividend policy on the stock prices in the banking sector firms.

4.1 Correlation Analysis

Positive correlation between stock prices and dividend payout was found in correlation analysis (r=0.877, p<0.01). Also it was observed that there is correlation between stock prices and dividend per share (r=0.960, p<0.01); whereas, stock prices and retention ratio has significant negative correlation(r=-0.419, p<0.05). The following table provides the results based on correlation analysis of variables.

Table 1

Correlation analysis of variables.

	Variables	Stock Prices	Dividend Payout	Dividend Per Share	Retention Ratio
1	Stock Prices	-			
2	Dividend Pay out	0.877**	-		
3	Dividend Per Share	0.960**	0.354**	-	
4	Retention Ratio	-0.419*	-0.283	-0.397*	-

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

4.2 Regression analysis

As per table 2, the adjusted R^2 is 0.18469 which is the defining capacity of model. The F-statistics is 103.7908 and Prob (F-statistic) is 0.000, which mean model is fit for analysis. The data was stationary; there was no hetroskedasticity, no multicollinearity and no autocorrelation. Regression analysis was executed and it was found that if dividend payout ratio increases by one unit an increase of 19.38730 will be observed in stock prices, thus hypothesis 1 is supported. Also if one unit will increase in dividend per share, an increase of 5.373796 will be observed

in Stock Prices which led towards the support of hypothesis 2. Whereas, if one unit will increase in Retention ratio a decrease of -3.069606 will be observed in stock prices, thus hypothesis 3 is supported.

Table 2

Regression Analysis.

Variable	Coefficient	Std. Error	t-Statistic
C	12.70248	0.980160	1.35959
DPO	19.38730	7.515300	**2.579711**[**]
DPS	5.373796	0.816350	**6.582714**[**]
RR	-3.069606	1.220256	**-2.515543**[**]
R-squared			0.184690
Adjusted R-squared			0.163785
F-statistic			103.7908
Prob(F-statistic)			0.000000
Durbin-Watson stat			2.042728

** $P<0.001$, DPO = Dividend Payout, DPS= Dividend Per Share, RR= Retention ratio

The results show that dividend payout and dividend per share has significant positive impact on stock prices which supports our hypothesis 1 and hypothesis 2. These results are also aligning with the finding of Ahmed and Javaid (2009), Akbar and Baig (2010). It means that when firm issues and payout the dividend the worth of its stock in market will be increased and there will be a sense of trust regarding that firm in market and the firm debt taking capacity will boost up. However, if empirical analysis also determines that retention ratio has significant negative effect on stock prices and supports hypothesis 3 then findings will be regarded as similar to the findings of Abdullah Al Masum (2014).

5. CONCLUSION

The integrated results drawn out of literature review and analysis of the secondary data proved that dividend policy has a significant effect on firm's performance and firm market value. A sound policy will boost up its market share and will create sense of trust in the market which will generate favorable conditions for firms. On the basis of results the firms should focus on dividend policy in terms of gaining trust and attention of the investors. The regular dividend payment will help in high retention of investment and will improve market share of the firm and also firm's debt taking capacity will further strengthen.

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SECTION 6. Metallurgy and energy.

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TO THE QUESTION OF THE SOLIDIFICATION PROCESS OF STEEL CASTINGS WITH DIFFERENT WALL THICKNESSES

Abstract: *The article was defined the transition time of the non-alloy steel 15L from liquid phase to solid phase in conditions of the castings manufacturing with the walls thickness from 1 mm to 20 mm.*
Key words: *temperature, steel, thickness, solidification, time.*
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Introduction

In modern conditions of the machine-building production, the different types of the cast are the progressive technological form-building processes of the castings manufacturing of complex configuration. In some cases, it is possible to obtain finished (which does not require subsequent machining) parts of high accurate and an unique casting, weighing up to several tons.

The essence of the casting process is in the solidification of the molten material in a closed special mould, which configuration corresponds to the geometric shape of the casting. The solidification process is characterized by the change of the ratio of liquid and solid phases of the casting over time. On the solidification time the volume of the filled molten material, the configuration of the casting, the properties of the alloy (metallic or non-metallic) at different temperatures and etc are affected. The account of all factors during the performing of the technological process of the casting can reduce the defects and to obtain the equilibrium structure of the casting.

The most accurate values of the solidification time of metallic castings, for example hollow with different wall thickness, it is possible to obtain by the mathematical modeling.

Materials and methods

Modeling of the solidification process of casting was carried out in a computer program LVMFlow. The molten non-alloy steel grade 15L [1] at an initial temperature of T_{s0} 1610 °C was subjected by the solidification. The solidification process was occurred before the solidus temperature [2] $T_{sol.}$ 1475.448 °C (kinetic solidus 1462.472 °C). Liquidus temperature [3] $T_{liq.}$ for this steel is 1511.367 °C, eutectic temperature [4] $T_{eut.}$ – 1141.31 °C.

Non-alloy steel 15L for casting has the following chemical composition: iron – 97.34 %, carbon – 0.16 %, silicon – 0.36 %, manganese – 0.7 %, chromium – 0.5 %, phosphorus – 0.04 %, sulfur – 0.04 %, copper – 0.3 %, nickel – 0.5 %, aluminium – 0.06 %. Steel possesses casting properties: CLF up – 70 %, CLF down – 30 %. Total emissivity ε_s for the liquid alloy is 0.1, for austenite – 0.11, for cementite – 0.1. Steel properties have been calculated by phases.

The solidification process was characterized by kinetic parameters:

1. Liquid alloy: crystallization heat of the primary phase $Q_{cr.}$ – 270 kJ/kg.

2. Austenite: the 1st phase growth coefficient – 0.2 mm/°C · s, nucleation/growth ratio – 0.1, crystallization heat Q_1 – 130 kJ/kg.

3. Cementite: the 2nd phase growth coefficient – 0.1 mm/°C · s, nucleation/growth ratio – 0.01, crystallization heat Q_2 – 330 kJ/kg.

The mould was made from the mechanically mouldable sand *Green sand JSM* [5]. Wet mixture on based of the quartz sand and 6.92 % bonding additives. The initial temperature of the mould T_{m0} was taken at 20 °C. Total emissivity the mould material ε_m is 0.93 when a gas-permeability [6] P $1.53 \cdot 10^{-6}$ m²/Pa · s and a rigidity 1.0.

The refractory coating of mould was absent. Interfacial heat transfer was set by the air gap at a temperature of 1415.45 °C. Upper, lateral and lower coefficients were taken as 100 %.

The calculation of the some physical properties of the mould material and steel was carried out by the mathematical models (1 – 7):

- heat conduction of the mould material λ_m, W/(m · °C)

$$\lambda_m = \lambda_{m.liq.} + 1.57 \cdot 10^{-4}(T_{s0} - T_{liq.}), \qquad (1)$$

where $\lambda_{m.liq.}$ – heat conduction of the mould material at $T_{liq.}$, W/(m · °C).

- heat conduction of steel λ_s, W/(m · °C)

$$\lambda_s = \lambda_{s.liq.} - 4.63 \cdot 10^{-3}(T_{s0} - T_{liq.}), \qquad (2)$$

where $\lambda_{s.liq.}$ – heat conduction of steel at $T_{liq.}$, W/(m · °C).

- specific heat of the mould material c_m, J/(kg · °C)

$$c_m = c_{m.liq.} + 4.09 \cdot 10^{-1}(T_{s0} - T_{liq.}), \qquad (3)$$

where $c_{m.liq.}$ – specific heat of the mould material at $T_{liq.}$, J/(kg · °C).

- specific heat of steel c_s, J/(kg · °C)

$$c_s = c_{s.liq.} + 2.94 \cdot 10^{-2}(T_{s0} - T_{liq.}), \qquad (4)$$

where $c_{s.liq.}$ – specific heat of steel at $T_{liq.}$, J/(kg · °C).

- density of the mould material ρ_m, kg/m³

$$\rho_m = \rho_{m.liq.} - 4.65 \cdot 10^{-2}(T_{s0} - T_{liq.}), \qquad (5)$$

where $\rho_{m.liq.}$ – density of the mould material at $T_{liq.}$, kg/m³.

- density liquid phase of steel ρ_{sA}, kg/m³

$$\rho_{sA} = \rho_{sA.liq.} - 5.46 \cdot 10^{-2}(T_{s0} - T_{liq.}), \qquad (6)$$

where $\rho_{sA.liq.}$ – density liquid phase of steel at $T_{liq.}$, kg/m³.

- density solid phase of steel ρ_{sB}, kg/m³

$$\rho_{sB} = \rho_{sB.liq.} - 3.2 \cdot 10^{-1}(T_{s0} - T_{liq.}), \qquad (7)$$

where $\rho_{sB.liq.}$ – density solid phase of steel at $T_{liq.}$, kg/m³.

The wall thickness s of the casting was taken from 1 mm to 20 mm (geometric modulus 0.05...1 cm). To obtain of the reliable results, the steps numbers of calculation of the solidification process were accepted 648.

The quasi-equilibrium model of the calculation of solidification of the ingot was adopted for the solution [7].

Results and discussion

The fig. 1 is presented by the dependence of the percentage ratio of liquid phase from shrinkage of the material [8].
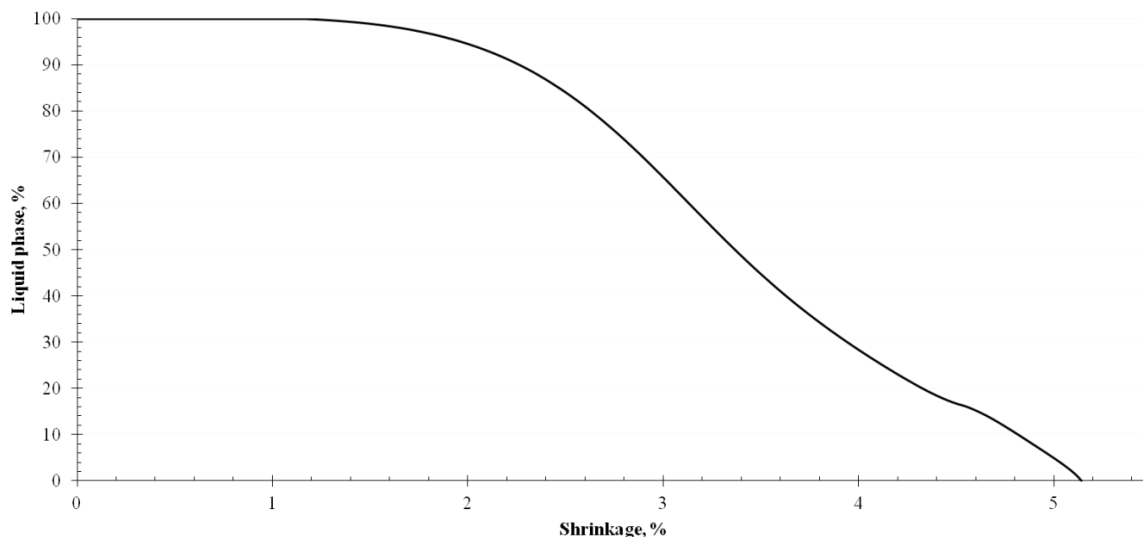
Figure 1 – The dependence of the percentage ratio of liquid phase from shrinkage of the material.

The chart analysis shows that shrinkage of the total volume of casting does not exceed 1.5 % when liquid phase of steel. The solid solution – austenite is formed with a decrease of temperature of the molten steel. Shrinkage of casting increases. When complete solidification and the formation of cementite, shrinkage of volume of the casting is approximately 5.17 %.

The fig. 2 are presented the dependencies of the cooling rates $v_{cool.}$ of casting with s 5 mm, 10 mm, 15 mm and 20 mm from temperature.
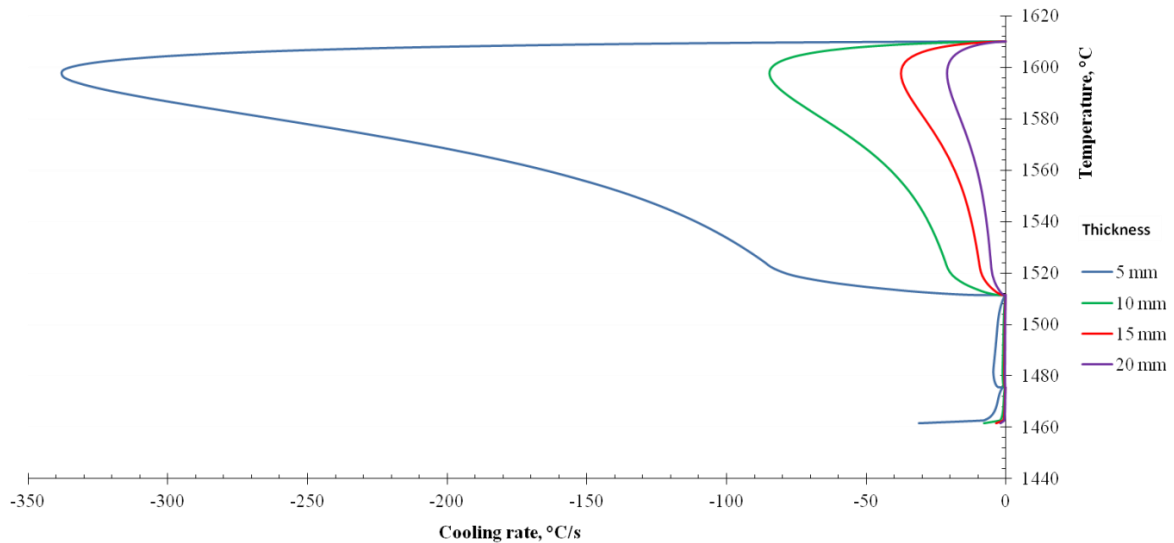

Figure 2 – The dependencies of the cooling rate of casting wall by the different thickness from temperature.

With decreasing temperature of molten steel from 1610 °C to 1600 °C, $v_{cool.}$ of the walls of castings is maximum in absolute value. Moreover, than less s of casting, the faster it is solidified. At the achievement of temperature of the molten steel value 1600 °C there is a decrease of $v_{cool.}$ to the minimum value in the point $T_{liq.}$. In the range $T_{liq.}$ and $T_{sol.}$ value of $v_{cool.}$ is minimal and approaches to zero.

The chart of the transition of liquid phase to solid from time is presented in Fig. 3.
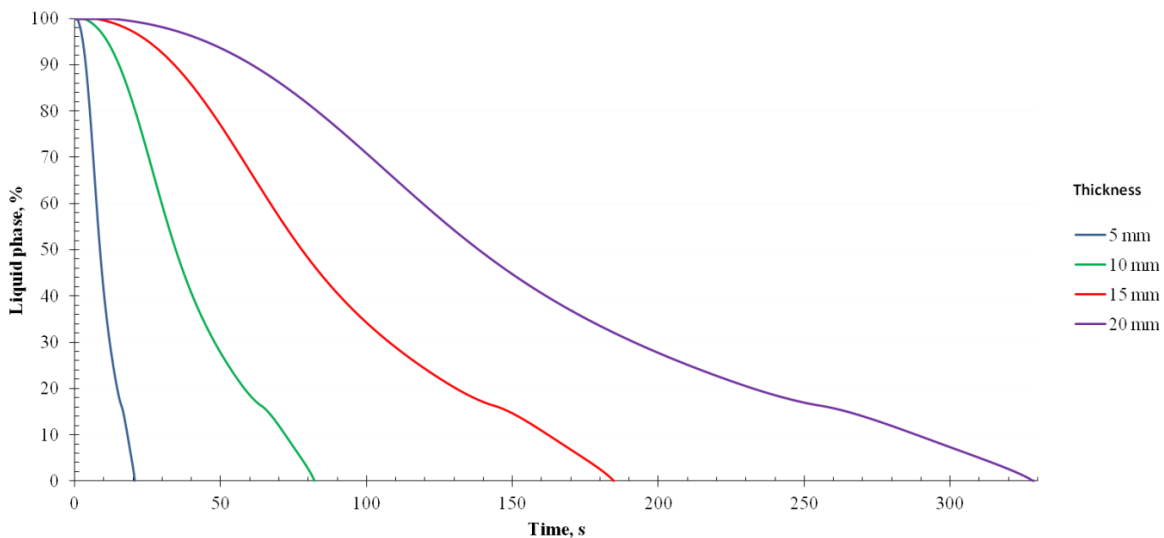
Figure 3 – The dependencies of transition of liquid phase in solid from time.

The solidification time $t_{sol.}$ (s) for any s of the casting, made of steel grade 15L, is calculated by the formula (8)

$$t_{sol.} = 0.822s^2, \qquad (8)$$

where 0.822 – specific solidification of steel grade 15L, s/mm.

The chart analysis confirms correctness empirically derived of the formula (8).

Conclusion

The account of the manufacturing time of castings is one of the most important issues of the foundry industry. The calculation of time of the each operation contributes to the rational allocation of the energy resources.

The received formula for calculation of the solidification time of the molten non-alloy steel

grade 15L with different wall thickness allows to optimize the process of casting manufacturing. This is an actual issue for casting steel of the different grades.

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SECTION 35. Immovable property. Land relations.

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STAGES OF CADASTRAL EXAMINATION IN THE RUSSIAN FEDERATION

Abstract: Now the state cadastral registration of the parcels of land represents the main function of the state land cadaster consisting in the description and individualization of the parcels of land in the Unified state register of lands therefore each parcel of land receives such characteristics which allow to allocate unambiguously it from other parcels of land and to perform its high-quality and economic estimates. In article stages of conducting cadastral examination are considered, approaches of conducting the state cadastral registration, and system of the state land cadasters are provided.
Key words: cadastral examination, land cadaster, state cadastral registration.
Language: English
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Introduction

Relevance of a subject of a research is caused by value of the state land cadaster as information resource which data are used during the carrying out the state cadastral assessment of lands, transactions with the parcels of land, in case of implementation of the public and municipal authority land resources and for the solution of other tasks. At the same time the state cadastral registration is the main tool of the description of the parcel of land as object of the right and taxation.

In scientific literature it is noted that accounting of lands is a component of the state land cadasters which reflects an economic and natural condition of lands, accumulates and provides the information on their quantity and quality.

The parcel of land is the part of the Earth's surface having accurately designated border, the area, location, legal status and other characteristics considered in the state land cadaster and in the Unified State Register of Rights on real estate and transactions with it [1, p. 52; 2, p. 153-1154].

Materials and Methods

The land code of the Russian Federation among the basic principles of the land legislation called division of lands on purpose on category. Classification of lands is determined proceeding from their belonging to this or that category and the permitted use according to zoning of the territories and requirements of the legislation. In the Russian Federation lands are subdivided into the following categories:

1) earth of agricultural purpose;

2) earth of settlements;

3) the earth of the industry, power, transport, communication, broadcasting, television, informatics, the earth for ensuring space activities, the earth of defense, safety and the earth of other special purpose;

4) the earth of especially protected territories and objects;

5) earth of forest fund;

6) earth of water fund;

7) earth of an inventory.

The order of use and cadastral assessment of lands of settlements are determined according to zoning of their territories, division into territorial zones. In the Russian Federation there are following types of territorial zones in borders of settlements:

– residential;

– public and business;

– production;
– engineering and transport infrastructures;
– recreational;
– agricultural use;
– special purpose;
– water objects;
– other territorial zones.

