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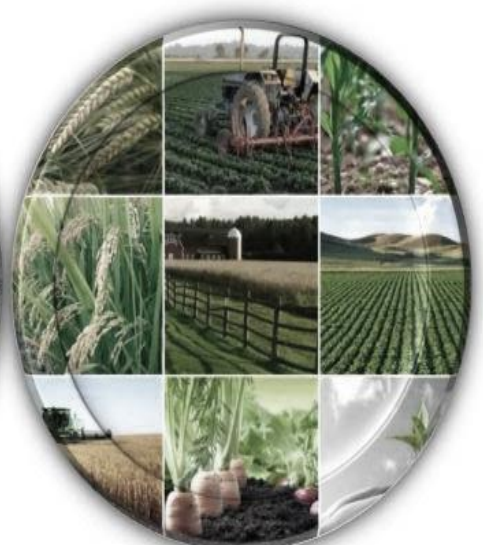
PROGRAM

*4th International Conference on Energetics, Civil
and Agricultural Engineering*



**SUSTAINABLE
DEVELOPMENT GOALS**

*Let us together take action in support of achieving the United Nations Sustainable
Development Goals to promote prosperity while protecting the planet*



12-13 October, 2023

Tashkent, Uzbekistan



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ICECAE 2023 PROGRAM

4th International Conference on Energetics, Civil and Agricultural Engineering 2023

DAY 1: OCTOBER 12, 2023

9:00 Onsite registration	
9:30 Welcoming Tea/Coffee	
OPENING CEREMONY [Hybrid: online and onsite] 10.00am – 12.50pm (Tashkent-Uzbekistan time zone) (Moderator: Mr. Islom Karimov) (Main hall of the TIAME – National Research University)	
10.00am–10.05am	Prof. Dr. Obid Tursunov <i>ICECAE Founder & Scientific Chairman</i> <i>Professor of the “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers”</i> <i>National Research University – Uzbekistan</i> <i>Fellow of the China Agricultural University – China</i>
10:05am–10:10am	ICECAE Promotion Video
10.10am-10.20am	Prof. Dr. Bakhadir Mirzaev <i>Rector of the “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University – Uzbekistan</i>
10.20am-10.30am	Prof. Dr. Abdushukur Hamzaev <i>Chairman of the Executive Committee of the Central Council of the Ecological Party of Uzbekistan</i>
10.30am-10.40am	Prof. Dr. İsmail Rakıp KARAŞ <i>Vice rector of the Karabuk University (Türkiye)</i>
10.40am-10.50am	Prof. Dato’ TS. Dr. Zaliman Sauli <i>Vice Chancellor of the Universiti Malaysia Perlis (Malaysia)</i>
10.50am-11.00am	Prof. Dr. Alisher Usmankulov <i>Rector of the Jizzakh Polytechnic Institute – Uzbekistan</i>
11.00am-11.10am	Prof. Dr. Muryanto Amin <i>Rector of the Universitas Sumatera Utara (Indonesia)</i>
11.10am-11.20am	Prof. Dr. Khakim Muratov <i>Director of the Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan</i>
11.20am-11.30am	Professor dr hab. inż. Jerzy Zając <i>Vice-rector of the Cracow University of Technology (Poland)</i>
11.30am-11.40am	Prof. Dr. Zaitjan Tilyabaev <i>Leading Scientist of the Institute of Bioorganic Chemistry, Academy of Science of the Republic of Uzbekistan (Uzbekistan)</i>



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11.40am-11.50am	Professor Saifur Rahman <i>Candidate for IEEE President-elect</i> <i>Joseph Loring Professor & Director</i> <i>Virginia Tech Advanced Research Institute - USA</i>
END OF OPENING CEREMONY	
Group Photo in front of Rector's Building	
Lunch: 12.00pm-12.50pm (Main Canteen of TIAME NRU)	

PLENARY SESSION - KEYNOTE SPEAKERS

[hybrid]

Venue: TIAME NRU, GREEN HALL

Chair/Moderator: Prof. Ziyodulla Yusupov, Assoc Prof. Dilshod Kodirov, Assoc. Prof. Pavel Navitski, Assoc. Prof. Jurabek Izzatillayev, Assoc. Prof. Sirojiddin Khushiev

13:00pm – 17:20pm

Keynote Speaker I: 13.00pm-13.20pm (mode of presentation: online)	
	Prof. Dr. hab. inz. arch. Justyna Kobylarczyk Prof. Dr. hab. inz. arch. Dominika Kusnierz-Krupa Dr. hab. inz. arch. Michal Krupa <i>Cracow University of Technology, Poland</i>
Speech title	Microclimate standards in housing environment
Keynote Speaker II: 13.20pm-13.40pm (mode of presentation: onsite)	
	Prof. Dr. Zaitjan Tillyabaev <i>Institute of Bioorganic Chemistry, Academy of Sciences of Uzbekistan, Uzbekistan</i>
Speech title	The licorice (<i>Glycyrrhiza glabra L.</i>) metabolite derivatives as bioinsecticides against <i>Anacanthotermes turkestanicus</i> termites
Keynote Speaker III: 13.40pm – 14.00pm (mode of presentation: onsite)	
	Assoc. Prof. Hayati Akman <i>Selçuk University (Türkiye)</i>
Speech title	Combating hidden hunger caused by wheat and soil-driven zinc deficiency
Keynote Speaker IV: 14.00pm-14.20pm (mode of presentation: online)	
	Assoc. Prof. IR. Dr. Umi Fazara Ali <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	Biomass derived porous carbon from agricultural waste for CO ₂ capture
Keynote Speaker V: 14.20pm-14.40pm (mode of presentation: online)	
	Assoc. Prof. Dr. Hui Lin Ong <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	Paddy waste-derived cellulose nanofibrils and its nanocomposite separators for supercapacitors



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Keynote Speaker VI: 14.40pm – 15.00pm (mode of presentation: online)	
	Assoc. Prof. Dr. Zarina Zakaria <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	Simple ratio formulation for carbon and nitrogen determination in mushroom cultivation substrate using Pearson Square Method
Keynote Speaker VII: 15.00pm – 15.20pm (mode of presentation: online)	
	Assoc. Prof. Dr. Ahmad Anas Nagoor Gunny <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	Deep eutectic solvent-halophilic cellulase system for green lignocellulosic biomass hydrolysis
Keynote Speaker VIII: 15.20pm – 15.40pm (mode of presentation: online)	
	Assoc. Prof. Dr. Alina Rahayu Mohamed <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	Kinetics analysis on torrefaction of rice straw using the coats-redfern method
Keynote Speaker IX: 15.40pm – 16.00pm (mode of presentation: online)	
	Dr. Amin Rukani Mustafa <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	Harnessing Bacillus species for agricultural sustainability
Keynote Speaker X: 16.00pm – 16.20pm (mode of presentation: online)	
	Dr. Noor Hasyirerah Bt Mohd Salleh <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	Anti-fungal of <i>Momordica Charantia</i> against <i>Thricoderma spp.</i> for mushroom protection
Keynote Speaker XI: 16.20pm – 16.40pm (mode of presentation: online)	
	Dr. Safa Senan Mahmud <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	Denaturing gradient gel electrophoresis (DGGE) for identification of microbial communities in biohydrogen and biomethane producing systems
Keynote Speaker XII: 16.40pm – 17.00pm (mode of presentation: online)	
	Dr. Nor Ashikin Ahmad <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	Biochar as a sustainable approach for soil fertility and crop growth
Keynote Speaker XIII: 17.00pm – 17.20pm (mode of presentation: online)	
	Assoc. Prof. Pavel Navitski <i>Oral Roberts University, Oklahoma (USA)</i>
Speech title	Utilization of Solar Energy for Water Desalination and Purification Using Solar Concentrator
Closing Speech: Prof. Dr. Obid Tursunov	
END of 1st Day	



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DAY 2: OCTOBER 13, 2023

[Fully online]

Time: 10⁰⁰ a.m. – 17⁰⁰ p.m.

Session chairs: Prof. Dr. Ziyodulla Yusupov, Assoc. Prof. Dilshod Kodirov, Assoc. Prof. Khushiev Sirojiddin, Assoc. Prof. Jurabek Izatillaev, PhD Islom Karimov

PRESENTERS (ORAL)

Fikedu Rage Faye, Abdurrahman Mohammed Kelecha, Abdugani Rakhmatov, Shuxratbek Mannobboyev, Jamshid Abdunazarov

¹*Department of Civil Engineering, Mettu University, Mettu, Ethiopia*

²*Department Power Supply and Renewable Energy Sources, National Research University TIAME, 100000 Tashkent, Uzbekistan*

³*Andijan Machine-Building Institute, 56 Bobur Shox Ave, Andijan 170119, Uzbekistan*

⁴*Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan*

Title of presentation: The impacts of improper curbside parking on traffic flow in semi-urban area, Ethiopia

Abstract: Introduction: For many towns in Ethiopia, traffic management is a crucial concern to accommodate the increased number of vehicles per day. Curbside parking is one of the traffic problem experience in Arba Minch town, especially in the midblock commenced at Sikella market to Gamo Square. This area is one of the central business district areas of Arba Minch Town that experience parking problems.

Objective: The study was initiated to investigate the impacts of curbside parking on the traffic flow of the semi-urban area. It was aimed at identifying the cause of curb-side parking and evaluating the parking duration of vehicles.

Methods: Various methods were used to accomplish the study. The data needed for the study were; Number of parking vehicles, duration, parking attraction, the length of curbside that is used for parking continuously, parking pattern and composition of parking vehicles investigated and the geometry of the road has been done by direct field observation. Interviews were also conducted with the owners of the businesses located beside the selected road. To show the change in the traffic flow which occurred due to the existence of curbside parking, traffic volume, and speed study has been also done.

Results: From the collected data, the reason for continuous parking in the study area was identified. These main reasons were the availability of recreational centers and surrounding business activities. The average number of parking vehicles along 120m long curbside which is used for continuous parking was obtained to be 16 vehicles. The parking pattern shown in the area was irregular which leads to accidents and traffic conflicts. The minimum duration of parking was 10 minutes, whereas the maximum was more than 2 hours. Because of the lack of work and climate conditions, most vehicles were parked in the midmorning and midafternoon. Most drivers were volunteered to use off-street parking if it provided. Using the traffic volume and speed study, the capacity of the road is estimated to be 140 vehicles per hour. Finally, the level of service on the road was determined for every 30 minutes.

Paper ID 1

10⁰⁰ – 10¹⁵

(5 min discussion)

Paper ID 4

10¹⁵ – 10³⁰

(5 min discussion)

Tran Thien Hien^{*}, Tran Thi Tuu¹, Xuan Tien Le^{2,3}, Bach Long Tran⁴, Xuan Phong Huynh⁴

¹*Institute of Applied Technology and Sustainable Development, Nguyen Tat Thanh University, Ho Chi Minh City, Vietnam.*