The land code of the Russian Federation allocates the following types of lands of especially protected territories:
– especially protected natural territories, including medical and improving areas and resorts;
– nature protection appointment;
– recreational appointment;
– historical and cultural appointment;
– other especially valuable lands.

In system of the real estate an object of the economic relations are the parcels of land possessing various consumer properties and the rights to them.

The earth has cost and the adequate land assessment represents one of the most important conditions of normal functioning and development of economy and society. Need for results of an objective land assessment (parcels of land) is felt by both the state, and municipal authorities of the executive authority for the purpose of effective management of land resources and carrying out rational land and tax policy.

Strategic objective of state policy in the sphere of the earth and other real estate – providing conditions for effective use and development of the real estate for the benefit of a requirements satisfaction of society and citizens.

The earth in the Russian Federation as a natural resource, a real estate object and a fixed asset of production is subject to cost assessment. As a result of conducting the state cadastral examination the real picture of cost of lands (parcels of land) in the territory of the Russian Federation will be received that will allow to exercise more effective management of land resources and related real estate objects, and also to carry out the balanced planning of revenues of budgets of all levels (within the payments arriving from the land tax and the rent), to stimulate development of investment processes and development of economy in general.

Need for receipt of reliable estimated value of the parcels of land is felt as the state and municipal authorities of the executive authority in case of management of land resources, implementation of perspective development of settlements, carrying out rational land and tax policy, and private subjects of the land right in case of any making of transactions with the earth, for the purposes of determination of the most rational, most effective development of this or that region, or this or that specific parcel of land.

The description of the parcel of land is made on the system of indicators including: a) The name of the subject of the land right – legal entity or physical person with indication of the exact address, documents certificating the person and financial details. b) Address reference points – the area (the residential massif, the industrial zone), the settlement, the street, house number and structures (in the cities and settlements). c) The documents establishing and certificating the land use right (the resolution, the decision, the order, the state act, the certificate, the lease contract). d) Category of lands, purpose and actual use. e) Code of the qualifier of lands. f) The area according to the documents certificating (establishing) the right to the site, actual including foreign use (depth, width, a form). g) The area of the sanitary protection zone and (or) zone with a specific mode of use within the parcel of land. h) Type of the land right (property – private, state). i) Superficial and subsoil layer, landscape, contour and topography. j) Improvements and engineering arrangement (supply of the electric power, water).

In relation to real estate objects methods of land management solve the following problems: a) development of programs of use and protection of lands on the basis of town-planning, ecological and economic characteristics of the territory [3, p. 27]; b) forming of the parcels of land on single state system and their technical registration; c) project development of creation and streamlining land use with elimination of various inconveniences; d) establishment of borders of the parcels of land, withdrawal of the parcels of land in nature, creation of documents for registration of the rights to the parcels of land; e) fixing and change on the area of line of the cities, settlements and rural settlements; f) carrying out inventory count with identification not used, irrationally used and used not for purpose of lands [4, p. 44]; g) accomplishment of land and estimative works [5, p. 177]. System of a land cadaster, working together with system of the state registration of the rights to the parcels of land and the related improvements, provides: a) owners – guarantees of the rights to property; b) system of the taxation – urgent data on the taxation objects; c) the real estate market – open and reliable information about the parcels of land and the related improvements; d) system of bodies of the public and municipal authority – information for forming and carrying out state policy in the sphere of the earth and the real estate, and also planning and development of the territories.

During a transition period to market economy the separate value assessment actually of the parcel of land becomes especially necessary as this methodical approach to assessment of real estate objects allows with rather smaller costs of means and time: a) to promote process of market pricing[6, p. 607; 7, p. 263]; b) to provide return of budgetary funds of municipalities for the improvement performed by them and public improvements in shorter terms [8, p. 161; 9, p. 183]; c) to objectively

assess the actual damage, a lost profit and other compensation payments in cases, stipulated by the legislation [10, p. 22; 11, p. 76-77]; d) to establish concerned parties negotiated prices, including the rent, the amount of mortgage lending.

Enhancement of approaches to conducting the state cadastral registration, and system of the state land cadaster in general, leads to increase in a social and investment potential. The state accounting of the earth as national wealth promotes providing guarantees of the rights to the parcels of land, development of system of the taxation of the earth and other real estate. The questions connected with implementation of functions of the state land cadaster are included in the sphere of the land legislation.

Conclusion

Activities for conducting the state cadastral registration have a public focus owing to value of a land cadaster as the state information resource concentrating data on all parcels of land in the territory of the Russian Federation. The state cadastral registration, first, is aimed at information support of functions of the public and municipal authority by land resources, including the payments for the earth, fiscal on collection, which are traditionally determining value of land and cadastral activities. In this respect the individualizing signs of the parcel of land shall allow to establish it, first of all, as the taxation object, therefore to admit the fact of existence of the parcel of land regardless of extent of identification of its borders of a pas of the area. Besides, the parcel of land for the purposes of maintaining the state land cadaster is determined not only as a part of the limited Earth's surface, on and as all that is over and under this surface if other doesn't follow from federal laws. The last provides reference to characteristics of the parcel of land availability firmly of the related real estate units that in turn, is caused by the principle of unity of destiny of the parcels of land and firmly related objects. Secondly, by means of the state cadastral registration of the parcels of land it is information the system of the state registration of the rights to real estate and transactions with it, and equally in other state information resources containing data on the parcels of land is provided. The efficiency of land turnover which is a basis for successful development of the land market depends on the timely, reliable and complete cadastral information on the parcels of land and dynamics of their changes. In this aspect the state land cadasters acts as a source and system of fixed storage of such data.

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SECTION 25. Technologies of materials for the light and textile industry.

THE TECHNOLOGICAL PROCESS OF THE MANUFACTURING A FILM SCALE OF THE INSTRUMENT PANEL OF VEHICLE ON THE AUTOMATED LINE SAKURAI

Abstract: *The article is presented the sequence of the manufacturing film scales of the instrument panel of vehicle in conditions of the automated production.*
Key words: *a printing, a stencil, a doctor blade, a film scale.*
Language: *Russian*
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ТЕХНОЛОГИЧЕСКИЙ ПРОЦЕСС ИЗГОТОВЛЕНИЯ ПЛЕНОЧНОЙ ШКАЛЫ ПАНЕЛИ ПРИБОРОВ АВТОМОБИЛЯ НА АВТОМАТИЧЕСКОЙ ЛИНИИ SAKURAI

Аннотация: *В статье представлена последовательность изготовления пленочных шкал панели приборов автомобиля в условиях автоматизированного производства.*
Ключевые слова: *печать, трафарет, ракель, пленочная шкала.*

Введение

Серийное изготовление элементов (шкалы) панели приборов автомобилей [1] разделяется на вспомогательное производство (изготовление трафаретов [2]) и основное производство (печать [3]).

Процесс изготовления трафарета, из моноволоконной полиэфирной ткани, для печати шкалы панели приборов автомобиля представлен в работе [4]. Печать шкал панелей приборов автомобилей выполняется по изготовленным трафаретам на специальном технологическом оборудовании.

Для выполнения трафаретной печати пленочных шкал и светофильтров на ОАО «Завод «Автоприбор» (г. Владимир, Россия) [5] введена в эксплуатацию автоматическая линия на базе автомата MF-80 фирмы «SAKURAI» (Япония) [6] и сушильных устройств фирмы «Natgraph» (Великобритания).

Плоскопечатный автомат модели MF-80 с вакуумным столом предназначен для печати листовых материалов толщиной от 0.1 до 3 мм. Автомат для печати имеет следующие технические характеристики: максимальный формат листа – 800 × 600 мм, минимальный формат листа – 350 × 270 мм, максимальный формат печати – 800 × 585 мм, внешний размер печатной формы – 1100 × 1000 мм, высота стопы самонаклада [7] – 620 мм, поле захвата клапанов – 6-8 мм, возможность регулировки клапанов по X-Y – 15 мм, скорость работы – 3600 лист/час, энергопотребление – 7.75 кВт.

Сушильные устройства предназначены для отверждения красок, применяемых при отделке печатной продукции.

Трафаретной печати на автомате модели MF-80 подвергается термопластичный материал – поликарбонат. Поликарбонаты относятся к аморфным пластикам. Поликарбонатная пленка обладает высокой химической стойкостью, термостойкостью, прочностью к разрыву и абразивному воздействию, гибкостью.

Соблюдение технологического процесса на всех этапах и полный контроль параметров оборудования обеспечивается при выполнении последовательности действий представленных ниже.

Технологический процесс изготовления шкалы

Технологический процесс изготовления пленочной шкалы панели приборов автомобиля на станочной автоматической линии SAKURAI представлен в табл. 1.

Таблица 1

Последовательность технологического процесса изготовления пленочной шкалы панели приборов автомобиля на автоматической линии SAKURAI.

Выполняемое действие	Изображение выполняемого действия
Порядок работы на автоматической (станочной) линии SAKURAI	
Включение главного рубильника.	
Открытие подачи сжатого воздуха.	
Включение холодильника.	
Включение вытяжного вентилятора сушилки.	
Запуск ленточного транспортера.	
Проверка температуры в модуле сушки и в модуле охлаждения.	
Включение стопоукладчика.	
Включение модуля печати.	
Включение кондиционера.	
Установка листов на самонаклад.	

Impact Factor:

ISRA (India) = **1.344**	**SIS** (USA) = **0.912**	**ICV** (Poland) = **6.630**
ISI (Dubai, UAE) = **0.829**	**РИНЦ** (Russia) = **0.234**	**PIF** (India) = **1.940**
GIF (Australia) = **0.564**	**ESJI** (KZ) = **1.042**	**IBI** (India) = **4.260**
JIF = **1.500**	**SJIF** (Morocco) = **2.031**	

Настройка подачи листа.	
Установка трафарета.	
Проведение настройки печати по рисунку трафарета.	
Установка заливного ракеля.	
Установка печатающего ракеля [8].	
Перевод ракелей в исходное положение.	
Запуск печати в автоматическом режиме.	
Подъем рамы.	
Опускание рамы.	
По окончании работы выключить линию, произвести очистку от протекания краски печатного стола, протереть от пыли, отключить вентиляционные установки, перекрыть подачу сжатого воздуха.	
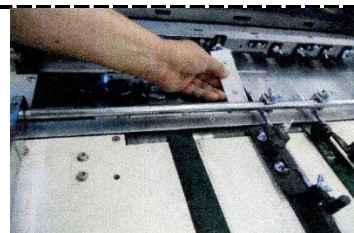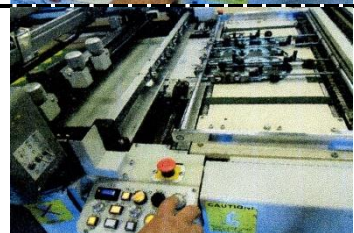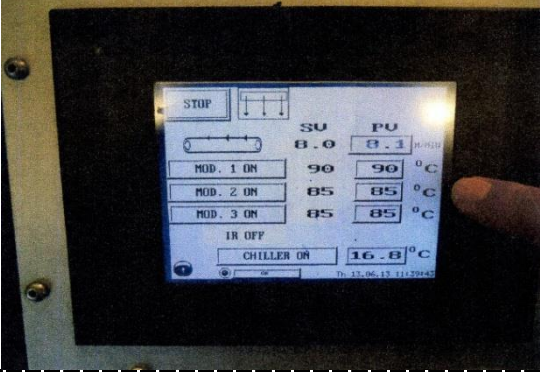
Изображение контролируемого параметра	Описание параметра
Контролируемые параметры при печати на автоматической (станочной) линии SAKURAI	
	Температура в модуле сушки (горячий воздух) 90±5 °С и в модуле охлаждения 16±5 °С.
	Скорость заливного ракеля – 5 ед., скорость печатающего ракеля – 3 ед.
	Давление ракеля 3 – 4 атм.

Заключение

Повышение технологичности, снижение издержек производства и повышение производительности – неотъемлемая часть политики ОАО «Завод «Автоприбор» при реализации инвестиционной программы с 2008 года. Высокое качество изготовления шкал на поликарбонатной пленке обеспечивается высокоточным автоматическим оборудованием. Тем самым сокращается количество основного производственного персонала и соответственно снижается производственный брак продукции, вызванный человеческим фактором.

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SECTION 13. Geography. History. Oceanology. Meteorology.

FROM THE HISTORY OF FORMATION OF THE UIGHUR'S DIASPORA IN UZBEKISTAN

Abstract: In the article migration of Uighurs to Uzbekistan, its reasons, Soviet policy on Uighurs and its meaning, selecting Uighurs as a nation, means and results of forming Uighur diaspora in Uzbekistan and other issues are analyzed basing on sources, scientific literatures, archival documents.
Key words: Diaspora, Diasporology, Uighur, East Turkestan, Xinjiang
Language: English
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Introduction

Nowadays, different period of less known nations' history is being important point globally. Because of there are almost more than 3 million nations and among them they live around 200 of countries. Therefore, there are some countries in the world known as poliethnic. In addition, there are some subjects developing and known as Diasporology which deals all the activities and things about diaspory. Furthermore, at the time we are living globalizing its importance than we expected. However, all human being and civilization, communities, independent communications and basic tendency shows its importance. Consequently, Diasporology and this sort of activities are affecting on its development. Diasporology and social-humanitarian subjects authors dealing, but until this time in the territory of Uzbekistan Uighur's diaspory history is one of the important themes.

Materials and Methods

Uighurs are known as the big part of Turkey languages ethnos, their todays statistics more than 10 million. Among them more than 9 million of them live in Eastern Turkistan, Chinese Xinjiang autonomous region. Around a million of Uighurs separated different countries of the world. People who live over there associated their organizations, language, enlightenment and spirituality to improvise their Diasporas. As an example Turkey, UAE, USA, Canada and other countries where live Uighur diasporas.

Moreover, considered as majority uighur lives and located in Central Asia. Including, according to the statistics of 2009 about the registered residents data more than 220000 of uighurs diasporas specified in the Republic of Kazakhstan[1].

Most of uighurs specified that they live regions of Kazakhstan such as Uighur Chilik, Enbekshi, Toldikorgan, Almati, Chimkent and Jambul provinces.

According to the published data of Kirgizistan by the year of 2012 just over 50000 of uighur nation lives. Most of uighurs lives in Bishkek, Osh, Yukori Uzgan, Kuyi Uzgan, Jalalabad and Issikkul provinces moreover more than 2 million of uighurs lives in Turkmenistan.

Minority of Uighur nations lives in Uzbekistan however their diasporas forming. Mainly Uighurs lives around Fergana valley and Tashkent city and region. In the past between Movaraunnakhr and Eastern Turkistan nations through Great Silk Road traded and exchanged commodities developed. Uighurs coming into the territory of Uzbekistan will be around XVI-XIX centuries. The reason of some internal conflicts, Sin Empire's affection, and the purpose of finding a job Eastern Turkistan moved huge number of Uighurs moved on.

Uighurs in Uzbekistan they have their State National Uighur Centers and the way of continental friendship atmosphere among the nations and partnership ideas considered as an important and social idea.

Known as all the diasporas have three steps

1) creation
2) development
3) Transformation

Diasporas of Uighurs in Uzbekistan by looking at this prospective creation step has been in a process long time. Moreover, uighurs lived long period in the territory of Central Asia with Turkish nations but they are not another part besides counted as one part of local people. Among them most of people into the local population. Some portion of Uighur population traded and exchanged social agreements among Central Asia and Eastern Turkistan and gave the rights to trade in a free atmosphere. Uighur nation developed as a different ethnic group Eastern Turkistan got the control on Sin empire as a popular moved in and the purpose of survive themselves and they called new placements as they have called before, in addition to save traditions and ceremonies.

The history of the Uighurs which was one of the ancient ethnics in Central Asia has been studied peculiarly for long time. It is known that the Uighurs have formed as a perfect nation and the territory of East Turkistan where most of their part have lived, was one of centers of the most ancient culture in Asia. Later they have dispersed in the whole world by various reason. Today large Uighurs Diasporas live in Central Asian republics. One of these is Uighur Diaspora in Uzbekistan. The appearance of the Uighurs in Uzbekistan concerns to long periods and it is directly bound up with process of formation from their ethnic aspects.

On consolidating East Turks since VII century, the Uighurs founded the Uighur Khaganate. "Tukkuz Uguzlar" ("Nine Uguz") made up the foundation of the Uighur Khaganate. Their structure was nine tribes such as Uighur, Bukhu, Khun, Boyirku, Tungro, Izgil, Chibni, Basmal, Karluk. After the Uighur Khanate collapsed as result of internal battles and external threat in 840, 15 tribes from East Uighurs have moved in direction of West and joined Karluks[2]. After that the process of spread of the Uighurs to Turkestan quickened. It was important event for spread of East Uighurs in Turkestan. After that the complicated political situation, which has taken place in Turkestan, caused disappearance of unity of Karluks. Karluks were divided into three parts in the middle of IX century, one of them stayed in its place, the second moved in Oksu rejoin of East Turkestan, the third part to Taharistan (nowadays it is in Southern Uzbekistan, Tajikistan and Afghanistan). Because the tribes such as Karluk, Basmil, Kirgiz were recorded in "Devoni lugatit Turk", not having been dividing into Turk and Uguz. Later Karluks and Basmils made up a great part of Uzbeks.

Later most of these have joined the structure of Uzbeks because territories are not limited by areas of East Turkistan where Uighurs lived. In the past some kins and tribes which made up structure of the Uighurs, have mixed with Uzbeks. For example,

great part of groups of Karluks which lived in Tarim and Ila valleys have made up Uighur nation. [3] Some groups of Uighurs took part in the process of formation of Uzbek. The Uighurs are mentioned too in the rinks of kins which have taken part in formation of Uzbek nation in a number of valuable sources written in Middle Centuries especially in "Shaiboniynoma" By Binoiy, "Torihi Abdulkhayrkhoni" by Masud ibn Usmon Kukhistoni, "Sharafnomai Shokh" by poet Hofizi Tanish ibn Mirmuhammad al-Bukhari, "Bakhr al-asror fe manokib al-ahyor" by Mahmud ibn Ali, "Shajarai Turk" by Abdulgozikhon Bakhodirkhon, "Firdavs al-ikbol" by Muhammad Rizo Ogahi, "Nasabnomai Uzbek" ("Trees of Uzbeks") by Mahdumi Azam Kosoni.

These two nations have established friendly trade relation through Great Silk Road for thousand years. Uzbeks lived and worked in the western side of these trade roads, in the eastern side the Uighurs lived and worked actively. Both nations had important place in the international trade and cultural relations, mutual relations between them have continued uninterruptedly. In the past the term "kashkarlik" appeared in Uzbek language yet as Great Silk Road passed through Kashkar city and people who visited Uzbekistan, came mainly through this city. The places where the Uighurs lived, were named "Mahallas of Uighurs" in the basis of that term. The Uzbeks were named "Andijonlik", places where they lived, were named "Mahalla of Andijan" in Kashkar and in a number of Uighur cities. The development of Great Silk Road make more active these relations as the territories where Uzbek and Uighurs nations lived, were a part of only state in the period of Turkish khanate and Karakhanys.