²*Faculty of Chemical Engineering, Ho Chi Minh City University of Technology*



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	<p>(HCMUT), 268 Ly Thuong Kiet, District 10, Ho Chi Minh City, Vietnam ³Vietnam National University Ho Chi Minh City, Linh Trung Ward, Thu Duc District, Ho Chi Minh City, Vietnam ⁴Institute of Food and Biotechnology, Can Tho University, Can Tho City, Vietnam</p> <p>Title of presentation: Application of pressing and hydro distillation technology in the extraction of seedless lemon essential oil (<i>Citrus latifolia Tanaka</i>)</p> <p>Abstract: Citrus is one of the most popular tropical fruit tree genera in the world with delicious taste and a rich content of vitamins C, A, fiber, and other essential minerals. The citrus essential oil has the main component being D-limonene, which is a substance with high antibacterial and antioxidant properties, along with various compounds. The experimental process of essential oils extraction from seedless lemon peels by mechanical distillation method combined with hydrodistillation, followed by comparative analysis of the chemical composition of the resulted essential oils. Results have shown that the yield of essential oils obtained from the mechanical pressing and distillation process is 0.089% and 0.10%, respectively. The main compound present in these essential oils is D-limonene with the concentrations in pressed and distilled oils being 58.967% and 38.552%, respectively. The research results show that the technological process of extracting essential oils by mechanical pressing can provide basic understanding about different extraction methods.</p>
<p>Paper ID 5 $10^{30} - 10^{45}$ (5 min discussion)</p>	<p>Tran Thien Hien[*], Tran Thi Tuu¹, Bao Long Huynh², Ly Thi Ngoc Minh³ ¹Institute of Applied Technology and Sustainable Development, Nguyen Tat Thanh University, Ho Chi Minh City, Vietnam. ²Ho Chi Minh City University of Food Industry, Ho Chi Minh City, Vietnam ³Branch of Green Power Co., LTD, Ben Tre Province, Vietnam</p> <p>Title of presentation: Modeling the extraction process of pomelo (<i>citrus maxima (burm.) Merr.</i>) Peel essential oil by steam distillation on a production scale (500kg/batch)</p> <p>Abstract: The development of larger-scale extraction processes depends on process kinetics. A production scale of around 500 kg/batch was used in this study to experimentally extract pomelo essential oil by steam distillation. In this study, three models including Model of simultaneous washing and diffusion, Model of instantaneous washing followed by diffusion, and Model of diffusion without washing are considered for evaluation. The most appropriate kinetic model kinetics were chosen using the coefficient of determination (R²) and percentage of variance (%q). The findings demonstrate that the analyzed model of concurrent washing and diffusion suited the experimental data. The results show that in this model, the value of R² = 0.99795 and q = 0.89285 ± 0.0061, which has the highest value of the three models. The extraction process through this production system was successfully described using a kinetic model, which gave information on the extraction process.</p>
<p>Paper ID 6 $10^{45} - 11^{00}$ (5 min discussion)</p>	<p>Katarina Culkova[*], Marcela Tausova¹, and Peter Taus¹ ¹Technical University of Košice, FBERG, 042 00 Košice, Slovakia</p> <p>Title of presentation: Trend of alternative and renewable energy source use in chosen EU countries</p> <p>Abstract: Currently, one of the most discussed topics is the development of alternative energy sources. The assumption is that the trend in the use of alternative energy sources will continue and will increase every year. The aim of the book chapter is to evaluate the development trend in the use of renewable energy sources in selected countries. The book chapter describes the current situation in the use of renewable energy sources in the world, as well as in the selected countries. We decided to describe and analyze in more detail the use of renewable energy sources such as the wind, solar, water and geothermal</p>



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	<p>energy in countries within Europe such as Italy, Germany and Austria. At the end, there is a comparison of selected indicators with reference to reserves in their use. The results show the share of renewable energy sources has increased; however, it is still necessary to meet the targets in the area of reducing emissions and to increase the production of electricity from renewable energy sources. The results can be used to meet new challenges for the functioning of the energy systems of the European Union, so that European Union could become a world leader in renewable energy sources.</p>
<p>Paper ID 15 11⁰⁰ – 11¹⁵ (5 min discussion)</p>	<p>Arvind Bodhe[*], Pragati Dethe², Muneesh Sethi³, Dheeraj Deshmukh⁴, Anoop Kumar Vishakarma⁵, Avnish Chauhan⁶ ¹<i>Professor, G.H.Raisoni University Saikheda (MP), India,</i> ²<i>Asstt. Professor, Science College Pauni, (MS), India</i> ³<i>Dean R&D, University of Engineering & Technology, Roorkee</i> ⁴<i>Dean Research, G.H.Raisoni University Saikheda (MP), India,</i> ⁵<i>Vibration Analyst, SPM Instrumentation India,</i> ⁶<i>Associate Professor, Graphic Era Hill University, Dehradun</i></p> <p>Title of presentation: Development of Balloon Biogas Plant for Small Farmers Abstract: Biogas plants are a sustainable and environmentally friendly way of generating energy from organic waste materials such as animal manure, crop residues, and food waste. In addition to producing biogas, these plants also generate nutrient-rich bio-slurry, which can be used as a fertilizer to improve soil fertility and crop yields. The utilization of natural resources for cooking gas generation has been a long-standing practice in various countries. However, the prevalent issue with existing systems lies in their chambers, which are prone to damage due to low-quality materials. Additionally, their construction often requires skilled labor and high-quality materials, posing challenges in affordability and accessibility. A comparison study conducted by referring problems that lead to troubleshooting in Biogas Plants between various types of biogas and a novel balloon-type biogas system has been designed and developed to address these limitations. The system exhibits cost-effectiveness, weather resistance, and thermophilic characteristics, enabling operation at high temperatures of 50°-55°C, within the range suitable for the digestion of mesophilic bacteria (40°-50°C) that contribute to gas generation. The work also elaborated to enhance biogas efficiency by incorporating a scrubber module capable of removing impurities such as hydrogen sulfide (H₂S), carbon dioxide (CO₂), and water vapor (H₂O).</p>
<p>Paper ID 20 11¹⁵ – 11³⁰ (5 min discussion)</p>	<p>Francis O. Okeke^{1,2}, Emmanuel C. Ezema², Rosemary C. Nnaemeka-Okeke[*], Andrew E. Okosun[*], Chioma A. Okeke⁴ ¹<i>School of Engineering, Technology and Design, Canterbury Christ Church University, Kent, UK.</i> ²<i>Department of Architecture, University of Nigeria, Enugu Campus</i> ³<i>Department of Urban and regional planning, University of Nigeria. Enugu Campus</i> ⁴<i>4GSL Education Kent, UK</i></p> <p>Title of presentation: Architectural design response to population issue in sub-Saharan cities Abstract: Overpopulation is a serious global problem, and it is predicted to get worse in future if unchecked; accompanied with threat of dwindling resources. The increase in population and its effect on the housing sector is surfacing as clog in the wheel of efforts at reducing Africa's housing deficits. How then can urban life continue to thrive in the existing housing issues in colonial, sub-Saharan city of Enugu, exploiting architectural design strategies is what the study investigates. It utilized a qualitative research approach of survey and participant observation in which data were collected and analysed based on thematic content analysis. Gross housing deficit, increased housing rent, emergence</p>



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	<p>and expansion of squatter settlement, Land use conversion and slum conditions are some observable effects of population growth due to urbanization and rural-urban drift in the city; Statistics of public housing provision between 1999-2020, showed an over focus on high-income earners, neglecting the majority low-income population. Therefore, architect's intervention in the housing sector should be strategic, holistic and proactive and encourage use of local materials, vertical development, dry construction and stakeholder's participation in delivery process. The study concludes that futuristic architecture holds the key to humanity's continued stewardship on earth and a sustainable housing delivery.</p>
<p>Paper ID 22 11³⁰ – 11⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">Noor A Zaki^{1*} and Ayoob O Alfalahi¹ <i>¹Department of Plant Protection, College of Agriculture, University of Anbar, 55431 Baghdad, Ramadi 31001, Iraq</i></p> <p>Title of presentation: Methyl Jasmonate Improves Superoxide Dismutase Activity in Infected Sunflower Plants Abstract: Methyl jasmonate (Meja) is a volatile phytohormone that contributes many plant critical processes, especially under biotic and abiotic stresses. Thus, Meja found to effectively regulating the biosynthesis of other plant hormones and/or enzymes, like Superoxide Dismutase (SOD). However, Meja specifically affects the plant antioxidant defense system, particularly SOD activity are still an area of ongoing research. The current results pointed to a clear effect of the applied Meja concentration in shaping the entire response to the biotic oxidative stress resulted from the three pathogenic fungi <i>Fusarium solani</i>. and <i>Macrophomina phaseolina</i>. The higher concentration of Meja had a greater effect on both gene expression and SOD enzymatic activity, which indicates the Meja importance in stimulating the defense system of sunflower varieties through which sunflower plants deal with the excessive production of reactive oxygen species (ROS) in response to the pathogenic infection. The different varieties showed different ability to cope with biotic stress represented by the three used pathogenic fungi, especially the antioxidants enzymatic activity. Sakha variety proved to have the most effective SOD enzymatic activity compared to the other two Ishaqi and Aqmar sunflower varieties. Meja concentrations in its maximum level (3 μM), was more effective in stimulating the antioxidant activity in term of enzymatic activity of SOD. Notably, <i>R. solani</i> had a greater effect on the antioxidant defense system, as it resulted in higher levels of SOD enzymatic activity in the three sunflower varieties. Further investigation maybe required to better understand the Meja ability to promote the plant antioxidant system, thus the possible protective mechanisms against plant pathogens.</p>
<p>Paper ID 24 11⁴⁵ – 12⁰⁰ (5 min discussion)</p>	<p style="text-align: center;">Nicholas I. Obi¹, Francis O. Okeke^{2,7}, Emeka J. Mba[*], Clifford A. Udeh⁴, Andrew E. Okosun⁵, Peter I. Oforji⁶ <i>^{1,2,3,4}Department of Architecture, University of Nigeria, Enugu Campus</i> <i>⁵Department of Urban and Regional Planning, University of Nigeria, Enugu Campus.</i> <i>⁶Department of Architectural technology, Institute of Management Technology Enugu, Nigeria.</i> <i>⁷School of Engineering, Technology and Design, Canterbury Christ Church University, Kent, UK</i></p> <p>Title of presentation: Potentials for alternative energy in Nigerian cities and remote communities Abstract: The energy sector of Nigeria's economy constitutes a critical challenge. This sector has defied all efforts for its reform and restoration largely due to ineffective and poor policy implementation. In the 20th century, oil was the main driving force in global geopolitics and the main force behind massive industrialization. However, oil is moving in a downward trend. In its place will be an array of technologies, in the form of</p>



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	<p>alternative energies with long term prospects. The standard of living of a given country can be directly related to per capita energy consumption but energy crisis is on the increase due to population and improved standard of living especially in developing cities. The aim of the study is to identify alternative energy potentials for Nigeria in view of her current energy challenges. The methodology applied in this study include case studies and review of existing literature on the subject. Identified energy crises include, incessant power outage, shortage and scarcity of petroleum products, high electricity bill, vandalization of pipelines and oil installations. The paper discussed the energy crises in Nigeria, the potentials of alternative energy technologies, and the challenges of its development for Nigerian cities and recommends that renewable energy and energy efficiency are necessary factors to achieve sustainable development in Nigeria.</p>
<p>Paper ID 32 12⁰⁰ – 12¹⁵ (5 min discussion)</p>	<p>Meutia Nurfahsdi*, Muhammad Turmuzi¹, Amir Husin¹, Hafizhul Khair AM¹, Julius Kristopel Tanjung², Elyor Atashev³, Abdugani Rakhmatov⁴ ¹<i>Departement of Environmental Engineeringg, Universitas Sumatera Utara, Indonesia</i> ²<i>Undergraduate Student of Departemtt Environmental Engineeringg, Universitas Sumatera Utara, Indonesia</i> ³<i>Urgench State University, Urganch 220100, Uzbekistan</i> ⁴<i>National Research University TIAME, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Zoning groundwater vulnerability in residential areas around the Terjun landfill using the aplis method Abstract: The development of the Medan City area causes an increase in population, increased activity, changes in the use of water catchment land into residential land, one of which is around the Terjun landfill area, Medan Marelán District. This is directly proportional to the increasing need for water. This study aims to determine how much pollution vulnerability in groundwater with the APLIS Method approach (Altitud, Pendiente, Litologia, Infiltration Prefencial, Seule). Zoning of groundwater vulnerability with the APLIS Method results in a low vulnerability class with a classification of >20-40%.</p>
<p>Paper ID 43 12¹⁵ – 12³⁰ (5 min discussion)</p>	<p>Meutia Nurfahsdi*, Said Muzambiq¹, Netti Herlina¹, Silda Adi Rahayu¹, Jonathan Noventino Manihuruk², Sherzod Kurambaev³, Sharof Musayev⁴ ¹<i>Department of Environmental Engineering, Universitas Sumatera Utara, Indonesia</i> ²<i>Undergraduate Student of Department Environmental Engineering, Universitas Sumatera Utara, Indonesia</i> ³<i>Urgench State University, Urganch 220100, Uzbekistan</i> ⁴<i>Jizzakh Polytechnic Institute, Jizzakh, 130100, Uzbekistan</i></p> <p>Title of presentation: Hydrogeochemical analysis of groundwater in residential areas around the Terjun landfill in Medan city, Indonesia Abstract: Open dumping is the type of landfill used in Terjun landfill. This type of landfill has a high potential for pollution to the environment, especially in groundwater quality. This study aims to determine the quality of groundwater in the Terjun landfill area and its hydrogeochemistry. The methods proposed in this research are Trilinear Piper Diagram Analysis (1944), Stiff Quadrangle Diagram Analysis (1951) and Durov Diagram Analysis (1948). The elements analyzed include Calcium (Ca²⁺), Sodium (Na⁺), Magnesium (Mg²⁺), Potassium (K⁺), Chloride (Cl⁻), Bicarbonate (HCO₃⁻) and Sulfate (SO₄²⁻). The results obtained on the electrical conductivity value ranged from 100-1100 micromhos/cm, indicating the classification of the water as fresh water. Analysis of the major ion test results of each sample using the three methods shows that the dominant ion content in the borehole groundwater is Cl⁻ ions in borehole 1 and HCO₃⁻ ions in the other boreholes. On the Piper diagram, it can be determined that the facies or type of borehole groundwater that has been tested is Ca²⁺-HCO₃⁻. Then the</p>