Spreading of the Uighurs in Middle Asia intensified in the periods of Chingizkhan and his generations. Reason of this was that the fourth wife of Chingizkhan was from Karakhanys, Uighurs mainly were involved to write state documents.[4] Most of the Uighurs intelligence have settled in a number of cities and villages of Middle Asia in the periods of Mongols. Abulgazikhan wrote about it so "There were a lot of men in the Uighur nation who have learnt Turkish language. All of Devon (department) and daftardors (officials, managing khanate incomes) were Uighurs in the periods of grandsons of Chingizkhan in Movarounnahr (the interfluves), Khurasan and Iraq"[5].

The mass immigration of the Uighurs to Middle Asia made more active particularly in XIV–XIX centuries. Especially the immigration of the Uighurs to Uzbekistan were observed in the middle of XVII century. The religious contradictions aggravated between two Sufism (religious sect) trends named "Ok toglar" ("White mountains") and "Kora toglar" ("Black mountains") which there were in East Turkistan.

The mass immigration of population to the Fergana valley began as the political separation and economic crisis have occurred. The population of Kokan Khanate named them (by origin) from "Kashkar", "Yorkent", "Turfon" or "Toglik" "Ogacha", "Povon" by the name of previous place.

Another wave of the mass immigration of the population of East Turkistan began owing to occupation of army of Manjur–Chinese empire to East Turkistan in 1750-1759. By using various methods to establish its government here, Manjur–Chinese Empire appointed its officials. Poor population who got tired with taxes and duties which were realized in 50 of XVII century, excited rebellion against the government. But this rebellion which was under the direction of Xujas (nobilities), was failed. The population, who took part in the rebellion, escaped to neighbor territories especially the Kakan khanate in order to evade penalty. According to information governor Xoja Bakhchi of Yorkent together with his family escaped to Irdona Khan of Kokan in 1751-1752. Sang Muhammad Badkhshony affirmed in his work called "Tarihi Badahshoni" that nine thousand families moved in the Fergana valley at the end of 1760 and also some thousand of Uighur families have immigrated to the Fergana valley after Kashkar rebellion in 1760 and the rebellion under Hakimbek Rahmatilla from "Uchturfonlik" failed.[6]

The further immigration of Uighurs took place after Jahongirxuja's rebellion concerning group of "Ok togliklar" ("white mountains") (1822-1826) and campaign of Kokan khan Muhammad Alikhon to East Turkestan in 1826-1830. Muhammad Alihon has occupied to East Turkestan with large army in 1826 to stand for Jahongirkhuja. But Muhammad Alikhan have had to come back after he has heard that army with large quantity was mobilized by Manjur–Chiness empire and armies of Bukhara Amir have occupied to Kokand.

When he came back he took 70 thousand of the Uighurs with himself. 70 thousand of the Uighurs who came from Kashkar disposed in Kokand, Shahrikhan and the Fergana valley.[7] The further rebellion was under Yusufkhuja against Sin empire in East Turkestan. The 20 thousand from Kokand, the 15 thousand from Tashkent who were named "andijonlik", have taken in part in this rebellion. But after the rebellion has been suppressed, the 12 thousand of population had been immigrated to the Fergana valley[6].

Another mass immigration of Uighurs has been occurred in 1848-1860. The rebellion named "Yetti khujalar" ("Seven khujalar") under Kattakhantura in East Turkestan caused the mass immigration in this period. In 1848 Manjur-Chinese empire occupied to Kashkar with 30 thousand forces. Escaping from Chinese forces, the 20 thousand of population have moved in the Fergana valley again after the rebellion under Valikhontura in 1858[6].

The further stage of ethno demographic process began in the Fergana valley and East Turkestan since the third quarter of XIX century. It has taken place as result of collapse of "Yetti shahar davlat" ("Seven city states") of Muhammad Yokubbek. As result the mass immigration began from East Turkestan to the Fergana valley. As Valikhanov Ch. wrote that number of population from Kashkar which moved in the territory of Kokan khanate between 1862–1877, made up 88–162 thousand. Generally as result of rebellion taken place till 1878 number of Uighurs from Turkestan raised more than 500 thousand[7].

The 70 thousand of the Uighurs who moved in together with Muhammad Alikhan in the first half of XIX century, located in the eastern territories of the Fergana valley. The Uighur villages such Akhtachi, Olakanot, and Okbuyra in Asaka district of Andijan rejoin made up as result of those immigrations. The block named "Eskilik" of the Uighurs has appeared in the same Andijon city. The names of small mahallas such Kizmasi, Ogushlik, Kurgontagi, Xakand have remained up to now. And also Bozorkurgon in Jalolobod rejoin of Kirgizstan, Kashkar in Ush rejoin consider the Uighur villages. The Uighurs organized new villages and mahallas in other areas of the valley under the names of territories where they lived before. Mahallas such Kashkartuppi (in Oltiarik district of Fergana region), Kashkarlar (in Pop district of Namangan region), Kashkarmahalla (in Kizilravot village of Uychi district of Namangan region), Uighur, Povon can be an example for it. Mahalla which was founded in territory named "Yangi shahar" ("New town") of Tashkent too in 1830s, was called "Kashkar mahalla". About 130 families lived in Kashkar mahalla. Kashkar darvoza (Gate of kashkar), one of gates of the city was located in the east edge of mahalla[8].

Population of East Turkestan not only came to Kokan khanate during war but they came in peace and safe times. Including there were people who came to the valley early in Spring to be employed as an employee and got back late in Autumn. 14689 people came to the Fergana valley from East Turkestan for seasonable job in 1906, in 1907 this quantity was 24107 people, in 1908 it was 28000 people.[9] They mainly occupied with farming, construction, bakery, cookery. They also opened Uighur canteens. Most of them stayed to live constantly here, later they took their families too.

According to information in 1907, there were 56742 Uighurs in the Fergana valley, 26182 of them have lived in Andijan district, 27209 in Margilan district, 2446 in Ush district, 770 in Kokan distric[9]. 13175 people, who came from to the Fergana from Kashkar to work for seasonable job between 1912-1923, have constantly stayed. In many cases they

have moved in vacant or uncultivated lands and made up their villages such Kovul, Tukyo, Pushmon, Ozox, Tuxtakuprik, Olakonot, Ovot, Kepakchi, Kashkar here.

Some ten thousand of the Uighur workers came to work from China to Turkestan including to Uzbekistan in the period of World War I. The main part of them got back to their mother land. Less part of them stayed to live constantly here. At the time the Uighurs were in the fourth place within national minority of native locality in the national structure of the Fergana valley[10].

The last period of immigration of the Uighurs to the territories of Uzbekistan fell on 1960. It took place as result of weakening of relation between the former USSR and China, after that China expelled citizens from the state who have had the Soviet passport in East Turkestan. As result thousands of the Uighurs immigrated to the territories of the former Soviet Union at that time.

The local populations were friendly terms with the Uighurs who have moved in Uzbekistan. The first times which The Uighurs have moved, were heavy owing to material and domestic. Job and promised land to the Uighurs have not been sufficient yet. The local population have helped them very much in material and spiritual. The mutual consolidation, mutual clemency between the Uzbek and the Uighurs nations influenced development of relations between them positively. The relation between both nations quickened in the whole sphere of life especially in trade, economics, cultural and family–marriage considerations. After the Uighurs immigrated in these places, they continued their traditions such farming, gardening, craftsmanship, trade, housing, cookery and their ethno cultural relations developed with local population.

This processes in Uzbekistan main reason of developing uighur diaspora. Immigrants of Uighurs in Uzbekistan according to the main places local people they live named Kashkarlik, Turfonlik, or in the case Taranchi. However, the situation of 1917 October accident has been highly changes with other countries and Uighurs also. Nowadays, Bolshevik government, which had just been formed, aimed to turn all people and nation of Turkestan to the supporters of idea of socialism. In order to absorb them better it was decided to make a propaganda in their own languages. That is why, according to Central Committee of the Communistic Party of Turkestan, 'Six cities – Djungar workers` revolutionary unity' had been formed since 1919. As above mentioned, Uighur intellectuals under leadership of Abdulla Ruzikboev was not selected as a controller but basing on higher government instruction intellectuals of other nations as well as Russian, Tatar, Kirghiz (maybe Kazakh), Jewish were. These leaders aimed to run propaganda among Uighur labours living Turkestan, and to change their

citizenship to Soviet one, to employee them at factories by giving them lands. In addition, extending these visions in the territory of Eastern Turkestan and forming Soviet government were planned. Soviet government was anxious about approaching of capitalistic relations to the state border and being spread it among the people of Eastern Turkistan, who are brothers of the nations of Central Asia. According to that, equipping them with ideas of communism, making friends were aimed. Although socialistic revolution in the territory of Eastern Turkestan was planned, the plan was changed into bringing the strata of people up who tended socialistic structure by equipping them with socialistic ideas. Uighur newspapers as 'Kambagallar ovozi' ('The voice of poor'), 'Sadoi tarangchi', alphabet books, textbooks, lots of manuals were published. Above mentioned ideas were absorbed in all of them.

These actions were continued later. Uighur section of the Commission of minor nation affairs (hereinafter The Committee) under Uzbek SSR Revolution Committee was formed and it coordinated these issues. Following problems were set out in the plan of the Committee for December of 1924 and January and March of 1925:

- Forming Uighur convention and collecting necessary materials for calling it

Verification economic condition of Uighurs

☐Immigrants of Kashkar and refugees information, emergency and helping them by government.

By the help of some codes uighur nations practically helped to survive. Uighurs provided with place to live, educations and work and registered as Soviet Union citizens. In addition, in order to be educated they provided grants to the primary and secondary schools. Those residents later then in order to separate uighur diaspora and found their positions in Uzbekistan and other countries respectively.

Around 20th of century of 70th years continued taking shape of uighurs in Uzbekistan. That is to say in the territory of China in the Middle Asia and that period ex USSR moving on Middle Asia and Kazakhistan, moreover Uighurs in Kazakhistan coming into Uzbekistan as a purpose of education or working, later then stayed longer period time to live in Uzbekistan.

Afterward, 70th years of 20th century Diasporas of uighurs started to moderate. For this there were some reasons.

Likewise

- Starting for 1950 year province of Xinjiang in China there were the last popular immigrating of uighurs affections reacted to increase the number of uighur populations in Uzbekistan. This process says that uighurs localizing and genuinely uighur

- The process of Uighur enlightened. This means in this country the number of educated uighurs

will be increased, popular intiligents and philosophy doctors. Moreover, in this period among the country admitted speksmen of enlightenment and spirituality.

- Establishing of the Institute of Uighur studies at the Academy of Sciences of the Kazakh SSR. This scientific center made a good relation with Uighurs living in the former Soviet Republics. In particular, research expedition were made in Uzbekistan, Tashkent city, Tashkent and Andijan regions;

- newspapers pressing in Kazakhstan as well as 'Communizm tughi' ('Weapon of Communism') and 'Yangi hayot' ('New life'), which was published in Uighur letter basing on Arabic alphabet, were widely spread in Central Asia, in particular, in Uzbekistan. Lots of articles were published on the theme of history of Uighur, their culture, socio-economic and spiritual-educational life to increase public opinion of the society.

- The Uighurs old Uighur history and culture, as well as affecting the socio-economic life of the spiritual and educational look at the various articles to further increase public awareness of social services;

- In the presence if Uzbekistan teleradiocompany appearing esamble of uighurs and its while. The teleradiocompany started to represent the life of uighurs broadcasts, sketches and uighur musics.

- As a result of reconstruction, which began in the mid-1980s, it was possible to publish articles, books, researches on some theme like some issues of the history of Uighurs and their life, which were not allowed to discus before, to make national self-consciousness.

Conclusion

Factors those are mentioned as above diasporas of uighurs in Uzbekistan come to the progressing at the end of 80th years and beginning of the 90th years. In Tashkent opened uighur national cultural center in 1989 year. In Kazakhistan associated uighurs association in 1991-year, in that year again one more Uighurs National cultural center opened in Andijan. In order to save uighurs national civilization, tradition and customs those national cultural centers implemented all the potential activities of uighurs. Several magazines and announcements published by uighurs. All over in this period uighurs in Middle Asia especially Uzbekistan to know more about themselves moved on upper level. This means according to this period uighurs diasporas have taken shape in Uzbekistan and might inform that this is historical stage.

In this situation Uighurs in Uzbekistan owned their own history around XX century Xinjiang Uighur autonom province and be in touch with uighurs in other places. Especially these relations on the economic and cultural, in this situation made an environment to know more and closely about Uzbekistan. Furthermore, this environment gave to Uzbekistan broadly economic stability and chances to develop widely commerces and cultural relations. By the result of 2012 exchanging products reached more than $740 million mutually between Uzbekistan and Xinjiang autonomus region. This concerned mutually set widely long term agreement

All over progression of Uighur diasporas in Uzbekistan shows that analyzing broadly the diasporas of uighurs in Uzbekistan and make solution on their mysteries this subject not only popular and scientific but also important practically.

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SECTION 24. Sociological research

MAIN APPROACHES OF INCREASING OF EFFECTIVENESS OF PUBLIC ADMINISTRATION ACTIVITY MOTIVATION

Abstract: In the following article, the author analyzed the main motivational theories in commercial structures and public administration. In addition to this the non-monetary mechanisms of motivation in public administration was examined.

Key words: motivation, public administration, public service, efficiency, justice, management, labor, staff, social package, stimulus.

Language: Russian

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ОСНОВНЫЕ ПОДХОДЫ ПОВЫШЕНИЯ ЭФФЕКТИВНОСТИ МОТИВАЦИИ ДЕЯТЕЛЬНОСТИ ГОСУДАРСТВЕННЫХ СЛУЖАЩИХ

Аннотация: В данной статье автор проанализировал основные теории процессов мотивации как в комерческих структурах, так и системе государственного управления. Автором была выявлена специфика немонитарных механизмов мотивации в системе государственного управления.

Ключевые слова: мотивация, государственное управление, государственная служба, эффективность, справедливость, менеджмент, труд, персонал, социальный пакет, стимул.

Introduction

Исследование, проведенное в области управления показывают, что основой функционирования любой организации безусловно являются люди, поскольку именно человек обеспечивает эффективное использование всех видов ресурсов, имеющихся в распоряжении организации и определяет ее экономические показатели. В свою очередь руководство организации может разрабатывать различные планы и стратегии, создать оптимальную систему обработки информации, установить в организации самое современное оборудование, однако все это будет сведено к нулю если члены организации не будут эффективно осуществлять свою деятельность. Готовность человека выполнять свои функции является одним из ключевых аспектов успешности любой организации. Имея определенное положение, желание и настроение, исходя из определенной системы ценностей, следуя определенным правилам и нормам поведения человек каждую конкретную деятельность персонифицирует, следовательно, очеловечивает ее, придавая ей в определенной степени уникальный характер. Однако из этого никак не следует, что этим процессом невозможно управлять. Напротив, если хорошо знать и понимать что движет человеком, что побуждает его к тем или иным действиям, к чему он стремится, можно, в отличии от принуждения, требующего постоянного воздействия и контроля, построить так управление человеческими ресурсами, что люди сами будут выполнять свою работу лучшим образом и наиболее результативно. Путь эффективного управления человеческими ресурсами лежит через внимание к его природе мотивации.

Materials and Methods

Как любая другая сфера, так и работники бюджетной сферы, в том числе и государственные служащие, имеют свои особенности мотивации, которые следует

учитывать в процессе проведения кадровой политики. Оптимально выстроенная траектория профессионального развития, должностного роста позволяет государственному служащему найти свое место в структуре управления и стимулирует его полному раскрытию профессионального, делового и личностного потенциала. Исходя из вышесказанного необходимо отметить, что мотивация это моральное и экономическое стимулирование, создание условий для проявлений творческого потенциала работника и его саморазвития. В общем виде процессы мотивации включают в себя установление неудовлетворенных потребностей работника и формулировку целей, направленных на удовлетворение потребностей [1].

Одной из самых известных теорий в области мотивации является теория X, Y и Z Р.Макгрегора. X исходит из того что человек ленив, пытается избегать работы, работники не очень честолюбивы, боятся ответственности и хотят чтобы ими руководили для достижения целей организации, работников нужно принуждать для осуществления ими своих функций. Теория Y строится на противоположных постулатах: нежелание работать это не врожденное качество человека, а является следствием плохих условий труда, которые подавляют прирожденную любовь к труду. При благоприятных обстоятельствах работники пытаются брать на себя ответственность за работу организации, вознаграждение и личностное поощрение являются важными элементами эффективности организации. Теория же Zявляется серединой двух вышеупомянутых теорий. Вопрос в преобладании удельного веса в организации теории X или теории Y [2].

Помимо теории X, Y и Z Р.Макгрегора наиболее известной теорией также является теория У.Уолча, в которой особое внимание уделяется коллективной мотивации персонала и раскрепощения инициативности работника. Также сегодня в науке широкую известность получила теория пирамиды потребностей А.Маслоу, отраженная во всех учебниках по управлению. В ней потребности человека разделены на пять основных категорий: основные физиологические потребности (пища, одежда, жилье), потребность в безопасности, уверенность в завтрашнем дне, потребность в социальной общности, принадлежности, причастности человека к той или иной группе, потребности в уважении и самоуважении, признание его и самоутверждение, потребность в самореализации [3].

Также необходимо подчеркнуть такие теории как двухфакторная теория Э.Гедсберга,

трудовая мотивация В.Аткинсона, теория справедливости С.Адамса, теория ожидания В.Врума. Заметное место среди них занимает теория справедливости С.Адамса. По его мнению, включаясь в трудовую деятельность, работник оценивает свою ситуацию по двум параметрам: что я даю организации и какое вознаграждение я получаю? Каждый работник сравнивает свои вознаграждения и затраты с другими работниками и врезультате он оценивает ситуацию в контексте: была ли проявлена в отношении к нему справедливость [3]?

Важно отметить, что проблема мотивации труда у государственных служащих сводится к тому, что во многих странах мира заработная плата у государственных чиновников ничтожно мала и жестко определена ставкой. В этой ситуации одним из возможных методов повышения мотивации государственных служащих являются немонетарные методы мотивации. Здесь важную роль в процессе стимулирования труда, по мнению многих исследователей, играют присвоение квалификационных разрядов государственным служащим. Передовой опыт государственной службы предлагает сопровождение карьеры чиновника начиная с приема на работу вплоть до его увольнения. Такой подход позволяет видеть работнику перспективу своей деятельности, что в свою очередь дает ему уверенность в завтрашнем дне [4]. Наиболее стимулирующим фактором является система пожизненного найма, которая наиболее ярко представлена в японском менеджменте [3].

К немонетарным методам мотивации также можно отнести награждение различными грамотами, присвоение каких либо званий, вручение памятных сувениров. Самым простым, привычным для многих способом немонетарной мотивации является составление для сотрудников так называемого компенсационного пакета, который в зависимости от потенциальных возможностей организации включает в себя карточку на бесплатный проезд, бесплатное питание, страховку, возможность регулярного посещения спортивного зала [5].

Также к немонетарным методам мотивации относятся простые слова благодарности, поздравления сотрудников с днем рождения, организация различных образовательных процессов и спортивных соревнований, корпоративных мероприятий с учетом пожеланий персонала, грамотная организация профессиональной адаптации новых сотрудников. Кроме того здесь необходимо упомянуть систему банков отпусков, когда работнику требуется взять для выполнения своих нужд один или несколько дней. В данном случае он может пользоваться запасом из банка отпуска

[5]. Важным стимулирующим фактором выступает философия организации, повышающая патриотизм персонала, его любовь к данному учреждению. Забота о карьере чиновника является важным фактором мотивации его труда. Практика управления коммерческими организациями и системой государственной службы показывает, что мотивация персонала является важным элементом повышения эффективности деятельности любой организации.

Conclusion

Исходя из концептуальных и прикладных аспектов, которые нами были указаны выше, мы можем прийти к следующим выводам:

1. Сегодня существует необходимость формирования и реализации в Узбекистане концепции повышения мотивации государственных служащих.

2. В процессе повышения мотивации государственных служащих необходимо обратить внимание на исследование уровня мотивированности персонала.

3. Каждое ведомство в стратегии своего развития должно уделять особое внимание механизмам повышения эффективности мотивации труда государственных служащих.

Именно, выше нами описанные механизмы в перспективе, на наш взгляд, будут способствовать повышению эффективности и результативности системы государственного управления в Республике Узбекистан.

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SECTION 24. Sociological research

SOCIAL ADVERTISING: ITS UNDERSTANDING AND ROLE IN PUBLIC CONSCIOUSNESS

Abstract: In this article the understanding, role, functions and the main aspects of influence of social advertising on public opinion and public consciousness are considered.

Key words: advertising, social advertising, public opinion, public consciousness, humanization, society, non-commerce advertising.

Language: English

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Introduction

Social advertising is non-commercial information aimed at achieving socially significant goals: combating harmful habits (drug addiction, alcoholism, smoking), promoting healthy lifestyle, drawing public attention to important questions of state importance, state projects, information about the location of special services (fire, police, ambulance).

Social advertising does not sell anything; it is aimed at achieving charitable goals, improving public welfare. Its goal is to attract attention to the problem; influence on views, on legislation or on changing behavior toward what seems desirable for society. It is the propaganda of normal relationships between people - in the family, in a collective, in society. It is the urge to keep the laws and do good, to keep health and not to lose heart.

Materials and Methods

In the whole world, the notion of non-commercial advertising and public advertising correspond to the notion of social advertising. "Non-commercial advertising is advertising sponsored by or for the benefit of non-profit institutions and aimed at stimulating donations, encouraging people to vote in favor of others or draw attention to the affairs of society" [1]. "Public (social) advertising conveys a message that propagates any positive phenomenon. Professionals create it for free, place and time in the media are also provided on a non-commercial basis" [2].

In the United States the term public service advertising (PSA) is used to refer to this type of advertising. The subject of the PSA is an idea that must have a certain social value. The purpose of this type of advertising is "to change the attitude of the public to any problem, and in the long term - to create new social values".

Social advertising is advertising not a specific product, but some "attitude to the world". Social advertising is a way of forming a relationship to the surrounding reality. This is a kind of method to suppress the indifference of society to social problems (drug addiction, alcoholism, crime, environmental pollution), to the problems of the state (the revival of patriotism, the well-being of family relations, the fulfillment of civil duties of the population).

In the advertising space, social advertising coexists with commercial advertising, but, thanks to its themes, takes a special place. If commercial advertising works in the market of goods and services, then social - serves to the humanization of society and the formation of its moral values. If commercial advertising changes behavioral models in society from an economic point of view, then the social one - from a humanistic, social point of view.

Social advertising can be distributed through a wide range of information transfer channels. These include posters, screensavers, clips, billboards, leaflets, badges, emblems on consumer goods, graffiti, computer graphics, comics, photographs and cartoons. Works can also be presented in literary

form in the form of scenarios of performances, slogans, poems, ditties, fairy tales, reports, feuilletons and fables.

In 1906 the American Civil Association placed an advertisement calling for the protection of the Niagara Falls from the harmful actions of electric companies. This year can be considered the year of birth of social advertising.

After the Second World War it acquired modern forms. Today, it is vital for various non-profit institutions (church, medical institutions, higher education institutions, schools). In the US social advertising is treated as a kind of medicine used to prevent diseases of society. This is its mission.

Social advertising can perform different functions and tasks, but its main goal is to become a kind of regulator of society, a way of positive adjustment of its life activity. Given such features of advertising as repetitiveness, mass character, emotional saturation it can be argued that much depends on the quality of social advertising in the management of society. It can shape moral needs and positive stereotypes and improve social relations. Advertising motto "Call your parents!" against the background of a well-chosen roller penetrates deep into the brain, contributes to the awareness of each person of their responsibility for their fathers and mothers.

Advertising does not simply call for certain actions, but draws an ideal picture in which these actions are shown, serve as role models or, on the contrary, are condemned. Advertising contains not only a picture, but also music. All of these together acts very effectively. In the context of increasing penetration of the screen culture and its impact on the behavior of modern man, the role of social advertising is growing. By the degree of influence on the younger generation, as well as on creative saturation and persuasiveness, advertising competes with such social institutions as home and school, literature and music. For various reasons, advertising seems to sometimes dominate its influence. Advertising forms in society certain ideas about values and styles of life. In the face of the lack of personal communication and the increased impact of the media on the value system of modern man, social advertising is called upon to influence people's behavior, to promote the formation of positive moral standards and patterns. Of course, social advertising can not compensate for the shortcomings of upbringing and fulfill it as a complex task. Nevertheless, the objective processes of the historical development of modern society require the activation of attention to this problem.

The essence of social advertising is that it "is aimed at achieving charitable goals" and socially beneficial results. Under the latter is understood the improvement of the criminal situation in the country;

Prevention of the spread of drug addiction and diseases associated with it; Prompting the population to fulfill their duties to the state (military duty, payment of taxes, compliance with regulations, environmental protection). The principles of social advertising exclude the possibility of pursuing commercial or political goals, mentions of specific commercial brands, organizations, brands (articles, models) of goods, as well as political parties and individual politicians.

The main tasks of social advertising are [4]:
• formation of public opinion;
• attracting attention to pressing issues of public life;
• intensification of actions to address them;
• the formation of a positive attitude towards state structures;
• demonstration of social responsibility of business;
• strengthening of socially significant institutions of civil society;
• the formation of new types of social relations;
• changing behavioral patterns of society.

The central function of social advertising is informational (informing about the problem, drawing public attention to it). With regard to social advertising, information can include a warning. For example, "up to 50% of patients with alcoholism suffer from a violation of sexual functions".

The second function is educational. This function distinguishes social advertising from commercial advertising. Social advertising gives society knowledge of the problems and methods for overcoming them. For example, "be prudent: keep money in several banks in different currencies".

The third function is educational. Social advertising is designed to educate the public about certain behavior and attitudes towards the reality: does not litter, maintain cleanliness, and protect benches in the park and playgrounds. Social advertising calls more often to communicate with parents, take care of children, cherish the culture of their country, love their homeland, etc. Also, social advertising declares important for a given society values. For example, for some countries of the CIS the revival of the citizens' love for their homeland is actual now; the revival of interest in the rich cultural heritage of the country, to a great history.

Legislative regulation of social advertising in our country is carried out on the basis of Article 16 of the Law of the Republic of Uzbekistan "On Advertising" [10]: Social advertising information - information on health, environmental protection, energy conservation, crime prevention, social protection and public safety, spirituality and enlightenment, and also other non-commercial information.

The activity of persons engaged in the production and dissemination of social advertising

information on a gratuitous basis, the transfer of their property (including money) to others for the production and dissemination of social advertising information is recognized as charitable. Such persons enjoy benefits provided for by law [5].

Distributors of advertising are required to place social advertising information in the volume of at least 5 percent of the total annual airtime, printed or advertising space allocated for advertising. At the same time, advertising distributors, whose activities are fully or partially funded from the State budget of the Republic of Uzbekistan, place social advertising information free of charge.

The broadest "field of activity" for social advertising lies in the propaganda of a certain way of life (propaganda function). Social advertising must meet the following requirements.

First of all, it should show a social problem, and most importantly it is the way to solve it. (For example: the call for neatness on the road should be accompanied by a call to fasten the belts and observe the speed limit).

Second, what you should pay attention to is the placement of advertising. For example, it is ineffective to place advertisements of such content as "Give way to ambulance" in public transport, or a poster with the information message "Cross the road on the pedestrian crossing" on the expressway.

The development of social advertising must involve the public. Already at the present time there are many festivals and competitions. People themselves participate in its development, and, consequently, the probability of non-acceptance of publicity declines by several times.

The question of the ethics of social advertising is also important. The creators of social advertising need to remember that their experiments can cause outbreaks of social tension.

Many researchers talk about the existence of the dependence of the positive results of social campaigns, that is, changes in attitude to the object or behavior, on the strength of provoked emotions - especially fear. Between the effectiveness of advertising and emotions is observed a direct dependence - the stronger the emotion, the more effective the message.

Without a doubt, advertising using the threat helps to manipulate human behavior. However, any deliberate stimulation of the state of anxiety affects ethical issues. Even if we imagine an experienced, mature person capable of resisting the influence of advertising, one can not exclude that it can negatively affect even him. Thus, advertising can be unacceptable in terms of ethics, even if it pursues noble social goals. Despite the fact that an appeal to a sense of fear can make a message convincing, its use must be carefully thought out in terms of consequences.

Another interesting question is the use of humor and creativity in social advertising.

Humor often helps in solving the communication problem, but can also destroy the message. It is known that the most significant and affecting the effectiveness of advertising are such factors as quality, utility and accessibility (understandability). In my opinion, humor or shocking creativity can be used in social advertising, but they should not be leading, and even more an end in itself, as is often the case in domestic social advertising.

Social advertising in today's world is focused mainly on such issues as healthy lifestyles (including AIDS prevention), compliance with traffic rules, calling for civil duties (tax payment, military service, etc.), careful attitude to Nature, patriotism and love for the Motherland, strengthening family relations (including raising the birth rate), fostering a sense of responsibility for the fate of children and socially unprotected strata. The range of problems should be expanded; this is due primarily to the role that social advertising plays in the creation and production of moral and spiritual values. It can spiritually enrich the society; awaken in people the best qualities. Motto "Call your parents!" can be perceived in every family differently and every child in its own way, but it is a question of the moral bar of "normality" in economic, civil and social terms. Social advertising is increasingly acting as the "conscience" and "common sense" of society.

Conclusion

Due to the peculiarities of advertising communication - repeatability, mass character, verbal accuracy, and emotional saturation - the texts of social advertising can serve as a moral catalyst for the state of society and a positive adjustment of its life activity. An appeal to spiritual values and moral standards can form the needs of a spiritual plan. Social advertising, like psychotherapy, is able to improve social relations. Among the important goals can be called the promotion of the basic principles of environmental ethics; Strengthening and family building, as well as intergenerational links; Formation of respect for people; the development of social capital, the unification of citizens on the basis of a community of interests and goals for solving social and cultural problems.

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SECTION 29. Literature Folklore. Translation Studies.

ABOUT THE TERM OF LANGUAGE GAME. CONCEPT OF LANGUAGE GAME

Abstract: *In article considered various definitions of the concept "language game". Language game makes a basis of a comic discourse and shown in expression of various substantial signs. Central boards indicators of comic communication are free activity and creativity.*

Key words: *latifa, humouristic discourse, norm, comic, linguistic game, comedian.*

Language: *English*

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Introduction

According to the idea of some researchers, game established the basis for jokes and generally considered as a necessary necessity to understand the joke [11: p.12]. At the same time, the other point of view of the scope of the existing conditional reality, and explained that it allows you to understand the new world outlook, for example, a certain culture, which is under the ban a joke topics (politics, money, family values, etc.) may rise to as a theme.

Materials and methods

Humorous discourse, of course, can be form of the game, because the game of communication [2: p.249] has the following characteristics:

1) The game is a form of interaction between individuals in a free and voluntary, because the man cannot be forced to laugh. To describe the identity of the subjects of humorous discourse on their social status should not reduce the social distance between them and other types of discourse will look different from the values in the solid;

2) game dialogue occur in the indicated limits of time and place. Listening to the works of the comic genre move to the reader to other realities, and often describes the events that not happened in the truth;

3) game and game dialogue is built on the basis of the rules adopted voluntarily by the participants of this game. Also, it can gives an opportunity understanding of the relativity of game and unserious of game;

4) unserious, humorous discourse to the game dialogue, to envisage enjoy by the comedy of other reality, which created by the participants. In general, the task of humorous discourse linguistic units by means of norms and stereotypes (standards), carry out comprehensive word game;

5) if communicative actions of game operated according to a certain pattern, but it has the process and the outcome of the game (the result) variation. Its impossible predict the outcome of the game, it would never be known in advance. In cognitive field, comedy shows unexpected results humorous discourse may be guarantee of success.

Metaphor of "Language is a game" (F-de Sossyur 1977) are widely used in earlier times linguistics. Sossyur describes the main categories of language as the equivalents of chess game (systematic, materiality, rule and etc.).

The term "Linguistic game" appeared nearby in the work of the philosopher L.Vitgenshteyn, according to it, linguistic games - their internal rules and the agreements subordinate unified and complete communications system, which is a violation of the provisions of the precise limits of the game. According to the point of view L.Vitgenshteyn that linguistic game does not serve peoples enjoying. People are used in accordance with the rules of natural language used by players is being described as a set of linguistic games [3]. In the conception of scholar the selection and using linguistic sign will be based on linguistic rules of the game, he makes equal

language game to the same as speech activity and creativity.

According to the point of view L. Vitgenshteyn the game formed by human consequently, the governing rules of language are considered the interactional cognitive processes of speech creation.

Clearly, linguistic game in different level belongs to all periods of language development , only treatments with the game in different fields and it can be differ from the level of actuality in concrete historical position for participants of this event.

As you know, the "game" is a term many scientific areas, such as psychology, pedagogy, physiology, etc., and every aspect of its functional properties. Different feature of linguistic game is that it is getting a piece of landscape comedian reflects the encoded information together [13: p.7]. Thus, through linguistic game expressed the implicate or explicate cultural values in the process of formation of different layer of society.

Many linguists, scholars engaged in the study of the linguistic game, so there are a number of definitions of this concept.

"Linguistic game "- is a extraordinary in language and the most importantly, the speaker (writer) failed lucid and deliberate way." At the same time, the listener (reader) deliberately told to it, on the contrary, it is this expression (phrase) is just wrong, or the uncertainty of values. But not surprised by the deliberate way displace displeasure and offered his support and this game will bring about the author's intention to attempt to resolve the underlying intention [9: p.20].

According to the definition of L. I. Sapogova that the linguistic games of this man's language during the game in front of the event, an amazing sense of its own power (power) that allows you to realize the language as a system of access in order to identify opportunities for cross their linguistic skills in different language the fact of the act of using experiments with layers, process (Sapogova 2003).

S. Nukhov explained, " Linguistic game "- is a speech movement is carried out linguistic abilities of their lingual creative form, which will show their individual style. In linguistic game the author's , addressee opinion, the game is important to distinguish between opinion and recipient address. Either, and the other to enjoy the game aesthetic send their vocal skills, the ability to evaluate the receiving game, does not resolve a linguistic riddle could delay happy [7: p.137-138]. Therefore, language is a bilateral process.

Some researchers characterized that linguistic game in order to achieve the effect of a violation of the linguistic model of programmed and perfect the result of deviances in the linguistic norm deliberately define as a specific form of creativity (Usalkina 2002).

One of the widely spread linguistic game, comics that impossible define limits of its application. Linguistic game study of modern linguistics considered one the most relevant linguistics because the study pragmatic aspects of linguistics are culminated. In addition, language is studied in many areas of the game by stressing linguistic characteristics dealt with science and language grammatical principles spurt of creative, non-use, so the comedian meaningful sentences to create a variety of linguistic units to use it [10: p.86].

The linguistic models of formation of linguistic units and structural and semantic methods of make comics, they were speaking the purpose of creating performance gaming effects [6: p.76].

Word game occur where there are two sides completely harmonious : content and expression, meaning and form. These belongs to all units: words, a fixed combination of words, morpheme or anywhere of the word which takes the status of meaning carrier [5: p.84].

Comedian effect of humorous texts common received stereotype according to deviation (measure standard)"carry out of necessity and prediction acts directed to destroy the stereotypes of linguistic game in commentary and the creation of comedian text" [8].

According to the poin of view of E.Shatrova linguistic game has the following important features:
1) free activity;
2) creative activity;
3) the activity of characterized with the system of speaker-listener or the author reader;
4) the activity of oriented to the system of emotional and psychological intence of participants';
5) the activity of characterized with the linguistic sight of the world ;
V.Z.Sannikov designated the following tasks linguistic game:
1. the characterization (laugh at characterized person);
2. the linguistic enrichment;
3.to strive to enthusiast of yourself and interlocutor ;
4. to strive to determine of the own status (to make visible yourself);
5. to fight against to the ignorance of surroundings;
6. To hide behind mask.
A.V.Volkogonova (2012) shows the following cognitive mechanisms of linguistic game:
1) first of all reduplicate cognitive mechanism which will illustrate of phonetic models;
2) the cognitive mechanism which use from the taken linguistic units of different language;
3) cognitive mechanism based on the destructive cognitive mechanism which changes (corrupt) of the linguistic form, phonetic as well as morphological structure of the word;

4) the cryptographic cognitive mechanism in the creation of scrambled words understandable only separate people (informed).

Conclusion

Linguistic games are characterized different by researchers. V.Z.Sannikov our linguistic usage of the game following in the footsteps of separate linguistic level: 1. Lexics. Semantics; 2.Syntax; 3.Methodical violation of principles; 4. Phonetics. Graphics. Orthography; 5.Word formation; 6. Morphology.

According to the idea of researchers that the main mechanisms for the formation of linguistic game in humor are considered polysemy homonym, paronym, synonyms, antonyms, models word formation and phraseology [1].

Linguistic game occur in literary language, also unlimited levels of speech, and differ from by sharp sense of humor. Linguistic game carried out expressiveness parody (travesty), to make fun to speech.

To feel the subtleties of the language to understand the logic of the facts of linguistic and linguistic intuition, as important parts of the linguistic skills. Spokesman linguistic knowledge and experience not only to know the words, and may lack the skills to use them in accordance with the rules, but not to the general principles of the new words in the linguistic ability to create a system based on the potential of language [4: p.44].

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THE EFFECTIVE USE OF RAINFALL FOR GROWING CROP PRODUCTION

Abstract: *The article presents the results of research on the effective use of rainfall for crop production. It is shown that on the calcareous black soils of Northern Kazakhstan it is advisable to leave plant residues on the surface of soil in the autumn period for the accumulation of a mantle of snow. Using deep mechanical tillage during the autumn will result in better absorption of defrost water. During the growing season the best option at the optimum agrophysical indicators of soil to retain moisture are the options of utilizing banded processing and No-till.*

Key words: *precipitation, yielding moisture, soil density, filtration, yield*
Language: *Russian*

ЭФФЕКТИВНОЕ ИСПОЛЬЗОВАНИЕ АТМОСФЕРНЫХ ОСАДКОВ ПРИ ВЫРАЩИВАНИИ СЕЛЬСКОХОЗЯЙСТВЕННЫХ КУЛЬТУР

Аннотация: *В статье приводятся результаты исследований по эффективному использованию атмосферных осадков при выращивании сельскохозяйственных культур. Показано, что на карбонатных черноземах Северного Казахстана целесообразно оставление на поверхности почвы растительных остатков в осенний период для накопления снежного покрова. Для лучшего впитывания талых вод проводить осеннюю глубокую механическую обработку. При оптимальной плотности почвы можно минимизировать обработку почвы вплоть до ее отказа. В течение вегетации наилучшим вариантом при оптимальных агрофизических показателях почвы для сохранения влаги являются варианты полосовой обработки и No-till.*

Ключевые слова: *атмосферные осадки, продуктивная влага, плотность почвы, фильтрация, урожайность*

Введение

В засушливых регионах влага является основным лимитирующим фактором получения высоких и стабильных урожаев [1, с. 396]. Атмосферные осадки являются единственным источником пополнения почвенных ресурсов (влаги). В условиях Северного Казахстана пополнение запасов почвенной влаги происходит за счет осадков не вегетационного периода. Основным резервом почвенного увлажнения являются зимние осадки. Эффективность их использования зависит от комплекса агротехнических мероприятий, направленных на накопление и сохранение влаги в почве. и ее продуктивное использование. Этой проблеме посвящен целый ряд работ.