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	<p>Durov diagram can be divided into 2 groups, namely the simple dissolution or mixing and reverse ion exchange groups. When looking at the results of the major ion test, sample point 1 has a high level of Cl⁻ ions influenced by leachate water and a fairly close distance to the landfill.</p>
<p>Paper ID 44 12³⁰ – 12⁴⁵ (5 min discussion)</p>	<p>Meutia Nurfahasdi[*], Agnes Yofita Zega², Agree Manganju Evannels Silalahi², Dally Raj Singh², Aziz Babayev³, Shakhlo Aitova⁴</p> <p>¹<i>Department of Environmental Engineering, Faculty of Engineering, Universitas Sumatera Utara, Jl. AlmamaterKampus USU Medan 20155, Indonesia</i></p> <p>²<i>Undergraduate student of the Department of Environmental Engineering, Faculty of Engineering, Universitas Sumatera Utara, Jl. AlmamaterKampus USU Medan 20155, Indonesia</i></p> <p>³<i>TIAME National Research University, Tashkent 100000, Uzbekistan</i></p> <p>⁴<i>Urgench State University, Urganch 220100, Uzbekistan</i></p> <p>Title of presentation: Mapping groundwater vulnerability using drastic method</p> <p>Abstract: Preventive management and protection of groundwater were to create a groundwater vulnerability map. This map provided information distribution on the level of vulnerability to groundwater contamination in an area. The impact made considered in making regional decisions to create a sustainable development framework. The DRASTIC method is an instrument for evaluating the vulnerability of groundwater pollution. The DRASTIC methods can use evaluate vulnerabilities of groundwater contamination which seven parameters: the depth of the groundwater table (D), rainPL (R), aquifer media (A), soil texture (S), topography (T), the influence of unsaturated zones (I), and hydraulic conductivity (C). The additional parameter is the use of land resulting from vulnerability. The parameter data will be poured into a map using ArcGIS and analyzed using the DRASTIC rating index. Eight attributes are included in the modified DRASTIC model, including hydraulic conductivity of the aquifer, topography, impact of the vadose zone, depth to water table, net recharge, aquifer media, soil media, and aquifer media. In a GIS system, these layers were combined using the Raster Calculator tool. The modelx was further validated using fifteen groundwater composite samples that were also gathered. Based on the results of the analysis, groundwater vulnerability in Terjun's landfill from the five parameters, the value of the DRASCTIC index is 137 which indicates the vulnerability of groundwater is at medium/moderate. Aquifers next to floodplain areas are very sensitive, whereas those next to terrace areas are less vulnerable, according to the results. The model's findings confirm that the topography, soil media, and aquifer depth indicated the strongest correlations with vulnerability. A positive association between the vulnerability classes and the three groundwater quality measures electrical conductivity was also found during the validation of the final DRASTIC map. Although the levels of contamination at this time are below acceptable bounds, the possibility of additional contamination cannot be completely eliminated and is really rather plausible.</p>
<p>Paper ID 25 12⁴⁵ – 13⁰⁰ (5 min discussion)</p>	<p>Md Azizul Hoque[*], and Md Hamidul Islam¹</p> <p>¹<i>Department of Building Engineering and Construction Management, Khulna University of Engineering and Technology, Khulna-9203, Bangladesh</i></p> <p>Title of presentation: Implementation of eggshell extracted calcium acetate in biocementation via soybean urease</p> <p>Abstract: Biocementaion, a promising soil improvement technique, mostly utilizes calcium chloride (CaCl₂) as its calcium source. However, using CaCl₂ poses a critical environmental problem of producing ammonium chloride as a by-product. Alternatively, when calcium acetate (Ca(CH₃COO)₂) is used as the calcium source, the production of ammonium chloride during biocementation can be reduced. Ca(CH₃COO)₂ can be</p>



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	<p>easily derived from waste eggshells. Nevertheless, such research has been conducted only with Microbial Induced Carbonate Precipitation (MICP) to date. This paper aims to study the implementation of eggshell $\text{Ca}(\text{CH}_3\text{COO})_2$ in the more effective biocementation approach: Enzyme Induced Carbonate Precipitation (EICP) via soybean urease. For this study, EICP solutions of varying molar ratios and concentrations were studied for their precipitation efficiency and reinforcement effect on poorly graded sandy soil. The findings showed that the EICP solution composition of 1:1 molar ratio between $\text{Ca}(\text{CH}_3\text{COO})_2$ and urea, added with 50 g/L soybean solution reached the maximum precipitation efficiency. It also produced the highest 7-day UCS of 371 kPa at a calcium carbonate content of 0.40%. Furthermore, the eggshell-soybean EICP produced 8.5% higher UCS than CaCl_2-soybean EICP despite having similar calcium carbonate content.</p>
<p>Paper ID 26 13⁰⁰ – 13¹⁵ (5 min discussion)</p>	<p>Ajuluchukwu E. Igwe[*], Abigail A. Ezeobi¹, Francis O. Okeke¹, Eziyi O. Ibem¹, Emmanuel C. Ezema¹ <i>¹Department of Architecture, University of Nigeria, Nsukka, Enugu, Nigeria</i></p> <p>Title of presentation: Causes and remedies of sick building syndrome: a systematic review</p> <p>Abstract: Sick Building Syndrome (SBS), a situation where building occupants of specific buildings feels unwell whenever they are in that building, but gets relieved when they exit the building. The effects of SBS is now of great concern to home owners and stakeholders in the building industry, even though some faction still believes that there is nothing like SBS since there is no clinical proof yet for the phenomenon, but still there is need for efficient means and strategies that can be employed to make our building right “well” and eliminate those factors that makes a building sick. To this effect, this study aims to investigate the phenomenon known as Sick Building Syndrome (SBS), identify the causal factors, symptoms and possible ways through which we can eliminate them from our buildings. The study in the quest to achieve the above aim employed the literature review research design (systematic review), with particular reference to works of literature that dwelt majorly on Sick Building Syndrome (SBS), the causes and how it can be curtailed. Evidence in literature revealed that for a fact most building occupants do experience SBS both in the residential and office/commercial buildings, owing to the fact that some of the buildings are exposed to the identified causal effects of SBS such as, poor ventilation, biological contaminants, chemical contaminants (both indoor and outdoor), radiation from electronics, psychological factors etc. this also comes with a lot of symptoms like headache, irritations of nose, eyes, throat, dizziness, dry cough, nausea. Other studies on SBS has dwelt majorly on the symptoms of SBS and definition, but this study tried to identify the causal agents of the phenomenon, which is where this study plays a major role in filling that gap. The research findings from this study ascertained that SBS can be completely avoided when the stakeholders in the construction industry adheres strictly to building guidelines, and in a situation where a building is considered to be sick, there should be proper corrective measures to make the building well and this should be followed with regular building inspection. This study will help inform the government and building stakeholders on ways to tackle SBS, and the things to look out for in building to ensure that the building is fit for people to occupy.</p>
<p>Paper ID 37 13¹⁵ – 13³⁰ (5 min discussion)</p>	<p>Sanjarbek Shamuratov¹, Umid Baltaev¹, Olga Myachina[*], Umarbek Alimov^{1,2*}, Elyor Atashev¹ and Tokhir Kuramboev¹ <i>¹Urgench State University, Hamid Olimjon str., 14, 220100 Urgench, Uzbekistan</i> <i>²Institute of General and Inorganic Chemistry, Uzbek Academy of Sciences, Mirzo Ulugbek str., 77a, 100170 Tashkent, Uzbekistan</i></p>



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	<p>Title of presentation: Agrochemical efficiency of slow release phosphate fertilizers derived on the base of phosphorite activation</p> <p>Abstract: Studies in which new phosphorus fertilizers containing additional organic substances are a tool for regulating soil fertility are described in this paper. The fertilizers were developed in Institute of General and Inorganic of Uzbek Academy Sciences. Phosphate fertilizers were obtained by decomposition of ordinary phosphorite powder with acid effluent that is a waste from the soap production of Urganch yog'-moy JSC in various ratios. According to the developers, ordinary phosphate powder (OPP), due to the treatment with acid effluent (AE), acquires new qualities as slowly soluble properties, which allows for a more rational use of nutrients, in particular phosphorus, increasing its efficiency and reducing wasteful losses. In addition, the introduction of organic substances into the composition of the AE enriches the phosphorus fertilizer with biologically active compounds, and gives it valuable growth-stimulating properties. New fertilizers are intended for use in irrigated agriculture, which have long lasting properties. It is assumed that derived fertilizers contribute to the improvement of the physical and chemical properties of the soil, optimize the vital activity of the cultivated crop without a negative increase in the activity of soil microorganisms.</p>
<p>Paper ID 62 13³⁰ – 13⁴⁵ (5 min discussion)</p>	<p>Mansur Khasanov[*], Salah Kamel², Francisco Jurado³, Abror Kurbanov⁴ and Urinboy Jalilov⁴</p> <p>¹Tashkent State Technical University, 100095 Tashkent, Uzbekistan ²Department of Electrical Engineering, Faculty of Engineering, Aswan University, 81542 Aswan, Egypt ³Department of Electrical Engineering, University of Jaen, 23700 EPS Linares, Jaen, Spain ⁴Department of Energy, Faculty of Energy and radio electronics, Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</p> <p>Title of presentation: Photovoltaic-based Distributed Generation Allocation in Distribution Network for Energy Loss Minimization</p> <p>Abstract: Nowadays, there is a global consensus that integrating renewable energy sources (RESs) is highly needed to meet the increasing electricity demand and reduce the overall carbon footprint of energy production. However, large-scale integration of RES-based distributed generation (DG) units often poses several technical challenges in the system from stability, reliability, and power quality perspectives. However, these problems are usually mitigated by the optimal integration of DG units in the distribution networks (DNs). In this regard, the optimal sizing and placement of the DGs are crucial. Otherwise, network performance will deteriorate. This paper proposes to apply a novel population-based technique called the dung beetle optimization (DBO) algorithm for the optimal allocation of Photovoltaic (PV) based DG units to minimize total active energy loss subject to equality and inequality constraints in the DN. A DBO is inspired by the behaviours of dung beetles, including ball-rolling, dancing, foraging, stealing, and reproducing. A standard 33-bus system has been used to demonstrate the proposed method's effectiveness. The simulation results and comparison with other techniques demonstrate our proposed approach's significant energy loss reduction and a suitable voltage profile.</p>
<p>Paper ID 68 13⁴⁵ – 14⁰⁰ (5 min discussion)</p>	<p>Cintantya Budi Casita^{1,2}, Budi Suswanto[*], Data Iranata¹, and Masahide Matsumura³</p> <p>¹Department of Civil Engineering, Faculty of Civil Engineering, Planning and Geo Engineering, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia ²Department of Civil Engineering, Faculty of Engineering, Universitas Pembangunan Nasional Veteran Jawa Timur, Surabaya, Indonesia ³Department of Civil Engineering, Faculty of Engineering, Kumamoto University, Kumamoto, Japan</p>



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	<p>Title of presentation: Numerical Investigation to Assess the Cyclic Performance of RBS Connection using Cover Plates</p> <p>Abstract: This paper presents the result of four welded connections under cyclic loading using finite element analysis, those are: Conventional Connection (C-Con), Cover Plates Connection (CP-Con), Reduced Beam Section Connection (RBS-Con), and RBS Connection using Cover Plates (RBSCP-Con) using the same material properties, including dimension of the profile and its span. Previous research indicates that, even though the fact that the initial seismic yield must be located far from the column's face, it still occurs on the majority of RBS connections on occasion. By adding a cover plate to the top and bottom flanges of the beam, the research can provide a seismic design improvement for RBS connections. The analysis results observed that cyclic performance of RBSCP-Con was much superior to the other connections in terms of plastic hinges location, panel zone's performance, and failure modes. However, CP-con has the maximum value of energy dissipation, which correlates with its hysteresis curves. Furthermore, all of the four types of connections already satisfy SMF category requirements in accordance with AISC 341-16.</p>
<p>BREAK 14:00pm – 14:30pm</p>	
<p>Paper ID 75 14³⁰ – 14⁴⁵ (5 min discussion)</p>	<p>Abigael Clavitea¹, J A Mamani^{1,2}, E Huaquisto¹, Roberto Alfaro-Alejo^{1,2*}, and G Belizario¹</p> <p>¹<i>School of Agricultural Engineering, Universidad Nacional del Altiplano, Av. Floral 1153 Puno, Perú</i></p> <p>²<i>Research Institute of Water Science and Technology, Universidad Nacional del Altiplano, Av. Floral 1153 Puno, Perú</i></p> <p>Title of presentation: Uniformity of water distribution in sprinkler irrigation mini-cannons in a high Andean community in Peru</p> <p>Abstract: The objective of the present work was to determine the uniformity of water distribution through mini-irrigation cannons in conditions of the Peruvian altiplano, applying the formulas for the Christiansen Uniformity Coefficient (CUC) and the Distribution Coefficient (DU) and to interpret the incidence of wind on water distribution at three different times during the day (5:30-7:30, 12-14 and 16-18 hours). Necessary climatological information, field rainfall tests, emitter pressure, and flow, wind speed were collected to evaluate their influence on water application. Variable CUC and distribution uniformity results were obtained at the level of four demonstration plots, the maximum and minimum CUC was 87.42% and 55.34%, while the DU resulted with a maximum of 80.79% and 26.88% minimum; it is worth mentioning that in the last two schedules, results were obtained that show a poor water distribution; while winds less than 2 m/s favored the uniform distribution of water applied through the sprinklers, affirming that it was possible to obtain an acceptable water distribution uniformity at the plot level considering the irrigation schedule.</p>
<p>Paper ID 83 14⁴⁵ – 15⁰⁰ (5 min discussion)</p>	<p>Yanisfa Septiarsilia[*], Data Iranata¹, and Budi Suswanto¹</p> <p>¹<i>Sepuluh Nopember Institute of Technology, 60111 Surabaya, Indonesia</i></p> <p>Title of presentation: Hybrid Beam-Column Connection of Precast Concrete Structures: A Review</p> <p>Abstract: The use of precast concrete materials as structural elements has become common practice. Precast concrete material offers various advantages over cast in place concrete, including energy-saving, pollution reduction, increased labor productivity, high material durability, reduced formwork and scaffolding usage, faster construction, and the ability to carry out construction in any weather conditions. However, there are some disadvantages in assembling precast elements, particularly in connection areas,</p>



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	<p>which serve as the main structure of a building. Several studies have been conducted to develop connection types for precast concrete. Some of these include dry connections and wet connections, each with their own advantages and disadvantages. To mitigate the weakness of both connection types, many studies are currently focusing on developing a combination of dry and wet connections known as Hybrid Connections. Various developments have been made in the Hybrid connection system.</p>
<p>Paper ID 84 15⁰⁰ – 15¹⁵ (5 min discussion)</p>	<p>Dita Kamarul Fitriyah[*], D Irawan¹, Budi Suswanto¹, and AB Habieb¹ <i>¹Sepuluh Nopember Institute of Technology, 60111 Surabaya, Indonesia</i></p> <p>Title of presentation: Structural Damage Identification Methods in Truss Bridge Structures Using Vibration Analysis: A Review Abstract: Developing countries will always engage in infrastructure development in various regions, and one notable aspect of this development is the construction of steel frame bridges. Bridges are complex structures with a myriad of challenges. The increasing number of cases of steel frame bridge collapses has prompted humans to become more conscious of Structural Health Monitoring (SHM) activities. In order to implement this, the development of a straightforward structural damage detection method has been pursued, suitable for both simple and highly complex structures, commonly referred to as Vibration-Based Damage Detection (VBDD). Various algorithms have been proposed to achieve the goal of identifying structural damage, enabling prompt and accurate decision-making in handling such situations. This article delves into the discussion of several proposed algorithms for achieving this objective.</p>
<p>Paper ID 85 15¹⁵ – 15³⁰ (5 min discussion)</p>	<p>Nafilah El Hafizah¹, Ervina Ahyudanari[*], and Valeriana Lukitosari¹ <i>¹Sepuluh Nopember Institute of Technology, 60111 Surabaya, Indonesia</i></p> <p>Title of presentation: Tourist Response as Water-based Seaplane Purposes for Island Tourism: A Literature Review Abstract: In a journal review, the conclusion of the statistical and mathematic model was presented to illustrate the impact of various factors on tourist preferences, facilities and infrastructure available as tourism support facilities. On of the most important sectors that drives the national economic is tourism sectors. This literature review covers a lot of research conducted on sustainable tourism, especially regarding transport facilities and other aspects. Other aspects of tourism, namely facilities, accomodation, sosial-culture, environment, and economy, are also considered. The main determinants of tourism are assessed using a scientific approach to evaluate the attractiveness of tourist sites by considering many aspects. Several results have indicated that natural resources, island culture, and access infrastructure are important determinants of tourism demand in various countries. This discussion may be useful for the authorities involved in tourism development and sustainability in the future. The study primarily focused on accessibility, tourism attraction, environment, etc. With these results, important tourist sites can be prioritized for enhanced accessibility and promoted as major tourist destination in the country. Research mapping to establish the basic model can be based on simulation approach and statistical analysis, such as a system dynamic model and other relevant analysis.</p>
<p>Paper ID 86 15³⁰ – 15⁴⁵ (5 min discussion)</p>	<p>Mutiara Firdausi¹, Ervina Ahyudanari[*], Wahyu Herijanto¹ <i>¹Department of Civil Engineering; Faculty of Civil, Planning and Geo Engineering, Sepuluh Nopember Institute of Technology, ITS Sukolilo Campus, Surabaya 60111, East Java, Indonesia</i></p> <p>Title of presentation: Study on the analysis of travel behavior: A review Abstract: Travel behavior analysis involves the utilization and examination of travel demand through the application of theories and analytical techniques derived from diverse scientific disciplines. There are many methods used by researchers in analyzing travel behavior. Mode selection is the stage where the transportation planning process is</p>



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	<p>responsible for determining the travel load or knowing the number of people and goods, then selecting the available transportation models that serve as the starting point of the destination. Travel factors have a strong influence on a person's travel behavior, (trip maker behavior), including income, vehicle ownership, vehicle condition, settlement density of one's socioeconomic conditions. This paper describes the disadvantages and advantages of travel behavior modeling analysis and factors that influence the choice of modes based on travel behavior, so that in the future researchers can use it as an illustration in determining the right analysis.</p>
<p>Paper ID 91 15⁴⁵ – 16⁰⁰ (5 min discussion)</p>	<p>Firuza Rakhmatkarieva[*], Odina Davlatova¹, Mirzokhid Kokhkharov¹, Mansur Xudoyberganov¹, Oybek Ergashev¹, Eldor Abdurakhmonov^{1,2}, Tolib Abdulkhaev¹ <i>¹Institute of General and Inorganic Chemistry of the Academy of Sciences of the Republic of Uzbekistan, 72a, Mirzo Ulugbek str., Tashkent, 100170, Uzbekistan</i> <i>²Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIAME), 39, Kori Niyaziy str., Tashkent, 100000, Uzbekistan</i></p> <p>Title of presentation: Mechanism of H₂O Vapor Adsorption in A Type Zeolites: A Model Based on Adsorption Calorimetry Abstract: In this study, the energy characteristics of water vapor adsorption in NaA and NaA(NaBO₂) zeolites were measured by adsorption calorimetry. Information of differential heats, isotherms, entropy and kinetic of adsorption in the matrix of NaA and NaA(NaBO₂) zeolites were obtained. Adsorption isotherms (a) and differential heats of adsorption (Qd) of water vapor by NaA and NaA(NaBO₂) zeolites were measured at 303 K. The heats of adsorption are stepwise and each step corresponds to the stoichiometric formation of adsorption complexes of H₂O molecules with Na⁺ or H⁺ ions, (H₂O)_n/Na⁺ or H⁺, (n = 1-4), which are located on the SIII, SII and SI crystallographic positions of NaA and NaA(NaBO₂). Hydration mechanism of NaA and NaA(NaBO₂) are complex and at saturation, the zeolites are occupied by the next water zeolitic host/guest systems: NaA – 2.2[(H₂O)₄/Na⁺III+H⁺], 3[(H₂O)₂/Na⁺II] and 6.6[(H₂O)₂/Na⁺I]; NaA(NaBO₂) – 2[(H₂O)₄/Na⁺III], 3[(H₂O)₄/Na⁺II] and 6.86[(H₂O)/Na⁺I]. The complete hydration of the α- and β cages of NaA amounts thus to 21,8 and 6,2 respectively H₂O/u.c. and α-cage of NaA(NaBO₂) – 26,3 H₂O/u.c. The mean molar integral adsorption entropy of water is ~-30,5 J/mol K less than the entropy of the bulk liquid. This value nearly the same as entropy of crystalline water so the mobility of water in the zeolitic matrix is solidlike.</p>
<p>Paper ID 98 16⁰⁰ – 16¹⁵ (5 min discussion)</p>	<p>Abduvali Turdiboyev¹, Dilmurod Akbarov¹, Tajiddin Toshev², Sardor Sayfiyev², Muxammedgaliy Mamutov³ <i>¹Department Electrical Technology and Using of Electrical Equipment, “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, 100000 Tashkent, Uzbekistan</i> <i>²Department of Electrical Engineering, Karshi Engineering and Economics Institute, 180100 Karshi, Uzbekistan</i> <i>³Department of Electric Energy, Karakalpak State University, 230112 Nukus city, Republic of Karakalpakstan, Uzbekistan</i></p> <p>Title of presentation: Enhancing the efficiency of cold water-soluble fertilizers through electrohydraulic technology Abstract: This article discusses the improvement of the efficiency of cold water-soluble fertilizers through the use of electrohydraulic technology to facilitate the assimilation of nutrients in plants. The issue of enhancing the efficiency of fertilizing plants through electrohydrolysis using cold water-soluble organic and mineral nutrients is examined. According to the detailed results of nutrient assimilation technologies in plants, the amount of nutrients absorbed by plants constitutes 30-40% of the fertilizer. To enhance the efficiency of nutrient assimilation in plants, it is necessary to break down the nutrients in the cold water-soluble composition into small particles, increase plant</p>