С 1957 г. повсеместно внедрялась система основной обработки почвы, которая предусматривала вслед за уборкой проводить глубокую вспашку почвы с выравниванием ее поверхности. При вспашке не обеспечивалось рациональное использование атмосферных осадков, особенно в острозасушливых условиях. Снежный покров со вспаханных полей сдувался в овраги и балки. Оголенная почва промерзала на значительную глубину и плохо впитывала талые воды. На вспаханных полях развивалась водная и ветровая эрозии. В результате урожаи сельскохозяйственных культур, особенно в острозасушливые годы, были низкими [2, с. 18] .

В связи с этим была разработана новая система обработки почвы – почвозащитная. Основой этой системы являлось сохранение при обработке почвы пожнивных остатков на ее поверхности. В результате на агротехнических фонах были большие запасы как общей, так и продуктивной влаги, что положительно сказалось на микробиологической активности почвы, росте и развитии растений, а также на урожае [3, с. 6; 4, с. 136].

В условиях Северного Казахстана при почвозащитной обработке почвы встречаются такие явления, когда выпавший первый снег осенью тает и, переувлажнив верхние горизонты почвы, промерзает. Вследствие этого при таянии снежного покрова весной влага усваивается плохо. Одним из способов повышения водопроницаемости мерзлых почв может быть осеннее щелевание [5, с. 239]. При сравнении щелевания с плоскорезной обработкой лучшее усвоение талых вод отмечалось при нарезке щелей [6, с. 40].

В настоящее время растет популярность ресурсосберегающих технологий возделывания сельскохозяйственных культур. Нулевые и минимальные технологии приходят в замену традиционным почвозащитным, более ёмким и затратным. Однако длительное применение No-till приводит к появлению нежелательных явлений, таких как более низкая температура поверхностного слоя почвы, в ряде случаев избыточное увлажнение почвы, а также повышенная пенетрация пахотного слоя по сравнению с классическими системами обработки почвы [7, с. 233]. В связи с этим, необходим поиск промежуточного варианта между традиционной и нулевой технологией. Полосовая обработка (strip till) или выше упомянутое щелевание, которое сходно с полосовой обработкой почвы является методом обработки, сочетающим в себе преимущества No-till и традиционной обработки. Метод полосовой обработки почвы широко распространён в ряде Европейских стран и Северной Америке. С помощью этого метода, который также известен

как совершенствование No-till, почва разуплотняется в обрабатываемых полосах и увеличивается водопроницаемость и температура почвы. В обрабатываемых полосах, увеличиваются запасы почвенной влаги за счет инфильтрации дождевых и снежных осадков, что благоприятно сказывается в зонах засушливого земледелия [8, с. 169]. Полосовая обработка почвы - система применения обработки только узких полосок или зон почвы, в которые будут посеяны семена. Обработанная зона составит не более чем 25% площади поля. Полосовая обработка почвы для растениеводства является консервативной, в которой почва остается, частично, покрыта и защищена стерней предшественника, в то время как возделываемая культура посеяна, выращена и собрана в обработанных зонах почвы [9, с. 277]. Необходимо отметить основные преимущества полосовой обработки почвы: уменьшается риск возникновения ветровой и водной эрозии почвы, потому что большая часть поля остается покрытой растительными остатками в течение года; увеличивается инфильтрация воды по сравнению с полной обработкой полей; уменьшаются выбросы углерода в атмосферу и сохраняется больше органического вещества в почве. Такая обработка способствует лучшему прорастанию семян и получению дружных всходов, потому что пропашные полосы хорошо прогреваются; урожайность в этом случае находится на одном уровне либо выше по сравнению с другими системами обработки; снижает расходы, в том числе на топливо и труд, устраняя некоторые первичные и вторичные обработки [10, с. 1].

В этом ключе необходимо отметить, что возможно при полосовой обработке создаются условия для лучшего впитывания атмосферных осадков в обработанные полосы. Результаты зарубежных исследований показывают, что полосовая обработка способствует улучшению водного режима почвы. Она похожа на вспашку чизельными плугами, но при этом сохраняет влажность почвы как при нулевой обработке. При полосовой обработке порозность почвы безусловно выше, чем при No-till. Увеличивается количество пор среднего размера в верхних слоях почвы, которые очень важны для впитывания и хранения воды в прикорневой зоне [11, с. 25]. Накоплению зимних осадков способствует ненарушенный стерневой покров сельскохозяйственных культур в необрабатываемых полосках, что также влияет на эффективность использования влаги [12, с. 136].

В связи с этим целью исследований явилось изучению накопления зимних осадков, усвоению зимних и весенних осадков в почвенном профиле,

использованию почвенной влаги сельскохозяйственными культурами.

Материалы и методы исследования

Исследования проводили в 2015-2016 гг. на опытном поле Научно-производственного центра зернового хозяйства им. А.И. Бараева в лаборатории агротехники полевых культур и диверсификации растениеводства. Научно-производственный центр находится на 51° 40' 38.64'' с.ш 71° 00' 58.21'' в.д.

Главной особенностью климата является его резкая континентальность, характеризующаяся большой амплитудой колебания температуры воздуха, сухостью и незначительным количеством атмосферных осадков, с длительной зимой и коротким летом. Безморозный период сильно колеблется по годам. Средняя продолжительность безморозного периода 98, наименьшая – 73, наибольшая 168 дней.

Устойчивый снежный покров устанавливается, как правило, в первой декаде ноября и сходит в первой половине апреля. В течение зимы выпадает около 100 мм осадков с колебаниями от 60 до 120 мм. Зимой отмечается значительная ветровая деятельность. За счет зимних осадков происходит проникновение влаги на глубину 1,0-1,5 м. В весенний период отмечается быстрое нарастание тепла. Весной погода неустойчива, с частыми возвратами холодов и поздними заморозками. За апрель и май в среднем выпадает 56,0 мм осадков, однако все они расходуются на испарение. Наибольшее количество осадков, около 160 мм, выпадает в течение летнего периода. Осенью (сентябрь-октябрь) выпадает около 50 мм осадков. В условиях прохладной погоды 25-30 мм влаги накапливается в почве. Однако в годы с дождливой осенью в почве может накапливаться до 60-70 мм продуктивной влаги.

Годы исследований различались по погодным условиям. Вегетационный период 2015 года характеризовался как умеренно увлажненный, с повышенной теплообеспеченностью в начальный этап развития растений и умеренно теплый в период с июля по август. В целом сельскохозяйственный год превышал многолетние показатели, как по количеству атмосферных осадков, так и по температурному режиму. За

сельскохозяйственный год выпало 415,9 мм атмосферных осадков. В осенний период (сентябрь-ноябрь) выпало 108,8 мм, за декабрь – февраль – 64,5 мм, за март – май – 86,5 мм и в летние месяцы – 156,1 мм. Вегетационный период 2016 года характеризовался как умеренно увлажненный, с недостатком тепла. За сельскохозяйственный год выпало 391,3 мм осадков против 319,3 мм среднемноголетних данных. В осенний период (сентябрь-ноябрь) выпало 45,4 мм, за декабрь – февраль – 64,6 мм, за март – май – 72,1 мм и в летние месяцы – 209,2 мм.

Исследования реализованы в подзоне черноземов южных карбонатных, с содержанием гумуса 3,6 - 4,1%. Водный режим южного карбонатного чернозема относится к непромывному типу. Полевой опыт включал два варианта основной обработки почвы (традиционная плоскорезная обработка на 25-27 см; полосовая обработка почвы с расстоянием между обрабатываемыми полосами 75 см и No-till.

В полевых опытах проводили наблюдения за состоянием снежного покрова, динамикой продуктивной влаги в почве, изменением плотности и фильтрационной способности пахотного слоя.

Научные эксперименты проведены согласно общепринятой методике полевых и лабораторных исследований.

Результаты и их обсуждение

За время проведенных исследований среднесуточная температура в зимние периоды 2014-2015 гг. и 2015-2016 гг. была выше среднемноголетних показателей. В декабре 2014 года -12,4 °C против многолетних данных -14,1 °C, в январе 2015 года-14,7 °C против -17,0 °C, в феврале -9,5 °C против -16,6 °C. В декабре 2015 года температура составляла -6,9 °C, в январе 2016 года - -18,8 °C и в феврале -7,8 °C. Количество зимних осадков способствовало интенсивному накоплению снежного покрова. В связи с этим снежный покров интенсивно накапливался на поверхности почвы независимо от варианта обработки почвы. Мощность снежного покрова в среднем за 2 года изменялась в течение зимнего периода (рис. 1).

декабрь ⊞ январь ⊞ февраль
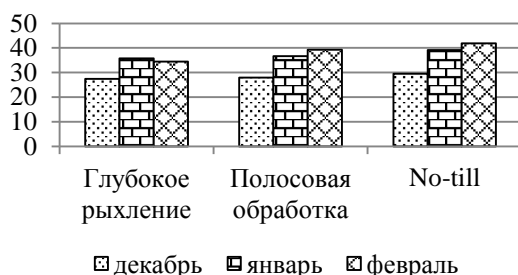
Рисунок 1 - Динамика накопления снежного покрова за период декабрь-февраль, в зависимости от агротехнического фона в среднем за 2014-2015 гг. и 2015-2016 гг., см

За годы исследования высота снежного покрова при полосовой обработке на момент снеготаяния составляла 38,7 см при плотности снежного покрова 0,29 г/см^3 (табл. 1). При глубоком рыхлении почвы на 25-27 см показатель высоты снежного покрова был равен 34,6 см при плотности снега 0,31 г/см^3. На варианте без обработки почвы высота снега была максимальной (41,9 см), это объясняется максимально полной сохранностью вертикальной стерни, которая создает дополнительную преграду при переносе снега, при этом плотность снега была 0,27 г/см^3. На вариантах с осенней обработкой и, особенно, при глубоком рыхлении сохранность стерневого покрова меньше, что, в конечном счете, отразилось на высоте снежного покрова, при этом плотность снега выше, что выравнивает показатели полосовой обработки и варианта без обработки почвы по запасу воды в снеге.

Таблица 1

Мощность снежного покрова, плотность снега и запас воды в снеге перед началом снеготаяния, 2015 – 2016 гг.

Фон	Высота снежного покрова, см			Плотность снежного покрова, г/см^3			Запас воды в снеге, мм		
	2015 г.	2016 г.	Среднее	2015 г.	2016 г.	среднее	2015 г.	2016 г.	среднее
Глубокое рыхление	30,8	38,5	34,6	0,31	0,31	0,31	94,4	119,3	106,8
Полосовая обработка	34,8	42,7	38,7	0,30	0,28	0,29	104,7	119,6	112,1
No-till	38,2	45,7	41,9	0,28	0,27	0,27	109,0	123,4	116,2

В среднем за годы исследования запасы воды в снежном покрове на момент снеготаяния при полосовой обработке почвы составили 112,1 мм, что выше на 5,3 мм варианта с глубоким рыхлением почвы на 25-27 см и ниже на 4,1 мм варианта No-till. Запасы воды в снеге различались незначительно вследствие выпадения атмосферных осадков выше нормы и резких перепадов температуры, что позволило эффективно закрепляться снежному покрову на поверхности независимо от обработки.

При равных запасах влаги в метровом слое почвы в течение двух лет независимо от обработки почвы, перед установлением отрицательных температур в осенний период и накоплением запасов воды в снеге в пределах 100 мм и выше, запасы продуктивной влаги в метровом слое почвы после схода снега отличались.

В 2015 году в связи с интенсивным снеготаянием запасы продуктивной влаги в метровом слое почвы увеличились незначительно (табл. 2). В 2016 году из-за невысоких запасов влаги, в осенний период на варианте No-till отмечены трещины в почве, что, также как и при проведенной качественной осенней обработке почвы, привело к хорошему впитыванию влаги в весенний период, вследствие чего запасы продуктивной влаги в метровом слое почвы после схода снега значительно увеличились.

Таблица 2

Запасы продуктивной влаги в метровом слое почвы в период установления отрицательных температур и схода снега с учетом запасов воды в снеге, мм

Фон	Уход в зиму		Запас воды в снеге		Сход снега		+/- от ухода в зиму до схода снега	
	2015г.	2016г.	2015г.	2016г.	2015г.	2016г.	2015г.	2016г.
Глубокое рыхление	88,3	16,2	94,4	119,3	111,0	150,4	+22,7	+134,2
Полосная обработка	85,5	18,7	104,7	119,6	103,7	148,9	+18,2	+130,2
No-till	79,8	19,4	109,0	123,4	82,3	150,8	+2,5	+131,4

В среднем за два года исследования запасы продуктивной влаги при глубоком рыхлении составили 130,7 мм, при полосовой обработке – 126,3 мм и при No-till – 116,5 мм (рис. 2).
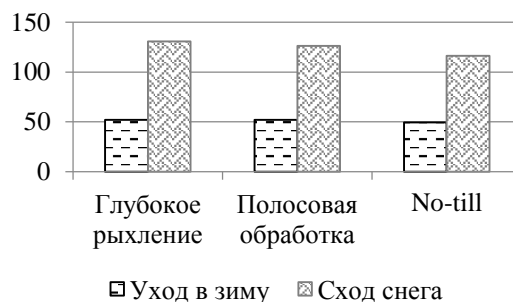
Рисунок 2 – Запасы продуктивной влаги в метровом слое почвы в зависимости от агротехнического фона в среднем за 2014-2015 гг. и 2015-2016 гг., см

Запасы влаги в почве к моменту посева изменялись в зависимости от агрофона и срока сева. В среднем за два года к посеву в начале второй декады мая запасы влаги снижались от момента схода снега независимо от варианта обработки почвы из-за испарения влаги и незначительного выпадения осадков в этот период. Снижение запасов влаги изменялось в зависимости от обработки почвы. Продуктивная влага в метровом слое почвы составила при глубоком рыхлении 102,9 мм, при полосовой обработке – 101,0 мм и при No-till – 92,8 мм. В наиболее выигрышном положении находились варианты с обработкой почвы. К посеву в третьей декаде мая запасы влаги были выше за счет выпадения атмосферных осадков. При этом тенденция снижения влаги при минимизации обработки сохранялась: при глубоком рыхлении - 132,9 мм, при полосовой обработке – 131,9 мм и при No-till – 122,7 мм.

Одним из наиболее важных почвенных свойств при характеристике приемов обработки является плотность. Избыточное уплотнение почвы приводит к ухудшению физического состояния в целом, снижая водопроницаемость,

стабильность почвенной структуры, что в итоге отражается на урожайности возделываемых культур [13, с. 133; 14, с. 3].

Результаты наблюдений показали, что в 2015 году к моменту посева сельскохозяйственных культур, плотность пахотного слоя почвы независимо от обработки находилась практически в одном интервале и изменялась от 1,22 г/см³ при глубоком рыхлении, до 1,26 г/см³ при полном отказе от обработки (табл. 3). Плотность почвы при полосовой обработке занимала промежуточное положение и составила 1,24 г/см³, что находится в пределах оптимальной плотности установленной для черноземов южных [15, с. 26]. В условиях 2016 года к посеву сельскохозяйственных культур данный показатель изменялся от 1,18 г/см³ при наиболее интенсивной традиционной обработке, до 1,29 г/см³ на варианте с прямым посевом культур. Плотность почвы при полосовой обработке занимала промежуточное положение и составила 1,20 г/см³. Плотность пахотного слоя на вариантах с механическими обработками была существенно ниже в сравнении с вариантом прямого посева, что, в конечном счете,

отразилось на фильтрационной способности изучаемых фонов.

Таблица 3

Плотность сложения (г/см³) и фильтрационная способность (мм/мин) пахотного слоя почвы при глубокой, полосовой обработке почвы и No-till перед посевом сельскохозяйственных культур

Фон	Слой почвы	2015 г		2016 г		Среднее	
		Плотность почвы	Фильтрация почвы	Плотность почвы	Фильтрация почвы	Плот ность почвы	Фильт рация почвы
Глубокое рыхление	0-10	1,11	0,36	1,09	1,44	1,10	0,90
	10-20	1,27	0,21	1,21	0,06	1,24	0,14
	20-30	1,27	0,01	1,22	0,02	1,25	0,02
	0-30	1,22	0,19	1,18	0,51	1,20	0,35
Полосовая обработка	0-10	1,12	0,42	1,12	1,18	1,12	0,80
	10-20	1,30	0,09	1,22	0,16	1,26	0,13
	20-30	1,31	0,02	1,26	0,02	1,29	0,02
	0-30	1,24	0,17	1,20	0,45	1,22	0,31
No-till	0-10	1,16	0,46	1,16	1,15	1,16	0,81
	10-20	1,30	0,02	1,35	0,08	1,33	0,05
	20-30	1,34	0,01	1,36	0,03	1,35	0,02
	0-30	1,26	0,16	1,29	0,42	1,28	0,29
HCP_{05}, в слое 0-30 см		0,06	0,12	0,08	0,07	-	-
Значение парной корреляции		$(r_{xy})= - 0,92$		$(r_{xy})= - 0,78$		-	

Фильтрационная способность, которая показывает количество воды, просочившейся через слой почвы за определенный промежуток времени, как известно, находится в тесной зависимости от плотности почвы. На нее влияют также состояние увлажнения, качество почвенной структуры, содержание органического вещества [16, с. 4]. В весенний период 2015 года фильтрационная способность пахотного слоя имела высокую обратную корреляционную зависимость ($r_{xy} = - 0,92$) с плотностью почвы. Насыщенный влагой уплотненный пахотный слой имел относительно низкие показатели фильтрационной способности (0,19 до 0,16 мм/мин) и также как и плотность существенно не различался по изучаемым вариантам технологий.

Перед посевом сельскохозяйственных культур в 2016 году фильтрационная способность пахотного слоя изменялась в соответствии с интенсивностью обработки почвы от варианта глубокого рыхления (0,51 мм/мин) к нулевой обработке (0,42мм/мин), и имела тесную обратную корреляционную связь с плотностью почвы ($r_{xy} = - 0,78$). Вариант полосовой технологии по показателям фильтрационной способности также занимал промежуточное положение (0,45 мм/мин) и существенно не отличался от изучаемых вариантов. Анализ фильтрационной способности по слоям показал, что максимальной водопроницаемостью, независимо от обработки обладает поверхностный слой почв 0-10см, далее, вниз по профилю фильтрационная способность резко снижается с сохранением общей тенденции. Также следует отметить более высокие показатели фильтрации горизонта 10-20см при полосовой обработке (0,16 мм/мин), тогда как при глубоком рыхлении и нулевой обработке значения не превышали 0,06-0,08 мм/мин.