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	<p>absorption capacity, and simultaneously demand the neutralization of bacteria in the cold water-soluble fertilizer composition. By applying the electrohydraulic effect to the cold water-soluble fertilizer, the following parameters were identified for maximum fragmentation of solid particles in the fertilizer composition: discharge voltage of 24 kV, 175 pulses, and a capacitor capacitance of 0.8 μF. This process allows for the fragmentation of solid particles in the fertilizer composition down to 0.002 mm, which is challenging for plants to assimilate on their own. The regime and parameters of electrohydraulic treatment, ensuring the fragmentation of solid particles in cold water-soluble fertilizers down to 0.002 mm, were determined, and this can increase the efficiency of the fertilizer for plant growth by 33-37 qq.</p>
<p>Paper ID 102 16¹⁵– 16³⁰ (5 min discussion)</p>	<p>S. M. Anas[*], Rayeh Nasr Al-Dala'ien^{2,3}, Rafat Tahzeeb¹, Mohd Shariq¹, and Mehtab Alam⁴</p> <p>¹<i>Department of Civil Engineering, Jamia Millia Islamia, 110025 New Delhi, India</i> ²<i>College of Graduate Studies, Universiti Tenaga Nasional, Jalan Ikram -UNITEN, 43000 Kajang, Selangor, Malaysia</i> ³<i>Civil Engineering Department, College of Engineering, Al-Balqa Applied University (BAU), 19117 Salt, Jordan</i> ⁴<i>Department of Civil Engineering, Netaji Subhas University of Technology, 110073 New Delhi, India</i></p> <p>Title of presentation: A Concise Overview of Numerical Simulation Tools and Techniques for Anti-Explosion Response Prediction of Infrastructures and Facilities Abstract: In the wake of recent devastating explosions, like the tragic blast in Lebanon's Beirut City, there has been a growing recognition of the need for blast-resistant design. Previously, this type of design was mainly reserved for critical infrastructures such as embassies and military facilities. However, the destructive power unleashed by these incidents has highlighted the importance of implementing blast-resistant measures in a wider range of buildings and infrastructure. The focus is now shifting towards incorporating blast-resistant features into various types of structures to enhance public safety and minimize the devastating impact of future explosive events. Collapse of infrastructures in the surrounding area of the explosion and the potential damage to buildings located at significant distances has raised serious concerns among structural engineers regarding the safety of infrastructures and facilities when subjected to explosive detonations. The level of devastation caused by the explosion can differ, spanning from reparable damage to total structural failure, leading to loss of life. Some engineers propose that buildings in areas prone to vulnerability or affected by war should be constructed with the ability to withstand explosive detonations, in order to prioritize the safety of human lives and preserve the integrity of the infrastructure. This article provides a concise overview of the latest advancements in numerical simulation tools and methodologies for predicting the response of infrastructures and facilities to explosions. It covers topics such as structural responses, pressure-impulse diagrams, existing design methods, and various numerical simulation tools and methodologies. The article also delves into the challenges faced in modeling blast scenarios and analyzing structural responses using different numerical methods. Additionally, it offers recommendations for overcoming these difficulties.</p>
<p>Paper ID 123 16³⁰– 16⁴⁵ (5 min discussion)</p>	<p>Dauren Dzhambulovich Issabekov</p> <p>¹<i>Department of Electrical Power Engineering, Non-profit joint-stock company "Toraighyrov University", Lomov str. 64, 140006 Pavlodar, Kazakhstan</i></p> <p>Title of presentation: Resource-saving protections of power transformers against internal faults Abstract: The paper presents the principle of operation of the developed gas protection and oil level control, the purpose of which is to protect power transformers from short circuits. The presented protections are made without using current transformers (CTs)</p>



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	<p>and current relays with ferromagnetic cores, which are widely used in the power industry and have significant weight and size parameters and their high cost. The proposed protections are made with the use of magnetically controlled elements- reed switches. Protections with the use of reed switches can be used at the moment only as a backup to the traditional protections of power transformers, since there is no wide introduction into production of these protections and experience in their operation. At the same time it should be said that such protections are in no way inferior to traditional ones in terms of speed. The presented protections characterize a new approach in the implementation of relay protection and have a resource-saving effect. The resource-saving nature of these protections, applicable to virtually any type and voltage class of power transformers, lies in the use of reed switches, which are, both in cost and in weight and dimensions, an order of magnitude cheaper and smaller in size and weight than the above-mentioned CTs. The proposed protections are made in the form of devices with their installation inside the power transformers, as well as inside their expander tank.</p>
<p>Paper ID 124 16⁴⁵– 17⁰⁰ (5 min discussion)</p>	<p>S. M. Anas[*], Rayeh Nasr Al-Dala'ien^{2,3}, Mehtab Alam⁴, and Mohammad Umair¹ ¹<i>Department of Civil Engineering, Jamia Millia Islamia, 110025 New Delhi, India</i> ²<i>College of Graduate Studies, Universiti Tenaga Nasional, Jalan Ikram -UNITEN, 43000 Kajang, Selangor, Malaysia</i> ³<i>Civil Engineering Department, College of Engineering, Al-Balqa Applied University (BAU), 19117 Salt, Jordan</i> ⁴<i>Department of Civil Engineering, Netaji Subhas University of Technology, 110073 New Delhi, India</i></p> <p>Title of presentation: Damage Prediction of Monolithic and Non-Monolithic Braced Unreinforced Brick Masonry Walls under Explosion Loadings</p> <p>Abstract: Numerous unreinforced masonry (URM) structures worldwide face greater vulnerability to direct threats like earthquakes, wind, impact, or explosions compared to reinforced concrete and steel structures. Given the current worldwide environment characterized by dominance and extremism, the task of safeguarding structures, especially from explosive detonations, presents a growing and crucial obstacle for engineers and researchers. The Masonry Society (TMS) and the Federal Emergency Management Agency (FEMA) have recognized that the primary cause of material damage resulting from explosions is the collapse of walls made of URM. The recent catastrophic explosion at the Beirut seaport in Lebanon, the largest of its kind, serves as a stark reminder to town planners, architects, and structural designers. This tragic incident resulted in an immense loss of building infrastructure overall and specifically affected load-bearing masonry structures, leading to severe injuries and casualties. It underscores the urgent need for comprehensive attention and strategic measures in addressing the vulnerabilities inherent in these structures. This research study explores the response of URM walls, constructed with clay bricks, to out-of-plane blast forces. The walls are braced with either monolithic or non-monolithic transverse walls, and a three-dimensional micro-modeling approach is employed. The analysis is conducted using the Abaqus software, which utilizes the finite element method. Alongside the braced walls, the study also examines a free-standing URM wall without transverse walls. The exposed face of the walls is subjected to peak reflected pressures of 0.38 and 1.01 MPa, generated by explosive charges weighing 4.34 and 7.49 kg-TNT at scaled distances of 2.19 and 1.83 m/kg^{1/3}, respectively. The Concrete Damage Plasticity (CDP) model, which incorporates the influence of strain rate, is utilized to simulate the behavior of masonry under blast loads. Comparisons are made between the computed damage patterns of a wall reinforced with monolithic transverse walls and the experimental results found in existing literature, revealing a notable level of agreement. The influence of both monolithic and non-monolithic joints on the performance of the exposed wall is thoroughly examined and contrasted with one another, as well as with</p>



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	the performance of a free-standing wall. The research indicates that non-monolithic joints between the exposed wall and transverse bracing walls exhibit a greater extent of damage to the bracing walls, as this is predominantly influenced by the response of the exposed wall itself.
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Announcement of Best Presentations and Best Papers

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ICECAE 2023 POSTER PRESENTATIONS

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POSTERS	
Paper ID 2	<p>Abdulkhakim Salokhiddinov, Andre Savitsky, Maria Radkevich[*], Olga Ashirova</p> <p><i>¹National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers", 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Possibilities of solving two-dimensional hydrodynamic problems on the basis of the non-divergent form of recording the transport and conservation equations</p> <p>Abstract: Existing and applied in practice to solve the aerodynamics and hydrodynamics problems finite-difference schemes ensure that the laws of conservation of matter and energy only in limited configurations of velocity fields. In other cases, there are balance errors, which are currently accepted as the norm, and special algorithms of recalculation have been developed to reduce them. Additional calculations are labor-intensive, and when solving small-scale problems, balance errors can completely distort the calculation results. This article attempts to solve two-dimensional hydrodynamic problems using a new finite-difference computational scheme previously developed by the authors, based on the non-divergent form of recording the transfer and conservation equations. Initially, the scheme was developed and tested in one-dimensional space and showed complete conservativity, stability, transportability and adequacy. To solve two-dimensional problems, a transformation of the proposed scheme was performed. The solution of the test problems and comparison with the calculation results of other known schemes showed that in two-dimensional space the proposed scheme surpasses the results obtained by the HEC-RAS and Courant-Isakson-Reese schemes. The proposed scheme makes it possible to use the maximum possible time steps in the calculations, and the resulting scheme viscosity has minimal values. This property of the scheme makes it possible to apply it to solve small-scale aerodynamic and hydrodynamic problems.</p>
Paper ID 8	<p>Aidai Turatbekova[*], Odina Nazarova², Otabek Khujaev², Olimjon Ergashev², Sunnatullo Turapov³, Irina Allenova⁴, Nodira Kuvvatova⁵, and Erkaboy Khudayberganov⁶</p> <p><i>¹Kimyo International University in Tashkent, 100121 Tashkent, Uzbekistan</i></p> <p><i>²Research Institute of Forestry, Tashkent, Uzbekistan</i></p> <p><i>³Jizzakh Politechnic Institute, 130100 Jizzakh, Uzbekistan</i></p> <p><i>⁴National Research University TIAME, 100000 Tashkent, Uzbekistan</i></p> <p><i>⁵Karshi State University, 180119 Karshi, Uzbekistan</i></p> <p><i>⁶Urgench State University, 220100 Urgench, Uzbekistan</i></p> <p>Title of presentation: Study on the frequency of ultraviolet (UV) light reflectance and absorption in native and nonnative flowering plants</p> <p>Abstract: In addition to the floral shape and colors seen by the human eye, ultraviolet (UV) reflectance serves as a significant visual advertisement for pollinators of many blooming plant species. The interaction between flowers and pollinators is significantly influenced by plant UV patterns. It is common knowledge that many flowers have vacuolated pigments that are UV-absorbing in their petal cells. Nevertheless, the impact of UV reflection and absorption on pollinators to particular plant species hasn't been properly investigated. In this paper, the degree and pattern of UV light reflection in flowers of 240 plant species from 55 families were examined. Four levels of UV absorption and reflection</p>



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	<p>were used to rank the flowers. While white and green flowers often reflect UV weakly, yellow and violet flowers have the highest likelihood of doing so. In general, pollination aids were nonreflective and independent of hue. UV reflection seems to be positively connected with flower size even though it is unrelated to floral symmetry. UV reflection is certainly present in all plant families; however, it seems to be more prevalent in some taxonomic groups. UV reflection and absorption appear to be influenced by the physical features and chemical make-up of the petals, just like other floral petals.</p>
<p>Paper ID 9</p>	<p style="text-align: center;">Isroil Jumanov¹, and Sunatillo Kholmonov[*] <i>¹Samarkand State University, 140104 Samarkand, Uzbekistan</i></p> <p>Title of presentation: Identification of Non-Stationary Objects Based on Training a Neural Network and Tuning the Parameters of a Generalized Model Abstract: Methods and algorithms have been developed for identifying non-stationary objects of various types using statistical, dynamic, neural network models, which are taken into account when solving problems of conditions of a priori insufficiency, uncertainty, low reliability of data. Mechanisms are proposed that provide effective identification based on combining the features of dynamic models with the properties of random time series. The possibilities of algorithms based on mechanisms that use statistical, dynamic, specific data characteristics, as well as the properties of self-adaptation, approximation, organization, self-learning of neural networks have been expanded. A generalized function identification algorithm has been developed and its functions have been expanded by adaptive segmentation of time series, setting the informative interval of element values, the size of the training set, training multilayer neural networks, database, and knowledge base. The training algorithms for a three-layer neural network are modified based on the mechanisms for regulating interneuronal connections in layers, weight coefficients of neurons, variable activation functions, network architecture, and superposition of continuous input-output dependencies. A software package for identifying random time series in the C++ language in the CUDA parallel computing environment has been developed to predict the annual power consumption of the industrial zone of the Samarkand region using software tools for data preprocessing, filtering, smoothing; determining the boundaries of the informative interval of time series elements.</p>
<p>Paper ID 10</p>	<p style="text-align: center;">Nargiz Matchanova[*], Farhad Rakhimov², Marguba Rajapova¹ <i>¹Jizzakh Polytechnic Institute (DzhizPI), 130100 Jizzakh, Uzbekistan</i> <i>²Tashkent Institute of Chemical Technology, 100011 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the possibilities of effective use of basalt Abstract: This article presents research on the possibilities of creating value-added unconventional materials, functional fabrics and products from local basalt and basalt roving. Basalt fiber, i.e. roving, is used to make knitwear and heat-insulating cord. The thermal insulation cord was tested in the "SNOL 15/1200" electric furnace in the laboratory of the "Mega invest industrial" LLC joint enterprise and its durability up to +980°C was determined.</p>
<p>Paper ID 11</p>	<p style="text-align: center;">S Murodova¹, M Sobirova¹, X Kiryigitov[*], M Halkuzieva², and D Kuvondikova² <i>¹Jizzakh branch of National University of Uzbekistan, 130100 Jizzakh, Uzbekistan</i> <i>²Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: The influence of plant growth-promoting rhizobacteria (PGPR) on the cultivation of Cynara Scolymus L. under salinity stress Abstract: This article highlights laboratory and field experiments based on the results of treatment of Cynara scolymus L. with biologically active products. According to the obtained results, compared to the control variant in the field experiments, the highest result was 3.4% to 4.8% in 1:100 and 1:1000 ratios of "Elisitor". Similar results were observed to increase 0.3%, 3.0% respectively in 1:1000 and 1:100 ratios of "Zamin-M"</p>



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	<p>biopreparation. According to the analyzes carried out in laboratory conditions, the fertility indicator was found to be 95.0% in plants treated with the biopreparation “Elicitor”. This result was 6.0% higher than the control and 3.4% higher than the standard. Fertilization in plants inoculated with “Zamin-M” biopreparation was found to be 93.85%, it was increased by 4.85% compared to the control variant and by 2.25% compared to standard variant.</p>
Paper ID 13	<p style="text-align: center;">Muzaffar Khudayarov[*], and Sarvar Qurbonov²</p> <p style="text-align: center;"><i>¹Department of Power Plants, Networks and Systems, Tashkent State Technical University named after Islam Karimov, 2 University Street, 100095 Tashkent, Uzbekistan</i></p> <p style="text-align: center;"><i>²JV LLC “SKB”, 5 Majnuntol Street, Yashnabad district, 100204 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Data verification for forecasting of building energy consumption</p> <p>Abstract: One of the necessary procedures prior to monitoring the energy consumption of buildings is the procedure of verification of the initial data on energy consumption. It is always applied in cases where there is even the slightest doubt in the correctness of the initial data. The article deals with the verification of data on energy consumption in buildings, which includes the implementation of procedures for detecting and replacing null, erroneous, absolutely equal, and recovery of lost data on energy consumption. To solve this problem the article presents a number of methods included in the program "Statistical data verification" developed in MATLAB environment. As an example, the process of verification of data on energy consumption in buildings, which include hospitals, polyclinics, rural health centers is presented.</p>
Paper ID 16	<p style="text-align: center;">Nurmukhammat Asatov[*], Navruz Raxmonov¹, Ugloy Ablayeva¹</p> <p style="text-align: center;"><i>¹Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Concrete with a complex additive based on a superplasticizer and an organosilicon polymer</p> <p>Abstract: Depending on the functional purpose, different requirements are imposed on the products. In particular, reinforced concrete products used in irrigation and drainage construction, along with increased strength and frost resistance, are required to have increased water resistance. For the water resistance of concrete, through macropores (filter capillaries) are dangerous, which are formed as a result of uneven thermal expansion of concrete components during heat treatment, as a result of plastic shrinkage and sedimentation during compaction. The relationship between the structure and impermeability of concrete is very complex.</p>
Paper ID 18	<p style="text-align: center;">Bakdurdi Matniyazov¹, Mashrab Aliyev¹, Bakhodir Sagatov[*], Dilshod Ziyaviddinov¹</p> <p style="text-align: center;"><i>¹Jizzakh Polytechnical Institute, Jizzakh 130100, Uzbekistan</i></p> <p>Title of presentation: Study on thermal physical detail of gas block wall structure without single source</p> <p>Abstract: This article presents the results of theoretical and experimental studies carried out at the physical heat level in a sample of an outer wall with a small block of a non-code gas block in order to improve the energy efficiency of the outer walls of newly built residential and public buildings. As a result of the studies, the overall thermal conductivity resistance of the outer wall consisting of a non-code small block block, the thermal conductivity coefficient of the wall layers, the temperature flow passing through the wall, the temperature in the wall layers and the heat resistance of the wall for the summer season were revealed. The theoretical thermophysical studies carried out are comparable to experimental studies on the wall model, recommendations have been developed to improve the energy efficiency of the external walls of buildings under construction on the basis of modern projects.</p>
Paper ID 28	<p style="text-align: center;">Baxtiyor Bazarov[*], Ravshanjon Axmatjanov¹, Jamshid Tojiyev², Akmal Azimov¹</p> <p style="text-align: center;"><i>¹Tashkent State Transport University, Tashkent, Uzbekistan</i></p> <p style="text-align: center;"><i>²Jizzakh polytechnical institute, Jizzakh, Uzbekistan</i></p>



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	<p>Title of presentation: The concept of improving the performance indicators of gas-cylinder vehicles</p> <p>Abstract: This article presents the analysis of operational and environmental indicators of gas cylinder vehicles, their prospects and optimal installation of gas cylinder equipment. In order to improve the operational performance of gas cylinder gas-cylinder vehicles and ensure their environmental safety, the method of choosing gas cylinder equipment according to the technical specifications of the vehicle and setting the appropriate program settings in the optimal state is shown.</p>
<p>Paper ID 29</p>	<p>Rustem F. Yunusov¹, Azizbek B. Imomnazarov², Muzaffar N. Rajabov², Ixom N. Karimov², Sohib T. Oblaqulov¹, Asam N. Mamatkulov²</p> <p><i>¹National Research University «Tashkent Institute of Irrigation and Agricultural Mechanization Engineers», Republic of Uzbekistan, Tashkent</i></p> <p><i>²Karshi Engineering and Economic Institute, Republic of Uzbekistan, Karshi</i></p> <p>Title of presentation: Electromagnetic quality of a linear asynchronous motor with different designs of the secondary element</p> <p>Abstract: Linear asynchronous electric motors drive the working bodies of the mechanisms directly and quite fully fulfill their drive characteristics, allow eliminating mechanical converters and increase performance. This solves the problem of maximum articulation, splicing of a source of mechanical energy - an electric motor and an executive technological mechanism. Linear electric motors with a massive ferromagnetic secondary are the most cost-effective, taking into account the operating modes - when operating in starting modes and on stop, therefore, in practice, it often becomes necessary to calculate them in a short circuit mode. With a simplified calculation, it is convenient to use correction factors for increasing magnetic fluxes in the yoke, secondary losses and efforts of linear induction motors compared to the same values in a circular analogue. The dependences of such coefficients on the quality factor, the number of pairs of poles and the relative magnetic resistance of shunting. In the general case, the comparison and selection of the design of a linear induction motor is carried out at the stage of preliminary design using the optimality criteria - the quality factor.</p>
<p>Paper ID 30</p>	<p>Dildora Nematova*, Avazkhan Merganov¹</p> <p><i>¹Namangan Institute of Engineering and Technology, 160115 Namangan, Uzbekistan</i></p> <p>Title of presentation: Study on the biochemical indicators of carrot varieties and their scientific and practical importance in the preparation of juice in industry</p> <p>Abstract: In this article, agrobiological characteristics of local and foreign carrot varieties, their chemical composition, the method and recipes of juice preparation, the importance of homogenized and non-homogenized methods in juice extraction, the determination of tannin in the raw materials using a 3% iron (III) chloride solution, and its industrial importance in the preparation of various juices, information on the determination of total carbohydrate and acid content of juice using refractometer and saccharometer and pH meter equipment is given. Also, scientific and practical results and conclusions on the technological scheme and technology of preparation of “Parkhezbop”, “Popular”, “For children” with addition of special ingredients (ginger, natural honey, lemon juice) are described.</p>
<p>Paper ID 31</p>	<p>Oybek Bozarov*, Rayimjon Aliyev², Dilshod Kodirov³, Eldorjon Begmatov⁴</p> <p><i>¹Tashkent State Technical University, Tashkent, Uzbekistan</i></p> <p><i>²Andijan State University, Andijan, Uzbekistan</i></p> <p><i>³Department of Power Supply and Renewable Energy Sources, National Research University TIAME, Tashkent, Uzbekistan</i></p> <p><i>⁴Fergana Polytechnic Institute, Fergana, Uzbekistan</i></p> <p>Title of presentation: Counter-rotor hydraulic unit on the basis of a nozzle jet hydro turbine</p>



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	<p>Abstract: This article analyzes counter-rotor hydraulic units developed on the basis of jet turbines. A new design of a counter-rotor hydraulic unit developed by the authors, consisting of a jet turbine with a nozzle and a water wheel, the principle of its operation and essence is described. Based on the velocity triangle of water flowing through the reactive and active impellers, the rotational speed of the impeller was analyzed. Accordingly, analytical relationships between the energy parameters of the impellers are presented.</p>
<p>Paper ID 33</p>	<p>Farmon Mamatov¹, Dilmurod Irgashev[*], Muhriddin Buriev¹ and Bekzod Ganiyev¹ <i>¹Karshi Engineering-Economics Institute, 225, Mustakillik ave, 180100 Karshi, Uzbekistan</i></p> <p>Title of presentation: Justification of the bottom softening parameters of working organ with a sloping column</p> <p>Abstract: At present, cultivator plows used in horticulture in Uzbekistan have a number of serious shortcomings. Their quality of work does not meet agrotechnical requirements. The purpose of study is to substantiate the parameters of lower ripper the working body with an inclined rack. The authors proposed a working body with an inclined rack, equipped with upper and lower rippers. The lower ripper loosens the lower soil layer. The scheme of a plow-ripper with improved working bodies is given. Theoretical studies were carried out using the laws of theoretical mechanics. In experiments, the height of irregularities at the bottom of arable land and traction resistance were taken as a criterion for evaluating the performance of a plow-ripper. Based on the results of theoretical studies, dependencies were obtained that allow determining the parameters lower ripper. According to the results of this proven research, the coverage width the bottom softener is in the range 9.5-9.9 cm, and its grinding angle is in the range of 16,3-27°, in order to ensure the required level of coulters in the bottom the plow. The angle of installation the blade in relation to the direction of movement should be 30°.</p>
<p>Paper ID 34</p>	<p>Erkin Farmonov[*], Parakhat Berdimuratov¹, Bakhadir Kuybakov², Shakhnoza Mirzaeva¹, Dauran Djumamuratov³ <i>¹“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, Tashkent, 100000, Uzbekistan</i> <i>²Almalyk branch of Tashkent State Technical University named after Islam Karimov, 110100 Almalyk, Uzbekistan</i> <i>³Karakalpak Institute of Agriculture and Agrotechnologies, Abdambetov Street, Nukus 230100, Republic of Karakalpakstan, Uzbekistan</i></p> <p>Title of presentation: Improvement of the state of degraded pastures by mechanized sowing of shrubs and semibrubs</p> <p>Abstract: This article presents the extensive agricultural characteristics of fodder plants growing wild in nature, which are the most promising shrub and semi-shrub fodder plants for the creation and development of cultivated pastures in degraded karakul (sheep) pastures. Also, the fact that out of 17.5 million hectares of land allotted for karakul breeding in the desert and semi-desert zones of the Republic, which up to 40 percent are degraded to one degree or another, their average productivity has decreased by 21 percent. The authors of the article analyzed degraded pastures in desert and semi-desert zones of Uzbekistan and foreign countries and ways to improve their condition. A method is recommended for restoring degraded pastures by mechanizing the sowing of seeds of shrubs and semi-shrubs. Studies on the mechanization of sowing small-seeded and non-flowing seeds show that, firstly, the mechanized sowing of desert fodder plants is largely carried out on the basis of agrotechnical methods in conditions that do not correspond to the specific conditions of deserts, and secondly, shrub and semi-shrub plants and their seeds have physical and mechanical properties that are very different from other crops and seeds. A universal sowing unit is recommended, which consists of a four-sowing machine,</p>