В целом состояние плотности почвы и её фильтрационная способность перед посевом сельскохозяйственных культур на исследуемых вариантах по своим значениям не выходили за пределы оптимума, установленного для почв зоны исследований. В условиях 2016 года на вариантах с механическими обработками плотность и фильтрационная способность почвы находилась в более выигрышном положении, что отразилось и на запасах продуктивной влаги в почве.

Немаловажным показателем для сельскохозяйственных культур являются запасы продуктивной влаги в почве и в течение вегетации. Наиболее благоприятные условия по влагообеспеченности должны складываться в критические периоды растений. Например, у яровой пшеницы это фаза от выхода в трубку до колошения, у подсолнечника и гороха – бутонизация-цветение и т.д.

На примере подсолнечника отметим важность запасов продуктивной влаги в почве в фазу цветения. Подсолнечник отличается высокой потребностью к влаге, его транспирационный коэффициент 470-550, но одновременно он и засухоустойчив. Расход воды от общего потребления за вегетацию по фазам составляет: 20-22% до образования корзинок, 60-62% до конца цветения, 18-20% до созревания.

При равном выпадении атмосферных осадков от момента посева до фазы цветения подсолнечника (184,8 мм в 2015 г. и 198,3 мм в 2016 г.) запасы продуктивной влаги в метровом слое почвы были различные в зависимости от изучаемых вариантов. В среднем за два года проведения исследований запасы влаги при глубоком рыхлении составили 31,8 мм, при полосовой обработке – 47,7 мм и при No-till – 42,8 мм. Отмечено, что при минимизации обработки почвы к фазе цветения сохранялось больше продуктивной влаги в метровом слое почвы. Это объясняется меньшим испарением с поверхности почвы за счет ненарушенного слоя почвы или частично нарушенного и оставленных растительных остатков. При расчете использования почвенной влаги от посева до цветения подсолнечника зафиксировано, что в среднем за 2015-2016 годы наибольший расход

был при глубоком рыхлении (71,1 мм), при полосовой обработке – 53,3 мм и при No-till – 50,0 мм. Важно отметить и то, что в начальный период вегетации температура в посевном слое почвы при полосовой обработке, там, где и производился посев в обработанную полосу, был выше, чем между необработанными полосами и был на одном уровне с вариантом глубокого рыхления. Температура почвы между полосами находилась в одном температурном режиме с вариантом No-till. Температура почвы менялась в зависимости от среднесуточной температуры воздуха. Если устанавливалась низкая среднесуточная температура воздуха, то температура в полосе резко реагировала на смену температуры и снижалась до определенного уровня, а между полосами температура почвы реагировала на смену температурного режима плавно. Что также доказывает меньшее испарение влаги с поверхности почвы за счет оставления растительных остатков.

В конечном результате это отразилось и на получении урожайности маслосемян подсолнечника. Наибольшие показатели урожайности в среднем за два года исследования были получены по полосовой обработке и No-till (рис. 3).

Рисунок 3 – Урожайность маслосемян подсолнечника в зависимости от агротехнического фона в среднем за 2015-2016 гг., ц/га

Заключение

Таким образом, на карбонатных черноземах Северного Казахстана для эффективного использования атмосферных осадков при выращивании сельскохозяйственных культур целесообразно оставление на поверхности почвы растительных остатков в осенний период для накопления снежного покрова. Для лучшего

впитывания талых вод проводить осеннюю глубокую механическую обработку. При оптимальной плотности почвы минимизировать обработку почвы вплоть до полного отказа от нее. При оптимальных агрофизических показателях почвы лучшими для сохранения влаги являются варианты полосовой обработки и No-till.

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SECTION 13. Geography. History. Oceanology. Meteorology.

THE HISTORY OF CONTINUOS EDUCATION IN REPUBLIC OF KARAKALPAKSTAN DURING THE INDEPENDENCE YEARS

Abstract: *This article presents the process of development of uninterrupted education in Karakalpakstan in the years of independence, new educational institutions, created in the sphere of public education in this territory are analyses in this article.*

Key words: *Public Education, schools providing, general education, music and art schools, uninterrupted education, school, Syllabus circle.*

Language: *Russian*

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ИСТОРИЯ РАЗВИТИЯ НЕПРЕРЫВНОГО ОБРАЗОВАНИЯ В РЕСПУБЛИКЕ КАРАКАЛПАКСТАН ЗА ГОДЫ НЕЗАВИСИМОСТИ

Аннотация: *В статье описываются описываются процессы развития непрерывного образования в Каракалпакстане за годы независимости. В нем анализируются новые учебные заведения созданные в сфере народного образования на этой территории.*

Ключевые слова: *Народное образование, общеобразовательные школы, школы музыки и исскуств, беспрерывное образование, школа, программа, кружок.*

Introduction

Претворение в жизнь Закона «Об образовании» и «Национальной программы по подготовке кадров», разработанных по инициативе Первого Президента Республики Узбекистан И.А. Каримова, дало возможность коренным образом улучшить качество и сущность системы национального непрерывного образования.

Согласно Закону «Об образовании» и «Национальной Программе по подготовке кадров», принятых на XI сессии Олий Мажлиса Республики Узбекистан I созыва от 29 августа 1997 года, система непрерывного образования в республике реализуется следующим образом: дошкольное образование, общее среднее образование, среднее специальное профессиональное образование, высшее образование, после вузовское образование, повышение квалификации кадров и их переподготовка, внешкольное образование.

Согласно «Национальной Программе по подготовке кадров», предусматривается поэтапная реализация системы национального образования.

I этап – 1997-2001 годы, за этот период создавались нормативно-правовые, научно-методические, финансово-материальные условия, необходимые для выполнения программы. Для этого государством дополнительно было израсходовано 65 миллиардов сумов. Этот этап был назван периодом создания материально-технической базы программы по подготовке кадров.

II этап – 2001-2005 годы, в этот период национальная программа распрстранилась в широком масштабе. Этот этап получил название качественного этапа Национальной Программы по подготовке кадров.

III этап – предусматривает 2005 и последующие годы. В этот период завершено выполнение Национальной Программы по

подготовке кадров, подытожены достигнутые успехи, обобщены результаты и на их основе ещё больше совершенствуется в нашей стране новая образовательная система. Поэтому данный этап называют периодом модернизации образовательной системы [1. с. 198].

Materials and Methods

На сегодняшний день при Министерстве народного образования Республики Каракалпакстан существуют 1066 образовательных учреждений, из них 702 средних общеобразовательных школ, 306 дошкольных учреждений, 17 детских центров "Баркамол авлод", 21 школа музыки и искусства, 18 детских и юношеских спортивных школ, 1 республиканский институт повышения квалификации и переподготовки педагогических кадров [2, с. 1].

Первым этапом непрерывной образовательной системы считаются дошкольные образовательно-воспитательные учреждения. На сегодняшний день в Республике Каракалпакстан действуют 306 дошкольных образовательных учреждений, в них (на 1 января 2011 года) воспитываются 29981 ребенок.

Общее среднее образование включает в себя I-IV классы начального образования и V-IX классы общего среднего образования.

В общеобразовательных школах Республики Каракалпакстан обучение ведется на 5 ти языках. Это узбекский, русский, каракалпакский, казахский и туркменский языки. В 1998 году были сданы на эксплуатацию 9 школ на 5222 мест и в 1999 году 3 школы на 1958 мест. А также, в 1998-1999 учебном году обеспеченность компьютерной техникой составила 37,4 % (258 классных комплектов,а в 1999-2000 учебном году обеспеченность составила 38,2 % (287 классных комплектов) [4, с. 5]. В 2007-2008 учебном году в Каракалпакстане имелись 756 школ, в которых обучались 283198 школьников. В том числе количество школ с каракалпакским языком обучения- 377, в них обучаются 105883 учеников [5, с. 176]. К 2010-2011 учебному году количество общеобразовательных школ уменьшилось до 744. В них обучались 255068 учеников, из них 110309 на узбекском, 21460 на русском, 90865 на каракалпакском и 8006 учеников на туркменском языках [3, с. 4].

За последние годы в нашей стране обращается большое внимание укреплению материально-технической базы общеобразовательных школ. Как говорил Уважаемый Первый Президент Республики Узбекистан И.А.Каримов: "В процессе реализации Национальной Программы по подготовке кадров усиление внимания на школьное образование, особенно, на укрепление материально-технической базы общеобразовательных школ, для нас превратилось в самую важную и серьёзную задачу на повестке дня"[6, с. 64].

В этих целях были приняты Указ Президента №3431 "О Государственной общенациональной программе по развитию школьного образования в 2004-2009 годах" от 21 мая 2004 года и Постановления №321 Кабинета Министров Республики Узбекистан " О мерах реализации Государственной общенациональной программы по развитию школьного образования в 2004-2009 годах" от 09 июля 2004 года.

Были приняты Постановления № 77 Кабинета Министров Республики Узбекистан « Об организации академических лицеев и профессиональных колледжей управлении их деятельностью» от 24 февраля 1998 года и « О мерах по организации среднего специального и профессионального образования Республики Узбекистан» от 13 мая 1998 года. Если на территории Республики Каракалпакстан в 2000-2001 учебном году действовали 3 академических лицея, то к 2010-2011 учебному году их количество достигло 10. Количество профессиональных колледжей в 2000-2001 учебном году составляло 20, а к 2010-2011 учебному году оно составляло 91 [7, с. 2]. К 2015-2016 учебному году количество академических лицеев составляло 10, а профессиональных колледжей – 93 [8, с, 2].

За годы Независимости в нашей стране высшее образование стало широко развиваться и стало уделяться огромное внимание на то, чтобы молодые кадры, окончившие высшие учебные заведения стали кадрами, отвечающими требованиям, экономического и социального реформ, проводимых в нашем государстве. На сегодняшний день в 7 вузах, действующих в Республике Каракалпакстан готовят квалифицированных специалистов по всем отраслям.

Ещё одним звеном системы непрерывного образования в республике является отрасль повышения квалификации и переподготовки кадров. В Каракалпакстане оно проходит в институте имени К.Убайдуллаева. В данном институте в 2006 году действовали 6 кафедр, в семи отделениях которой работали 1 доктор наук, 11 кандидатов наук и доценты. На основе почасовой оплаты дополнительно привлечены к работе 4 доктора наук, 17 кандидатов наук. В институте лишь за первую половину 2011 года вместо 4000 педагогических работников прошли курсы повышения квалификации 4295 по 39 специальностям.

В нашей стране в системе непрерывного образования своеобразное место отводится внешкольному образованию. По показателям

Государственного статистического отчета Министерства народного образования Республики Каракалпакстан в 1992 году в Республике Каракалпакстан общее количество действующих внешкольных образовательных учреждений достигло 53, из них 20 домов и дворцов школьников, 12 центров технического творчества, 16 станций юных натуралистов, 4 детских центра туризма и краеведения, 1 независимая туристическая база. К 2004 году в Республике Каракалпакстан количество внешкольных образовательных учреждений достигло 84, в них действуют 1925 кружков, куда привлечены 55000 школьников. [9].

Кабинет Министров Республики Узбекистан принял Постановление №50 "О мерах совершенствования системы внешкольного образования" от 28 февраля 2011 года. На основании данного постановления в каждом районе и городе организованы по одному детскому центру "Баркамол авлод", а также по одному областному детскому центру, а в Республике Каракалпакстан один республиканский детский центр и в городе Ташкент 3 республиканских детских центра по направлениям: техническое, художественное творчество, краеведение и экология – всего 211 детских центров " Баркамол авлод".

На основании Распоряжения Совета Министров №71 б от 4 мая 2011 года все внешкольные образовательные учреждения прекратили свою деятельность, на их базе организованы 1 республиканский, 16 районных и городских детских центров " Баркамол авлод". Протоколом №07\1-91 от 12 мая 2011 года была утверждена "Целевая программа по организации детских центров " Баркамол авлод в 2011-2014 годах".

На основании данного протокола в 2011 году в Республике Каракалпакстан в городах Тахиаташ и Нукус отремонтированы и сданы на эксплуатацию детские центры « Баркамол авлод», в 2012 году в 4 зданиях – Республиканский центр « Баркамол авлод», в Шуманайском, Берунийском, Элликалинском районных детских центрах « Баркамол авлод» проводились строительно-ремонтные работы.

В 2013 году в детских центрах « Баркамол авлод» Тахтакупырского, Турткульского, Караузякского, Кунградского районов проводились строительно-ремонтные работы. В 2012-2013 учебном году в 611 кружков 255 наименований республиканского детского центра « Баркамол авлод» привлечены 5871 школьник. Их обучали секретам профессий 350 педагогов. К 2014 году в существующие 17 детских центров «Баркамол авлод» привлечены 6502, в 2015 году 7090 учеников.

Conclusion

Таким образом, в Каракалпакстане, в сфере непрерывного образования проводятся большие реформы и они являются отражением практической ответственности далеко идущих стратегических целей, проводимых нашим государством.

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SECTION 6. Metallurgy and energy.

FORMATION OF THE STRUCTURE AND PROPERTIES OF POWDER ROLLS BASED ON COPPER WITH NANO DIMENSIONAL DIAMOND FILLER

Abstract: *This study considers the formation of the properties of a powder sheet material with a nano-sized diamond filler RUDDM 0-0.5 with the use of a copper metal sheath, depending on the operations of the technological process.*

Key words: *powder metallurgy, diamond-bearing rolling, porosity, shrinkage, ultimate strength, microhardness, microstructure.*

Language: *Russian*

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ФОРМИРОВАНИЕ СТРУКТУРЫ И СВОЙСТВ ПОРОШКОВОГО ПРОКАТА НА ОСНОВЕ МЕДИ С НАНОАЛМАЗНЫМ НАПОЛНИТЕЛЕМ

Аннотация: *В настоящем исследовании рассмотрено формирование свойств порошкового листового материала с наноразмерным алмазным наполнителем марки RUDDM 0-0,5 с применением медной металлической связки в зависимости от операций технологического процесса.*

Ключевые слова: *порошковая металлургия, алмазосодержащий прокат, пористость, усадка, предел прочности, микротвердость, микроструктура.*

Введение

Порошковые тонколистовые алмазосодержащие материалы с микрометрическим алмазным наполнителем широко применяются при абразивной обработке неметаллических материалов для нужд электронной промышленности [1-7].

Изготавливают такие материалы методом порошковой металлургии, технологический процесс состоит из следующих основных этапов: смешивание шихты; холодная прокатка шихты в пористую ленту; спекание; многоцикловая механо-термическая обработка (МТО); термофиксация. МТО представляет собой уплотняющую прокатку в сочетании с последующим отжигом.

Формирование требуемых эксплуатационных свойств тонколистовых алмазосодержащих материалов с микрометрическим алмазным наполнителем происходит в процессе многоцикловой МТО, что подробно рассмотрено в работах [1-7].

В работе [8] рассмотрено влияние микро- и нанометрического алмазного наполнителя на механические свойства порошкового проката. Показано, что уменьшение размера алмазного наполнителя снижает механические свойства, что связано с различным характером распределения по металлической матрице микро- и

нанометрического алмазного наполнителя. Расчетным методом установлена максимально допустимая условная концентрация *K* наноалмазного наполнителя марки *RUDDM 0-0,5* из условия образования металлической связи между частицами связки при спекании и промежуточных отжигах.

Получение алмазосодержащих материалов с микро- и нанометрическим алмазным наполнителем выполнено по схожей технологической схеме, за исключением операции смешивания шихты. При смешивании шихты с микрометрическим алмазным наполнителем применяется перемешивание в баночном смесителе, а при использовании нанометрического наполнителя смешивание проводили в шаровой мельнице в каскадно-водопадном режиме.

В настоящем исследовании рассмотрено формирование свойств порошкового листового материала с наноразмерным алмазным наполнителем марки *RUDDM 0-0,5* с применением медной металлической связки.

Материалы и оборудование
Порошковый прокат с наноразмерным алмазным наполнителем изготавливался методом порошковой металлургии (прокатка + спекание + МТО). Прокат имел различную концентрацию нанолмазного наполнителя - 0,8 масс. %, 2,4 масс. %, 4,2 масс. %, что соответствует условной концентрации *K*: 8%; 24% и 40%.

Двухкомпонентная шихта сформирована из порошка меди ПМС-1 ГОСТ 4960-2009 и порошка поликристаллических алмазов *RDDM 0-0,5* с различной, указанной выше концентрацией.

Порошок поликристаллических алмазов *RDDM 0-0,5* представляет собой легко разрушаемые крупные конгломераты, поэтому смешивание шихты выполнено в шаровой мельнице для разрушения исходных конгломератов и равномерного распределения наноалмазного наполнителя по объему шихты. Время смешивания 10 часов в каскадно-водопадном режиме. Этого времени оказалось достаточно для равномерного распределения наполнителя по объему шихты.

После смешивания в шихту добавлялся пластификатор - этиловый спирт в количестве 3% от массы для увеличения формуемости смеси.

Прокатка шихты в ленту осуществлялась в прокатном стане дуо с горизонтально расположенными валками. Образцы после прокатки имели пористость П=35% и толщину 1800 мкм.

Далее прокатанная лента нарезалась на полосы небольшой длины, которые спекались в остроосушенном водороде при температуре 850 ºС в течении 120 минут. Спекание проводилось для упрочнения образцов, т.е для образования металлической связи между частицами порошка меди.

Спеченный прокат подвергался нескольким циклам МТО для уплотнения и увеличения физико-механических характеристик.

Измерение удельной поверхности шихты выполнено с помощью прибора ПСХ-10а, измерение физико-механичесих свойств выполнено с помощью универсальной испытательной машины *Inspekt* и микротвердомера ПМТ-3, просмотр микроструктуры выполнен с помощью цифрового микроскопа *Keyence VHX-1000* и растрового электронного микроскопа *VEGA3 TESCAN*.

Полученные результаты и обсуждение
Влияние смешивания, совмещенного с помолом, на удельную поверхность полученных порошковых смесей.

В процессе обработки шихты в шаровой мельнице происходит изменение формы частиц меди с разветвленной (рисунок 1а) на более округлую (рисунок 2б), что связано с деформацией металлических частиц мелющими телами. Удельная поверхность порошка меди до смешивания, совмещенного с размолом, составляет 1345 см²/г. В процессе смешивания алмазный наполнитель равномерно распределился по поверхности частиц порошка меди, что иллюстрирует рисунок 2.

Удельная поверхность шихты с различным содержанием алмазного наполнителя приведена на рисунке 3. После смешивания по мере роста массового содержания алмазного наполнителя величина удельной поверхности смеси также возрастает. Алмазный наполнитель, распределяясь по поверхности частиц меди, увеличивает удельную поверхность.

Очевидно, что в процессе смешивания, совмещенного с помолом, уменьшение удельной поверхности порошка меди, связанное с его деформированием, компенсируется наличием на поверхности частиц алмазного наполнителя.

а)

б)

Рисунок 1 - Морфология поверхности частиц порошка меди (а) до смешивания и после смешивания (б) с алмазным наполнителем в концентрации 0,8 масс. %.

Рисунок 2 - Морфология поверхности частиц порошка меди с алмазным наполнителем в концентрации 4,2 масс. %.

Рисунок 3 - Зависимость значения удельной поверхности от массового содержания алмазного наполнителя после смешивания в шаровой мельнице.

Пористость и усадка после спекания и многоцикловой МТО

Как указано выше, пористость после холодной прокатки шихты в ленту составляет

35%. Минимальное значение пористости достигается после спекания и двух циклов МТО и составляет П=6-15% в зависимости от содержания алмазного наполнителя. Изменение пористости по операциям представлено рисунке 4.
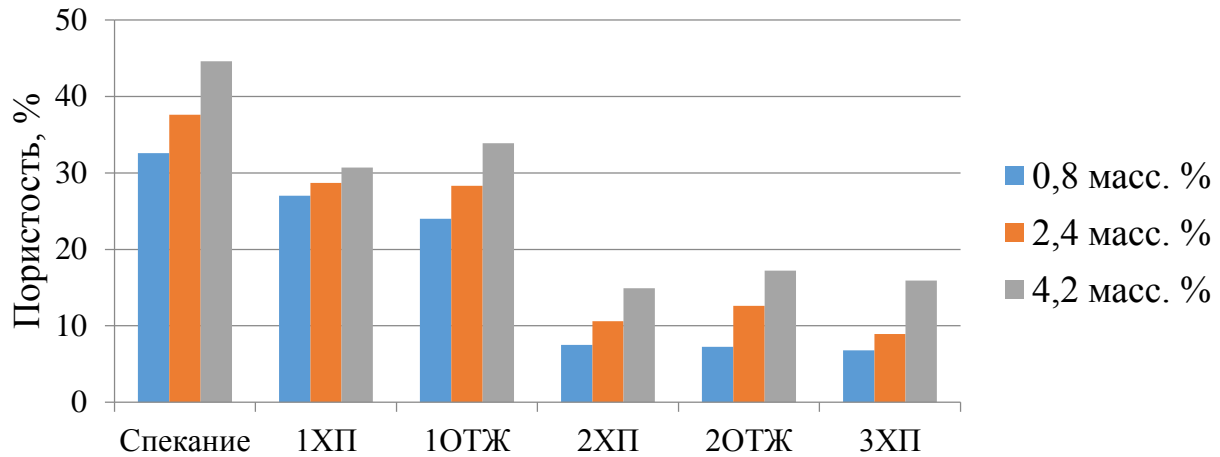
Рисунок 4 - Диаграмма изменения пористости по операциям технологического процесса

В процессе спекания и после промежуточных отжигов полученные материалы в зависимости от содержания алмазного наполнителя имеют усадку или рост. Прокат с содержанием 0,8% алмазного наполнителя проявляет усадку после спекания и первого промежуточного отжига и незначительный рост после второго отжига. При концентрациях 2,4% и 4,2% наблюдается рост размеров после термической обработки. Причем при концентрации 2,4 масс. % значения роста

размеров уменьшаются с каждой последующей термической обработкой, а при концентрации 4,2 масс. % рост размеров увеличивается.

В процессе спекания окислы на поверхности частиц меди довосстанавливаются с выделением водяного пара. Большая удельная поверхность алмазного наполнителя может адсорбировать некоторое количество газов из воздуха и паров этилового спирта при прокатке [9].
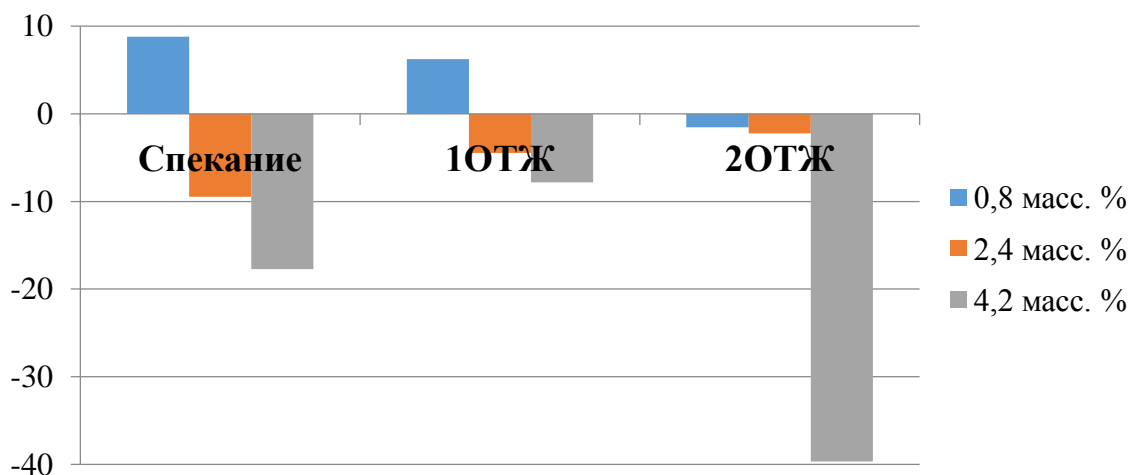
Рисунок 5 - Диаграмма изменения усадки после термической обработки проката

При термической обработке адсорбированные газы будут покидать поверхность алмазного наполнителя, что в комплексе с процессами восстановления частиц меди будет повышать давление внутри материала

и приведет к росту размеров после термической обработки.

Механические свойства после спекания и многоцикловой МТО

Изменение предела прочности на растяжение проката по операциям

технологического процесса представлены на рисунке 6. Наибольшая прочность проката с различным содержанием алмазного наполнителя достигается за два цикла МТО, что хорошо согласуются с данными, представленными на рисунке 4. Уменьшение пористости в процессе МТО существенно повышает прочность проката.

Материал с содержанием 0,8 масс. % наполнителя имеет наибольшие механические свойства, что связано с большой вероятностью образования металлической связи между частицами меди в процессе спекания и МТО [8].

Значения микротвердости материала с содержанием наполнителя 0,8 масс. % также достигают максимума после двух циклов МТО (рисунок 7). Значение микротвердости составляет ~ 600 МПа, что несколько ниже микротвердости порошкового проката из меди.
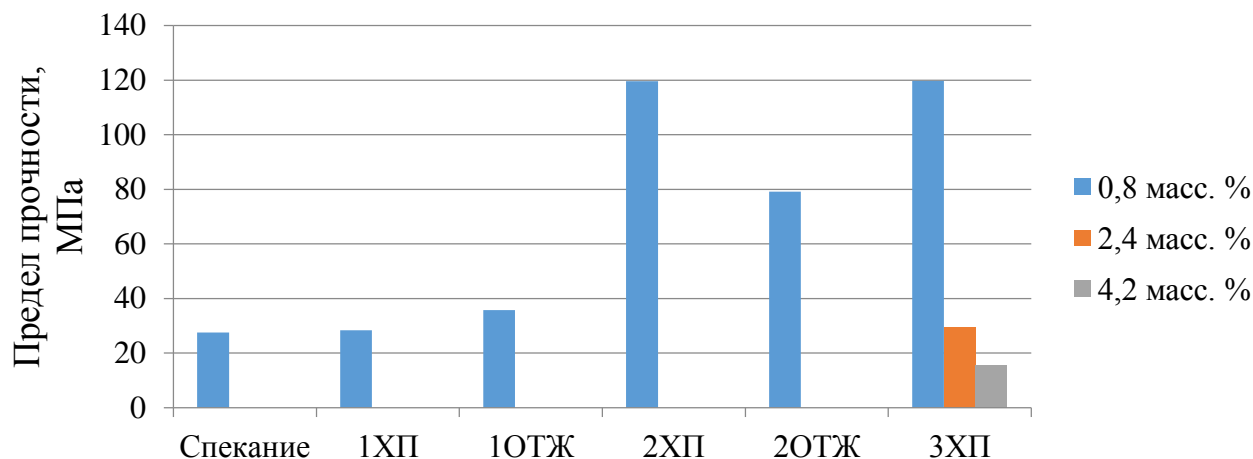
Рисунок 6 - Диаграмма изменения предела прочности на растяжение по операциям технологического процесса
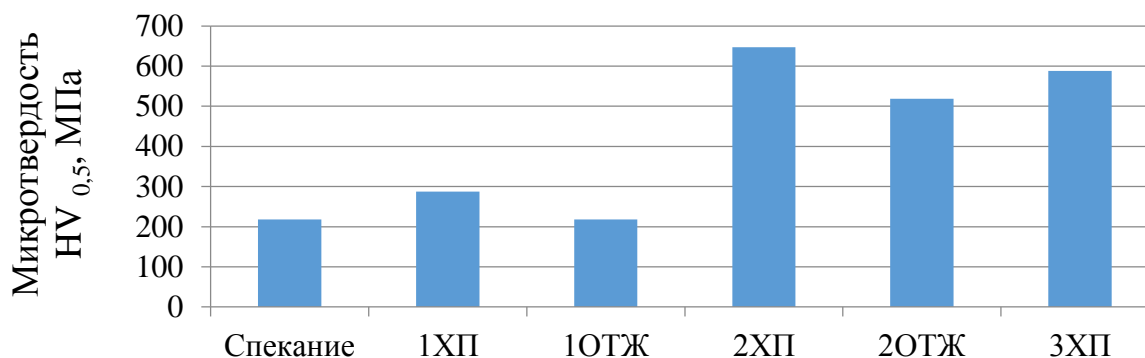
Рисунок 7 - Диаграмма изменения микротвердости материала с концентрацией наполнителя 0,8 масс. % по операциям технологического процесса

Микроструктура полученных материалов

Микроструктура материала с концентрацией алмазного наполнителя 0,8 масс. % по операциям технологического процесса представлена на рисунке 8. Микроструктура материала свидетельствуют о равномерном распределении наноалмазного наполнителя по границам частиц порошка меди.

Полученные относительно низкие механические свойства связаны с влиянием алмазного наполнителя. В работе [8] показано, что расчетное предельное значение условной концентрации K наполнителя было значительно превышено.
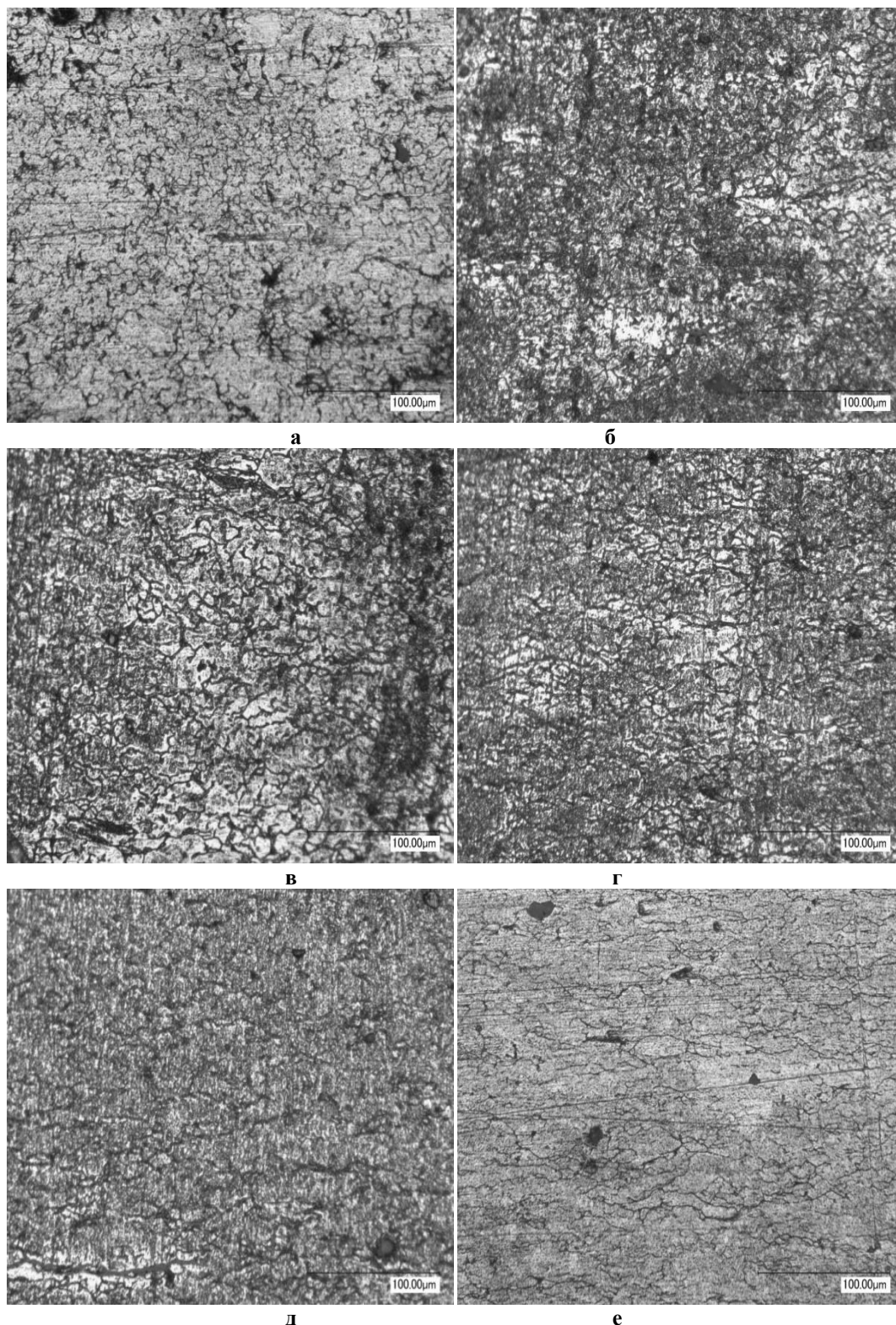
Рисунок 8 - Микроструктура образцов при увеличении x1000: а - спекание, б - ХП1, в - отжиг 1, г - ХП2, д - отжиг 2, е - ХП3.

Согласно [8] вероятность образования металлической связи между частицами порошка меди при концентрации алмазного наполнителя 2,4 масс. % и 4,2 масс. % весьма мала. Однако, получение весьма низких физико-механических свойств при концентрации наполнителя 2,4 масс. % и 4,2 масс. % объясняется наличием металлической связи в небольшом объеме материала. В процессе уплотняющей прокатки нарушается сплошность слоя наноалмазов под

давлением, вследствие чего и образовывалась металлическая связь.

Выводы

Была разработана технология получения проката с нанометрическим неабразивным алмазным наполнителем на основе порошка меди.

Максимальное уплотнение данного материала достигается за два цикла механико-термической обработки.

С ростом концентрации наноалмазного наполнителя пористость повышается, т.к. наполнитель препятствуют образованию металлической связи и тем самым усложняют компактирование материала.

Резкое снижение предела прочности у образцов с концентрацией наноалмазов 2,4% и 4,2% по сравнению с образцом с концентрацией наноалмазов 0,8% объясняется изолирующим действием наноалмазного наполнителя при термической обработке.

В результате получена агрегатная структура дисперсноупрочненного материала [10] и соответствующий эффект каркасного разупрочнения. Для получения дисперсной структуры необходимо применение помола в высокоэнергетических мельницах или проведение спекания с присутствием жидкой фазы.

Значения микротвердости у проката с наноразмерным алмазным наполнителем соизмеримы с твердостью порошкового проката из меди.

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SECTION 6. Metallurgy and energy.

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TECHNOLOGY, STRUCTURE AND PROPERTIES OF METALLIC SHEET FILTER MATERIALS

Abstract: *The paper considers generalized data on manufacturing processes, structure formation, filter properties of porous sheet materials obtained by the powder metallurgy method. Three varieties of porous materials with a thickness of 0,06 to 0,60 mm were studied: powder, mesh single-layer mesh of 80/720 mesh and three-layer mesh 004, mesh-powder two-layer and three-layer combined nickel materials from nets and carbonyl powder of nickel with sequence of alternating layers "mesh - powder - mesh" and "mesh - powder".*
Key words: *powder metallurgy, filter material, porosity, bulk density, hydraulic characteristics.*
Language: *Russian*

ТЕХНОЛОГИЯ, СТРУКТУРА И СВОЙСТВА МЕТАЛЛИЧЕСКИХ ЛИСТОВЫХ ФИЛЬТРОМАТЕРИАЛОВ

Аннотация: *В работе рассматриваются обобщенные данные о технологических процессах изготовления, структурообразовании, фильтровальных свойствах пористых тонколистовых материалов, полученных методом порошковой металлургии. Исследовали три разновидности пористых материалов толщиной от 0,06 до 0,60 мм: порошковые, сетчатые однослойные из сетки 80/720 и трехслойные из сетки 004, сетчато-порошковые двухслойные и трехслойные комбинированные никелевые материалы из сеток и карбонильного порошка никеля с последовательностью чередования слоев «сетка – порошок – сетка» и «сетка – порошок».*
Ключевые слова: *порошковая металлургия, фильтрматериал, пористость, насыпная плотность, гидравлические характеристики.*

Введение

Пористые материалы со сквозными поровыми каналами используют для фильтрования рабочих сред в различных системах машин и аппаратов, суспензий в химической промышленности и других назначений [1]. В работе рассматриваются обобщенные данные о технологических процессах изготовления, структурообразовании, фильтровальных свойствах пористых тонколистовых материалов. Материалы получали с использованием порошков ПХ18Н15 ГОСТ 13084-88 отдельных фракций от −20 до −315+200 мкм, карбонильного никеля ГОСТ 9722-79, тканых никелевых сеток 004 ГОСТ 6613-73 с квадратной ячейкой и 80/720 ТУ 16-538.982-75 саржевого переплетения. Исследовали три разновидности пористых материалов толщиной от 0,06 до 0,60 мм: порошковые, сетчатые однослойные из сетки

80/720 и трехслойные из сетки 004, сетчато-порошковые двухслойные и трехслойные комбинированные никелевые материалы из сеток и карбонильного порошка никеля с последовательностью чередования слоев «сетка – порошок – сетка» и «сетка – порошок».

В опытном порядке изготовляли трехслойный материал с чередованием слоев «порошок – сетка 004 – порошок» и пятислойный материал «сетка – порошок – сетка – порошок – сетка». Ленты с наружными порошковыми слоями при испытаниях на перегиб выдерживают до образования макротрещин меньшее число перегибов.

Технологические схемы изготовления материалов

При разработке пористых листовых материалов толщиной от 0,06 до 0,60 мм

использовали различные технологические схемы изготовления (рис. 1). Порошковые и сетчатые слоистые материалы формовали в пористые листы способом прокатки в валках с последующим спеканием. Сетчатые материалы дополнительно уплотняли холодной прокаткой с большими степенями обжатия по толщине для уменьшения размеров поровых каналов.

Сетчато-порошковые материалы формовали способом вибрационного насеивания на движущуюся сетку высокопористого слоя порошка карбонильного никеля с дальнейшим предварительным спеканием. Далее двухслойную ленту плакировали следующим слоем сетки со стороны порошкового слоя. Полученную трехслойную ленту калибровали прокаткой на заданную толщину и проводили окончательное спекание.

Исходный порошок
↓
Рассев по фракциям
↓
Прокатка в пористую ленту, разделение на мерные листы, укладка листов в пачку
↓
Спекание предварительное
↓
Переборка листов, укладка в пачку с пересыпкой
↓
Спекание окончательное
↓
Переборка листов, удаление пересыпки
↓
Прокатка выравнивающая
↓
Листы пористые порошковые

а)

Исходная сетка
↓
Разрезка сетки, сварка в ленту
↓
Насеивание порошка на сетку, спекание предварительное
↓
Разрезание на мерные листы
↓
Прокатка уплотняющая
↓
Спекание окончательное
↓
Прокатка выравнивающая
↓
Листы пористые двухслойные «сетка – порошок»

б)

Рисунок 1 -. Технологические схемы изготовления пористых порошковых листов (*а*) и пористых двухслойных порошково-сетчатых листов (*б*).