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	<p>which, in one pass of the technological process of work, sows seeds of shrubs and semi-shrub desert fodder plants with relatively close seed sizes. At the same time, the hoppers of the sowing unit are filled with 1, 2, 3 or 4 types of seeds of different plants and the seeds are sown. During the operation of the unit, the first hopper of the sowing machine is filled with shrub seeds (for example, saxaul) and the hoppers of the remaining 2, 3 and 4 sowing machines are filled with one or different types of seeds of semi-shrubby plants (Izen, keiruk, teresken), etc. The universal sowing machine sows seeds in one direction 3.6 m wide, and when returning, it also sows seeds 3.6 m wide, forming a pasture strip with a total width of 7.2 m. In the first row, it sows the seeds of a shrub plant (for example, saxaul seeds) and, in the remaining 2, 3, 4 rows - different types of seeds of semi-shrubs, for example, seeds of izen or seeds of other semi-shrubs, while on both edge rows of the pasture strip, he sows seeds of shrubs between them, sows seeds of semi-shrubs and creates a pasture-protective strip, consisting of shrubs and semi-shrubs. Simultaneous sowing of shrubs along the two edges of the strip provides for the protection of these undersized semi-shrubs from heat, strong wind and dust, as a result of which they develop better. The following parameters of the universal seeding unit were determined: the speed of movement of the unit is 1.38 -2.22 m/s; working width of the universal sowing unit 3.6 m; quantity of the sowing device 4 pieces; distance between sowing units 0.9 m; the number of seed mixture mixers in the lower part of the hopper is 6 pieces; lengths of cone-shaped fingers softeners of the seed mixture 7.0 cm; normalizing drum radius 5.0 cm; number of revolutions of the normalizing drum 26-30 r/min; length of the normalizing drum 7.0 cm; quantity of triangular chute 8 pieces.</p>
<p>Paper ID 35</p>	<p style="text-align: center;">Farmon Mamatov[*], Akmal Karimov^{1*} and Golib Shodmonov¹</p> <p style="text-align: center;"><i>¹Karshi Engineering-Economics Institute, 225, Mustakillik ave, 180100, Karshi, Uzbekistan</i></p> <p>Title of presentation: Study on the parameters of bars of the potato digger ploughshare</p> <p>Abstract: Currently, potato diggers used in agricultural production in Uzbekistan have a number serious drawbacks. In particular, they have a high material and energy capacity, and their use in small farms and personal subsidiary farms is considered less effective. The purpose study is to substantiate the parameters vibrating rods potato digger ploughshare. The authors proposed a potato digger with lattice ploughshares equipped with vibrating rods. Swinging rods are attached to the main ploughshares, the oscillation which is carried out from the tractor power take-off shaft. A diagram a ploughshare with vibrating rods and a mechanism for transmitting motion is given. The laws theoretical mechanics are used in the research. In the experiments, losses and damage to potatoes, as well as traction resistance, were taken as a criterion for evaluating the performance potato digger. As a result, theoretical studies carried out, analytical dependencies and mathematical models were obtained that allow determining the parameters rods. It is proved that the length bars the potato digger ploughshare should be 25 cm, the number bars is 14 pieces, the distance between the bars is 3 cm, the diameter the bars is 1 cm.</p>
<p>Paper ID 36</p>	<p style="text-align: center;">Botirjon Nishonov¹, Abdukayum Normirzaev¹, and Mirzokhid Tukhtabayev¹</p> <p style="text-align: center;"><i>¹Namangan Engineering-Construction Institute, Islam Karimov avenue-12, Namangan 160103, Uzbekistan</i></p> <p>Title of presentation: Study on the development of a rotary soil softener</p> <p>Abstract: This article presents the technological working process of the rotary softener developed for the chisel-cultivator; results of experimental studies carried out to justify its parameters. The type of soil and its physic-mechanical properties are the main factors in the selection of the working bodies of the soil tillage machine and assessment of aggregate performance. The researches are carried out mainly in grassy, pale gray and barren soils, and the physic-mechanical properties of the soil in irrigated fields of the Republic of Uzbekistan have been sufficiently studied. However, in a short period of time, machines that can treat a large area with high quality and at the level of demand have not been</p>



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	<p>created. In order to choose the optimal type of rotary softener, based on the physical and mechanical properties of the soil, rotors equipped with different types of blades were prepared and tested. A rotary tiller for a chisel cultivator was compared with a chisel tiller and leveler, and cost effectiveness, labor and operating costs were calculated.</p>
<p>Paper ID 38</p>	<p>Ilhom Tagayev¹, Shohrux Juraev¹, Muxabbat Masharipova², Sanobar Achilova², Uktam Temirov*</p> <p>¹Navoi State Mining and Technology University, Galaba str. 27, 210100 Navoi, Uzbekistan</p> <p>²Urgench State University, Kh.Alimdjan str. 14, Urgench city, 220100 Urgench, Uzbekistan</p> <p>Title of presentation: Analysis of the mineralogical composition of soil samples: Case study of Karmana district</p> <p>Abstract: This article deals with the issues of determining the mineralogical composition of soil samples in the city of Navoi and the Karmaninsky district (the settlement of Khazora, 24 km from the city) and identifying the degree of salinization of these old irrigated soils in the region. To determine the mineralogical composition of soil soils, the X-ray diffraction method of research was used, and to determine the functional groups of carbon, sulfur, and chlorine, IR spectrometric analysis of samples was used. The studies carried out made it possible to establish a carbonate type of salinity for the city of Navoi, and for the Karmaninsky district, the dominance was noted first of carbonate - 45.4%, then sulfate 28.8%, and only lastly did the third type of salinity appear, represented by chloride - 0.8%, found on the surface layer of the soil (0-0, mm).</p>
<p>Paper ID 39</p>	<p>Maftuna Akhtamova¹, Uktam Temirov*, Navruzbek Khurramov¹, Azim Shukurov 1, Bekhzod Karshiev²</p> <p>¹Navoi State Mining and Technology University, Galaba Str. 27, 210100 Navoi, Uzbekistan</p> <p>²Institute of General and Inorganic Chemistry of Academy of Sciences of the Republic of Uzbekistan, 77a Mirzo Ulugbek, 100170, Tashkent, Uzbekistan</p> <p>Title of presentation: Processing of phosphorites and additives with researching their thermodynamical properties</p> <p>Abstract: In this article, scientific research on the production of thermophosphate fertilizers was carried out on the basis of thermo-alkaline activation of Central Kyzylkum waste phosphorite with mineralized mass and alkali metal salts, namely NaCl, KCl, Na₂SO₄, K₂SO₄, Na₂CO₃, K₂CO₃ and silica at high temperature. In this case, samples are heated in muffle furnaces at temperatures of 800oC, 900oC, 1100oC, 1200oC and for 30 min, 60 min, 120 min. The total P₂O₅, assimilable P₂O₅, total CaO and total CO₂ forms of the sintered tablets were investigated. As it can be seen from the experiments conducted with mineralized mass phosphorite, alkaline salts and quartz sand, it was found that the assimilated form of CaO, P₂O₅ and the degree of decarbonation rose with increasing temperature and time.</p>
<p>Paper ID 40</p>	<p>Matkarim Ibragimov¹, Firdavs Kushnazarov*, Farrukh Kushnazarov²</p> <p>¹"Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University, 100000 Tashkent, Uzbekistan</p> <p>²Tashkent University of Information Technologies, 100084 Tashkent, Uzbekistan</p> <p>Title of presentation: The use of a pulse-expansion module to increase the efficiency of natural feeding of fish by flying insects on artificial ponds</p> <p>Abstract: The article deals with the problems of providing feed in artificial ponds and fish farms, increasing the proportion of live feed in the fish diet due to flying insects of the base of internal artificial reservoirs. A review of equipment for feeding fish with flying mosquitoes and insects, in which different color stimuli, a fan and PWM are used to attract</p>



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	<p>them, is carried out. The use of this electrical equipment leads to an increase in the productivity of artificial ponds and a reduction in the cost of artificial fish feed. UV LED strip. Thanks to RGB LEDs, the regulation of the chromaticity of their radiation is possible in a wide range by changing the currents passing through R-, G-, B-crystals by specialized PWM drivers of LEDs. The ambient air temperature is controlled by a digital temperature sensor.</p>
<p>Paper ID 41</p>	<p style="text-align: center;">Komil Turgunov* and Akhror Abdullaev² ¹Tashkent University of Architecture and Civil Engineering, Navai str.13, 100011 Tashkent, Uzbekistan ²Tashkent State Transport University, Adilxodiyev str. 2, 100067 Tashkent, Uzbekistan</p> <p>Title of presentation: Study on the conditions of material capture by pairs of rolls of squeezing machines Abstract: This paper is devoted to the analysis of the condition for material capture with pairs of rolls of squeezing machines. Calculation formulas for the parameters of roll pairs of squeezing machines are given, such as: contact angles, minimum distance between the rolls, the thickness of the processed material after squeezing. It has been established that the capture of material in the roll pairs of squeezing machines is determined by the center distance between the rolls, the thickness of the processed material and the coefficients of friction of the rolls on the processed material. It was determined that the displacement of the upper roll relative to the lower roll does not affect the values the nip angles.</p>
<p>Paper ID 42</p>	<p style="text-align: center;">Komil Turgunov* and Akhror Abdullaev² ¹Tashkent University of Architecture and Civil Engineering, Navai str.13, 100011 Tashkent, Uzbekistan ²Tashkent State Transport University, Adilxodiyev str. 2, 100067 Tashkent, Uzbekistan</p> <p>Title of presentation: Study on equations of curves of the squeezing machines' contact of rolls Abstract: This study deals with the issues of mathematical modeling of curves of contact of rolls of squeezing machines. The paper deals with the issues of mathematical modeling of curves of contact of rolls of squeezing machines. Equations are obtained the of curves contact of the rolls of the squeezing machine, in which the upper roll is mixed relative to the lower roll towards the movement of the processed material, the processed material is fed so that the line, which is a continuation of its front end, passes through the axis of rotation of the upper roll. It was been established that the contact curves of the rolls depend mainly on the deformation and geometric parameters of the processed material and both rolls, as well as the coefficients of friction between the contacting bodies.</p>
<p>Paper ID 45</p>	<p style="text-align: center;">Sulton Amirov¹, Absaid Sulliev*, Shukhrat Sharapov¹ ¹Tashkent State Transport University, 1, Adilkhodjaev str., 100167 Tashkent, Uzbekistan</p> <p>Title of presentation: Study on differential transformer displacement sensors Abstract: This paper studies magnetic circuits of known and developed differential transformer sensors of large linear motion, which refer to circuits with special structure of magnetic resistance parameters distribution of long ferromagnetic cores and magnetic capacitance between them. It is shown that in the known sensor the distribution of the working magnetic fluxes along the length of the ferromagnetic cores has a nonlinear character, as a result of which the dependence between the output signal in the form of the electromotive force and the input linear motion of the sensor also has a nonlinear character. It was found that by selecting the law of changing the working gap between the middle and inner cores along the length of displacement of the moving measuring winding by making the middle concentric core in the form of a paraboloid of rotation, a linear distribution of the working magnetic flows along the length of the ferromagnetic cores and linearity of the transformation characteristic of the differential transformer sensor of large linear displacements are achieved.</p>



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<p>Paper ID 46</p>	<p style="text-align: center;">Nuriddin Annaev* and Akmal Rasulev² ¹Karshi Engineering Economics Institute, Mustaqillik av.225, 180100 Karshi Uzbekistan ²Tashkent University of Architecture and Civil Engineering, Navai str.13, 100011 Tashkent Uzbekistan</p> <p>Title of presentation: Study on contact lines of rolls of two-roll modules Abstract: The results of solving the main problems of contact interaction in squeezing machines are presented, when the deformation of the contacting bodies is given by the Kelvin Voigt models. Analytical expressions are found that describe the shape of the contact line of the rolls, as well as the patterns of distribution of normal and tangential forces. It has been established that one of the main factors determining the roll contact lines is the ratio of the strain rates of the material being processed and the roll coating. It is revealed that the point where the shear stresses change their signs is located in the sticking area.</p>
<p>Paper ID 47</p>	<p style="text-align: center;">Nuriddin Annaev* and Akmal Rasulev² ¹Karshi Engineering Economics Institute, Mustaqillik av.225, 180100 Karshi, Uzbekistan ²Tashkent University of Architecture and Civil Engineering, Navai str.13, 100011 Tashkent, Uzbekistan</p> <p>Title of presentation: Study on hydraulic pressures in the roll squeezing process Abstract: The results of the study of hydraulic phenomenon in the of roller squeezing process. Mathematical models of regularities of changes in filtration rates are found. Based on the analysis of the graphs obtained, the hydraulic pressure distributions are approximated by empirical formulas. Formulas are derived to determine the maximum value of hydraulic pressure and the angle at which this maximum is reached. A formula for calculating the part of the external pressure acting on the liquid is defined.</p>
<p>Paper ID 48</p>	<p style="text-align: center;">Dilafuz Kazakova*, Ikhom Abbazov¹, Khurshid Yuldoshev¹, Sardor Tojmuradov¹, Kumush Baratova¹ ¹Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</p> <p>Title of presentation: Statistical assessment of the comparative breaking strength of yarns with different fiber composition Abstract: This article studied the factors affecting the quality of cotton yarn. The properties of cotton fiber and their changes in technological processes play an important role in product production. Therefore, cotton fibers with different staple lengths of 28.5, 29.0, and 29.5 mm were used in the test work. Because it is advisable to use long fiber cotton fiber to get single yarn spun for sewing threads, for each option, different twists on the thread, i.e. the number of twists in 1 meter of thread were 850, 900, 950 b/m. The strength of individual threads ensures the quality of the product obtained from it, so we use the above number of twists. In order to determine the relative breaking strength of a single thread for sewing threads, experimental tests were conducted. According to the conducted experimental tests, 2 incoming factors were selected. As an output parameter, the relative tensile strength of the yarn, sN/tex (U) as input parameters, the effect of fiber staple length in mm, and the number of twists on the b/m indicator were studied based on the experiment. As a result of theoretical studies, the optimal value of the relative breaking strength of the thread from 16.25 sN/tex to 17.54 sN/tex, the staple length of the fiber should be more than 29.5 mm, and the number of twists should be 900 twist/meter It was determined that it should be. Based on the obtained conclusions, scientific and research work was carried out in the control enterprise. Based on the results of this research, the preliminary results of choosing the direction of further research were obtained. For this, LOTs were organized in the enterprise in various options. LOT-1 consists of Porloq-4, LOT-2 Bukhara-102, LOT-3 Sultan varieties. Based on the research results, the coefficient of variation in the linear density of yarns with different fiber content, the coefficient of variation in the number of twists, breaking strength, the variation coefficient in breaking</p>