Порошки ПХ18Н15 прокатывали в пористую ленту на дуо-стане с горизонтальным расположением валков, имевших бочку диаметром 75 мм и длиной 110 мм. Пачки листов помещали в контейнер и спекали в камерной электрической печи в два этапа: предварительно при температуре 850...950°C, 3 ч. и окончательно при температуре 1000...1150°C, 3 ч. Сетчатый материал из сетки 004

изготовляли по двух стадийной технологии прокатки: холодная прокатка в брикет толщиной 0,09 мм из трех слоев сетки, уплотняющая и калибрующая прокатка пакета из трех брикетов до толщины листов 0,06...0,08 мм, спекание при температуре 1100°C, 2 ч. Никелевую сетку 80/720 прокатывали до получения толщины 0,07...0,09 мм

с промежуточными отжигами при температуре 1100°C, 3 ч.

Пористые сетчато-порошковые листовые материалы изготовляли двух разновидностей с использованием сеток 004 или 80/720 и порошков карбонильного никеля, имевших насыпную плотность от 1,36 до 2,79 г/см^3. Для получения двухслойной ленты-заготовки «сетка – порошковый слой» применяли лабораторную установку непрерывного вибрационного насеивания порошка на движущуюся сетку и предварительного спекания с припеканием порошкового слоя к сетке-подложке. В состав установки входят устройство, имеющее набор вращающихся и вибрирующих сит-сеток, расположенных в заполненной аргоном закрытой камере, проходная печь с муфелем прямоугольного сечения и водородной атмосферой, моталка для сматывания пористой спеченной ленты-заготовки в рулон.

После предварительного спекания при температуре 850°C в течение 0,5 ч. ленту разрезали на листы, которые подвергали холодной уплотняющей и калибрующей прокатке со степенью обжатия по толщине 60...80%. Окончательное спекание-отжиг вели при температуре 1100°C, 4 ч. в среде осушенного водорода. Так изготовляли двухслойный пористый материал с сеткой 80/720. В случае использования сетки 004 после получения спеченной ленты-заготовки проводили плакирование следующим слоем сетки 004 со стороны порошкообразного слоя способом совместной прокатки в валках диаметром 180 мм. Затем выполняли окончательную уплотняющую и калибрующую прокатку с заключительным спеканием. По этой технологической схеме получали трехслойный пористый материал «сетка 004 – порошок – сетка 004». Размеры листов 250 × 1000 мм.

У материалов исследовали структуру сквозных поровых каналов (пористость, размеры пор, извилистость каналов), фильтровальные свойства (скорость и тонкость фильтрации).

Строение и свойства пористых листовых материалов

Для описания структуры применяют различные модели пористых сред. Модели поровой структуры тел из порошкообразных веществ оперируют или с частицами скелета тела, или рассматривают размеры и форму пор. Анализ показал, что для рассматриваемых материалов адекватна экспериментальным данным капиллярная модель пористой среды. Ее основными параметрами являются пористость, как интегральная характеристика, размеры пор, извилистость поровых каналов.

Установлено, что у порошковых материалов средний и максимальный размеры поровых каналов с увеличением пористости в диапазоне от 16 до 47% изменяются по степенным зависимостям. Показатель степени возрастает с увеличением размера частиц исходных фракций порошка ПХ18Н15. Численное значение среднего и максимального размеров поровых каналов в зависимости от фракции порошка и пористости листов находится соответственно в пределах 3...29 и 4...56 мкм. У сетчатых пористых материалов из сетки 004 в зависимости от числа слоев и степени обжатия при холодной прокатке средний и максимальный размеры пор соответственно равны 10...35 и 14...41 мкм (для двухслойного сетчато-порошкового: 2...20 и 7.. .26 мкм).

Показателем однородности по размеру пор принято отношение максимального D к среднему d размеру поровых каналов. У пористых листов из порошка ПХ18Н15 при толщине 0,13.. .0,53 мм этот показатель равен 1,35...1,45 и остается постоянным в диапазоне пористости 20...43%. В случае применения более крупных фракций повышение пористости приводит к изменению показателя однородности по размеру пор с 1,9 до 1,5 (у титановых листов 1,2…1,3). Для сетчатых материалов из одного слоя сетки 80/720, трех слоев сетки 004, порошково-сетчатых «сетка 80/720 – порошок» и сетка «004 – порошок – сетка 004» отношение максимального к среднему размеру поровых каналов составляет соответственно 1,18...1,19, 1,25...1,50, 1,16...1,40, 1,40...1,60.

Одной из структурных характеристик пористых материалов является коэффициент извилистости a поровых каналов, характеризующий возрастание их длины по сравнению с толщиной. Анализ литературных данных показывает, что по вопросу о роли коэффициента извилистости сквозных поровых каналов у исследователей нет однозначного подхода. В ряде работ [2, 3] вопрос об извилистости пор не рассматривается или эти данные носят отрывочный характер. Необходимость учета коэффициента извилистости пор преимущественно на примерах волокнистых пористых материалов рассмотрена в работе [4].

Исследования тонколистовых материалов показали, что коэффициент извилистости поровых каналов порошковых материалов равен 1,7...2,5 при пористости 20...35%, возрастая до 2,8...3,8 при большей пористости и использовании крупных фракций порошка. Наибольшую величину, равную 4,1...6,9, имеет этот показатель у сетчатых тонколистовых материалов, подвергаемых холодной прокатке с большими обжатиями.

Установлено, что численное значение коэффициента извилистости поровых каналов одновременно характеризует однородность пористых материалов по ориентации пор в объеме физического тела. Этот коэффициент для однородных материалов равен двум. Предложена классификация пористых материалов по двум показателям однородности поровой структуры: по размерам пор и по объемной ориентации поровых каналов [5].

Рассмотрено для данных материалов влияние размерного фактора, представляющего собой отношение толщины листов к среднему размеру частиц порошка, на однородность по величине пор

и на коэффициент извилистости (рис. 2). При величине этого фактора более восьми показатель однородности по размеру пор имеет постоянное значение, а при уменьшении менее восьми его численное значение возрастает. С увеличением толщины листов и снижением пористости с 38…40 до 25…34% коэффициент извилистости уменьшается. Так, при размерном факторе, равном 39, коэффициент извилистости поровых каналов достигает величины 1,11 и приближается к расчетному значению 1,065, получаемому по глобулярной модели пористой фиктивной среды при величине пористости 25,9%.
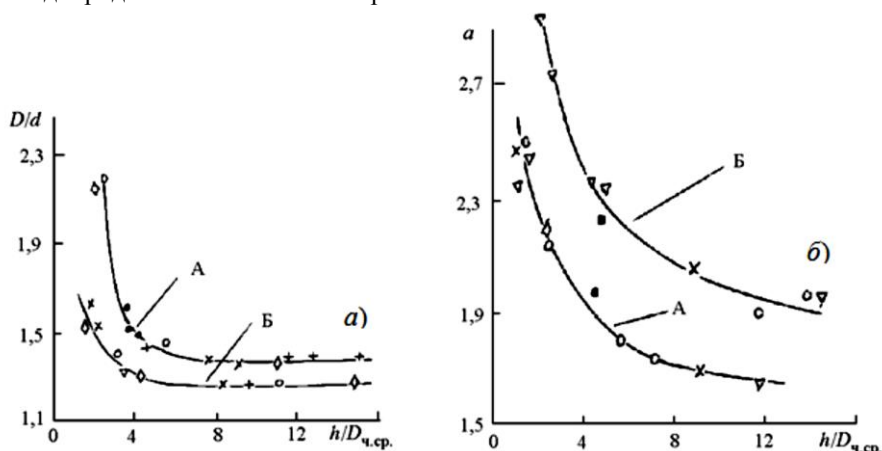
Рисунок 2 - Зависимости показателя D/d (a) и коэффициента извилистости a поровых каналов ($б$) пористых листов от размерного фактора $h/D_{ч.ср.}$ Фракции порошка ПХ18Н15 (мкм): + –20; • –40+20; ▽ –63+40; × –100+63; ◊ –160+100; о –200+160. Пористость, %: А – 32…34; Б – 38…40.

Установлено, что у пористых тонколистовых материалов из порошков стали и титана гидриднокальциевого восстановления при изменении количества более крупных фракций в порошке, толщины и пористости листов в некоторых пределах одновременно меняются в одном и том же направлении размеры поровых каналов и их коэффициент извилистости. Это обеспечивает своеобразное саморегулирование задерживающей способности таких пористых материалов по отношению к частицам загрязнителя при фильтровании жидких и газообразных сред, то есть высокую стабильность заданной тонкости фильтрации.

Экспериментальные исследования показали, что коэффициент проницаемости K в зависимости от пористости тонколистовых материалов изменяется по степенной зависимости. Для порошковых материалов показатель степени составляет от 2,8 до 4,35, возрастая при переходе к более крупным фракциям исходных порошков. Оценочные расчеты коэффициента проницаемости могут быть выполнены по известным значениям параметров структуры поровых каналов. Основными регулируемыми факторами являются пористость П, средний размер пор d и коэффициент извилистости поровых каналов a:

$$ K = \Pi d^2 / \left(32 a^2 \right) $$

Показано, что на коэффициент проницаемости материалов, изготовленных из одной и той же фракции порошков, при близких

величинах пористости листов, оказывает влияние относительная насыпная плотность (рис. 3).
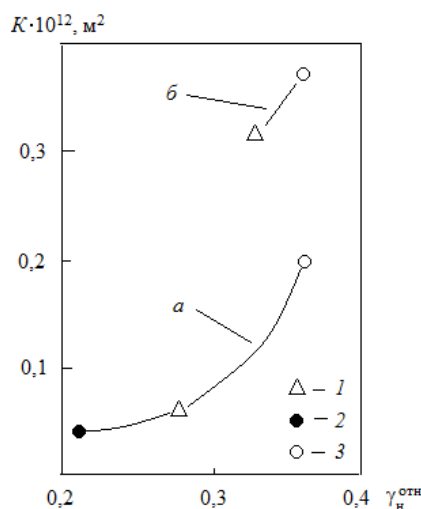
Рисунок 3 - Влияние относительной насыпной плотности порошков фракции –63+40 мкм на коэффициент проницаемости пористых листов: 1 – ПХ18Н15; 2 – титан гидридно-кальциевый; 3 – титан электролитический. Пористость листов, %: а – 28…29; б – 35…36.

Наблюдаемая закономерность обусловлена изменением степени разветвленности поверхности частиц и, соответственно, поровых каналов материалов. Численные значения относительной насыпной плотности порошков можно рассматривать как косвенный показатель разветвленности (шероховатости) поверхности поровых каналов пористых порошковых материалов. Снижение насыпной плотности характеризует большую разветвленность поверхности пор. Больший коэффициент проницаемости при равных значениях пористости имеют пористые сетчатые материалы с малошероховатой поверхностью.

В работе [6] показано, что насыпная плотность порошков $\gamma_н$ зависит от удельной поверхности частиц порошка S. Рост удельной поверхности приводит к снижению насыпной плотности, например, порошков меди, полученных электролизом. Некоторые данные о соотношении между S и $\gamma_н^{отн}$ представлены на рис. 4 (по работам Аксенова Г.И. и Ревякина В.П.).
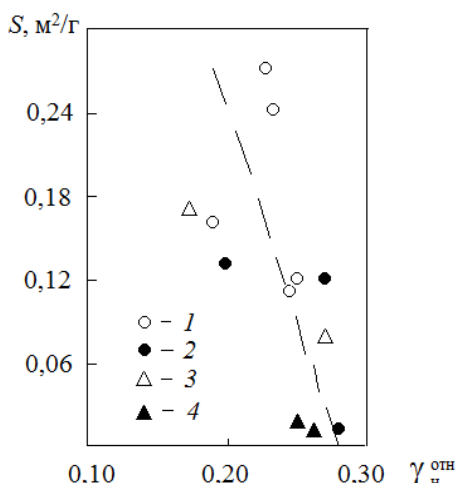
Рисунок 4 - Соотношение между удельной поверхностью и относительной насыпной плотностью металлических порошков: *1* – железо; *2* – никель; *3* – медь; *4* – АПС

В работах [1, 7, 8] исследованы гидравлические характеристики в критериальной форме пористых проницаемых материалов типа ФНС из порошков ПХ18Н15 в сравнении с

материалами из пористой бронзы и стали 50Х из порошков с сферическими частицами. На рисунке 5 приведены данные для листового материала марки ФНС-10 промышленного производства (ТУ 14-1-2819-79).
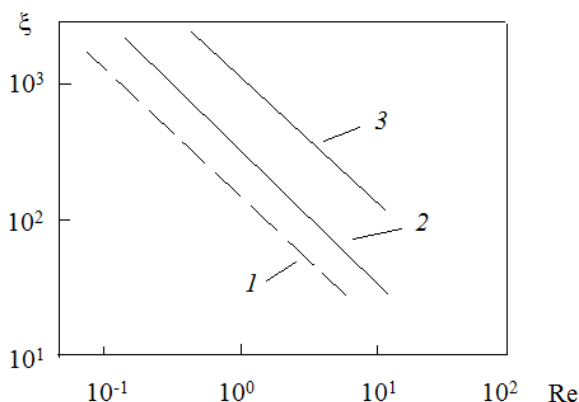
Рисунок 5 - Зависимость коэффициента гидравлического сопротивления ξ пористой бронзы, изготовленной из сферических частиц (*1*), и материала ФНС-10 из порошка ПХ18Н15 фракции –100+63 мкм, по данным [7] (*2*) и [8] (*3*) от числа Рейнольдса Re

Как видно, имеют место расхождения в значениях ξ при одинаковых величинах числа Рейнольдса Re для материала разных партий одной марки ФНС-10. Сравниваемые партии материала исследованы в 1974 г. и 1984 г., т.е. изготовлены в разные годы. Предположительно, они получены из порошков ПХ18Н15 с различной насыпной плотностью. Данные о насыпной плотности в рассматриваемых работах [7, 8] не приведены. Эти сведения необходимы при анализе закономерностей проницаемости пористых материалов.

При исследованиях задерживающей способности пористых тонколистовых материалов по отношению к частицам загрязнителя при фильтровании жидких сред изучали их дисперсный состав обычно в интервалах размеров 0...3, 3...5, 5...10, более 10 мкм. С возрастанием пористости листов и, соответственно, размера поровых каналов выше некоторого значения обычно увеличивается количество частиц загрязнителя более крупных фракций.

В случаях использования для изготовления тонколистовых пористых материалов дисперсных порошков гидридно-кальциевого титана, карбонильного никеля и мелких фракций порошка ПХ18Н15 задерживается 90% и более частиц загрязнителя размером менее 2 мкм. У листов из порошка ПХ18Н15 крупных фракций количество частиц загрязнителя размером менее 3 мкм сохраняется на уровне 60...75%. Лучшую задерживающую способность имеют пористые материалы из порошков ПХ18Н15, полученных с использованием исходного мелкодисперсного порошка карбонильного железа и имеющих пониженную насыпную плотность.

На дисперсный состав частиц загрязнителя, проходящих через поровые каналы, оказывает влияние насыпная плотность порошков ПХ18Н15, характеризующая разветвленность поверхности пор. Для листов толщиной 0,15…0,19 мм при пористости 36…38% из порошка фракции –63+40 мкм увеличение насыпной плотности от 1,35 до 2,63 г/см^3 привело к снижению числа частиц загрязнителя размером менее 3 мкм от 94 до 62% (рис. 6, *а*). Номинальная тонкость фильтрации при этом сохранилась на уровне 5 мкм.
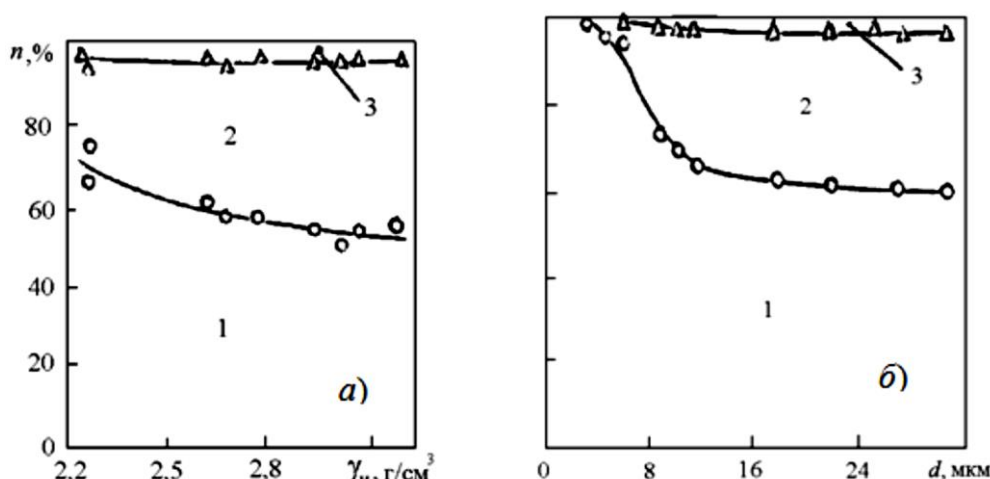
Рисунок 6 - Диаграммы зависимости дисперсного состава *n* частиц загрязнителя от насыпной плотности порошка ПХ18Н15 фракции –63+40 мкм (*а*) и среднего размера пор (*б*). Размерные интервалы частиц загрязнителя, мкм: 1 – менее 3; 2 – 3…5; 3 – 5…8.

Анализ экспериментальных данных показал, что пористые листы из порошков разных фракций, имевшие одинаковую величину поровых каналов при близких значениях коэффициента извилистости, обеспечивают получение практически одинакового дисперсного состава частиц загрязнителя, проходящих через поры листов.

Изучена зависимость дисперсного состава частиц загрязнителя, проходящих через поры, от среднего размера поровых каналов листов из отдельных фракций порошка ПХ18Н15 в диапазоне 4...30 мкм. С увеличением величины пор от 7 до 11 мкм число задерживаемых частиц загрязнителя размером менее 3 мкм снижается от 96...98% до 65%, а далее изменяется незначительно (рис. 6, *б*).

Анализ взаимосвязи между абсолютной тонкостью фильтрации A_a и максимальным размером D поровых каналов в интервале от 4 до 36 мкм для пористых листов из порошка ПХ18Н15 показал наличие степенной зависимости $A_a = 0{,}26D^{1,21}$. Такой характер имеет и функциональная связь между номинальной тонкостью фильтрации (фракционный коэффициент отфильтровывания 0,97) и средним размером поровых каналов у материалов ФЭП из фторлона–4 [9] и фильтровальных бумаг марок АФБ–5 и БФДТ [10].

Заключение

Примененные технологические схемы позволяют получать различные виды порошковых, сетчатых и сетчато-порошковых пористых листовых материалов. Рассмотрены структурные характеристики поровых каналов и фильтрующие свойства. Материалы применены при изготовлении фильтровальных устройств для тонкой очистки от частиц механических примесей [11–13].

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