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	<p>strength, elongation at break, the coefficient of variation in elongation at break, comparison of the coefficients of variation for breaking strength and specific breaking strength were studied. When analyzing the effect of the composition of the fiber mixture on the physical-mechanical properties of the yarns for 3 LOTs, it was seen that the quality indicators of the yarns obtained from the LOT-1 mixture are higher than the indicators of the yarns obtained from other mixtures.</p>
<p>Paper ID 49</p>	<p>Rena Alieva[*], Zamira Mukhamedbaeva², Nargiz Olimova¹, Gaukhar Zakhiyevna³ ¹Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan ²Tashkent Chemical-Technological Institute, Tashkent, Uzbekistan ³M. Auezov University of South Kazakhstan, Shymkent 160012, Kazakhstan</p> <p>Title of presentation: Acid-resistant liquid glass coatings using soda ash production wastes</p> <p>Abstract: This article presents the results of research on the topical problems of protection of building structures, structures and products of various purposes operated in aggressive, mainly acidic environments. The existing scientific bases of obtaining high-performance acid-proof cements on the basis of liquid glass with the use of local raw materials and secondary resources of various industries are developed. Questions of increasing and improving the properties of acid-resistant liquid glass compositions by changing the input components: a primer, a filler and a hardener by introducing various active and inert additives, modifying the liquid glass, optimizing curing regimes, selection of compositions for specific operating conditions are considered.</p>
<p>Paper ID 50</p>	<p>Utkir Norboyev¹, Rustam Sulaymonov² ¹Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan ²"Scientific center of cotton industry" JSC, Tashkent, Uzbekistan</p> <p>Title of presentation: Ways to increase the efficiency of the seed linting process</p> <p>Abstract: The current state of local and foreign linters has been studied. It has been determined that local 5LP linters when linting cotton seeds do not meet the increased requirements of ginneries in cotton-textile clusters. The practice of operating serial 5LP linters shows that the actual performance of a 5LP linter is on average 50% of that stated in the passport. It was revealed that one of the main reasons for the decrease in the efficiency of the linter is not the perfection of the working body-turner. Due to the imperfection of the agitator design, the density of the seed roller increases, the quality of the lint and seeds deteriorates, and the productivity of the linter decreases. Studies of the Chinese-made MR-160-11C linter operated at the Djuma cotton plant in the Samarkand region showed an increase in the dust content of the air in the workshop due to the absence of a cleaning section for cleaning seeds in the feed system. At the same time, the increase in mechanical damage to seeds by 1.5-2.5% and clogging of the lint by 2.5-3.5% is higher than recommended by the regulations. Due to increased seed damage, these linters were not used to process plant seeds. An increase in the degree of clogging of the lint and an increase in the amount of lint with a short staple length in its composition sharply reduced the quality of the lint. When linting, the productivity of machines for seeds decreased by an average of 50-60%, for linting by 25-35% compared to passport data. To increase productivity and improve the quality of lint and seeds, a new design agitator for the 5LP linter was proposed.</p>
<p>Paper ID 51</p>	<p>Khakim Muratov¹, Kamoliddin Kadirov[*], Alijon Kushev¹ ¹Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan, 100076 Tashkent, Uzbekistan</p> <p>Title of presentation: Possibilities of applying time-classified tariffs in "smoothing" the loading graph of the electric energy system</p> <p>Abstract: In this paper, the impact of the use of time-classified tariffs on the electricity system is considered. That is, the possibility of adjusting the loads on the existing</p>



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	<p>substation in the morning and evening “peak” periods was assessed. In exchange for using the results of the energy audit and applying the system of time-classified tariffs, it will be possible to achieve smoothing of the load schedule of the electric power system during “peak” periods. Consumers’ use of the time-classified tariff system will reduce the loading period of the electric power system and change its regimes.</p>
Paper ID 52	<p>Kamoliddin Kadirov[*], Khakim Muratov¹, Alijon Kushev¹ ¹<i>Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan, 100076 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Possibilities of managing electricity consumption through the application of time-classified tariffs Abstract: This manuscript is devoted to the issue of smoothing the load schedule of enterprises in “peak” periods in return for using the results of energy audits and applying a system of time-classified tariffs. Considering the mentioned issue above, using the results of the energy inspection and using the system of time-classified tariffs will create an opportunity to achieve smoothing the load schedule of the electric power system during “peak” periods. The use of the time-classified tariff system by consumers will reduce the loading period of the electric power system and change its regimes.</p>
Paper ID 53	<p>Oybek Bozarov[*], Rayimjon Aliyev², Dilshod Kodirov³, Hamidillo Usarov⁴ ¹<i>Tashkent State Technical University, Tashkent, Uzbekistan</i> ²<i>Andijan State University, Andijan, Uzbekistan</i> ³<i>Department of Power Supply and Renewable Energy Sources, National Research University TIAME, Tashkent, Uzbekistan</i> ⁴<i>Andijan Institute of Agriculture and Agrotechnologies, Andijan, Uzbekistan</i></p> <p>Title of presentation: Energy parameters of a hybrid counter-rotor hydraulic unit operating on the basis of solar and hydraulic energy Abstract: This article analyzes the prospects for using a combined hybrid solar photovoltaic and hydroelectric device and presents their characteristics and energy parameters. In particular, since the hydroelectric device consists of a counter-rotor hydraulic unit, the functional relationship between the dynamic parameters of the reactive and active impellers and the efficiency of the hydraulic unit was investigated. Based on the obtained graphs and analytical expressions, the relationship between the energy parameters of the jet nozzle hydraulic turbine and the design parameters of the hydraulic unit was analyzed.</p>
Paper ID 54	<p>Xamroz Ulugmuradov[*], Ilkhom Abbazov¹, Bobir Sharopov¹, Rustam Muradov¹, Maxfuza Gapparova² ¹<i>Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</i> ²<i>Tashkent Institute of Textile and Light Industry, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Basis of the improved construction of cotton cleaning equipment Abstract: In this article, the analysis of news on the development of the cotton industry in our republic is presented. In addition, based on theoretical studies and analyzes of cleaning processes used in foreign countries, ways to improve the cleaning efficiency of the pile drum, which is the main working organ of cotton cleaning equipment from small impurities. It is based on the need to carry out theoretical calculations of the cleaning surface to improve the cleaning efficiency of the cleaning equipment from small impurities. The results of the theoretical research on calculation of useful surfaces of mesh surfaces based on the calculation of the grid surface located in the lower part of pile barbans used in our Republic and abroad are presented. The need to develop new constructions to increase the use of mesh surfaces to 100% and its calculations were made.</p>
Paper ID 55	<p>Alisher Davirov[*], Dilshod Kodirov¹, Xumoyun Mamadiyev¹ ¹<i>Department of Power Supply and Renewable Energy Sources, National Research University “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers”,</i></p>



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	<p style="text-align: center;"><i>100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on screw turbine of the micro hydroelectric power plant working in low pressure water flows</p> <p>Abstract: Nowadays, the demand for electricity is becoming more and more important, so finding new, safe and renewable energy is considered an important issue. Micro hydroelectric power plants with screw turbines are ecologically clean, renewable and efficient operation in low-pressure water flows is presented in the article. This article examines the transmission of 2 parallel screw turbines to one generator through a chain drive and increasing the output power by controlling the part connected to the generator in obtaining electricity from low-pressure water flows.</p>
Paper ID 56	<p style="text-align: center;">Lutfulla Eshkuvatov[*], Rakhimjan Babakhodjayev¹ and Nazim Tashbayev¹ <i>¹Tashkent State Technical University, University str. 2A, 100095 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Intensification of heat transfer during condensation of water vapor on a vertical tube</p> <p>Abstract: A review of the scientific literature on the intensification of the heat exchange process during condensation of water vapor on the surface of a vertical tube is carried out and the main results of the study are presented. The work on the study of heat transfer during laminar condensation of water vapor in the form of a laminar-flowing liquid in the form of a film both inside and on the outer surfaces of vertical tubes with an ascending steam flow is analyzed. The numerical values of Nusselt and Reynolds, which are also known and proposed for the case under consideration, have been studied. Methods of intensification of the heat exchange process are presented by improving the geometric configuration of the heat exchange surface from the side of the heating steam, on which its condensation occurs during heat transfer, which consists in reducing the thermal resistance of the wall molecular layers of the liquid. This method helps to increase the coefficient of heat transfer from steam to the wall surface by increasing the surface area of heat exchange. Based on the study of the results of well-known works, the authors have developed an experimental laboratory installation to study the increase in the efficiency of water vapor condensation processes on the outer surface of a vertical tube. An important scientific problem to be solved is the breakdown of the laminar-flowing liquid of condensed steam from the heat exchange surface, which leads to the admission and contact of steam directly from the cold surface of the tube.</p>
Paper ID 57	<p style="text-align: center;">Rakhimjon Babakhodjaev[*], Miyasar Kurbanbaeva¹, Murodjon Kavkatbekov¹ <i>¹Tashkent State Technical University named after Islam Karimov, 2 University St, Tashkent</i></p> <p>Title of presentation: Increasing the calorific value of Angren lignite coal by an upgraded device</p> <p>Abstract: This article presents the classification of the improved drying and enrichment device for increasing the calorific value of Angren B2 coal, the behavior of heat carriers, physical model, operation process, hydrodynamics of the abstract fluidized bed. Experiments were carried out on this device, preliminary results were obtained, and examples of analyzes that determine the reliability of the research are presented. The empirical equation of the results of the research is defined in term 6 in the polynomial linear equation and shown using a graph. In addition, the reliability of the research results was analyzed by regression and the reliability was 96%.</p>
Paper ID 58	<p style="text-align: center;">Oblokul Berdiyev¹, Nurmuhamat Asatov¹, Azizjon Abdurakhmonov[*], Uktam Djurayev¹, Bakhodir Sagatov¹ <i>¹Jizzakh Polytechnical Institute, Jizzakh 130100, Uzbekistan</i></p> <p>Title of presentation: Substantiation of the physics of mathematical calculation of the heat-humidity regime of building envelopes in non-stationary conditions</p>



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	<p>Abstract: This article explores calculation methods and experimental studies of newly erected, restored, and reinforced, multi-layer enclosing structures, which most fully considers the specifics of the impact on them of the individual properties of materials, the climate of the construction area, and operating conditions. The calculation of the humidity regime of external enclosing structures in a non-stationary mode will make it possible to more accurately determine the moisture content of materials in the structure, primarily in the heat-insulating layer, and, depending on humidity, establish the actual coefficients of thermal conductivity of materials, which will help to more accurately determine the thermal resistance to heat transfer and predict the effectiveness of thermal protection of enclosing structures of buildings in operational conditions.</p>
<p>Paper ID 59</p>	<p>Bakhor Khakimova¹, Saida Atkhamova², Dildora Ruzmetova[*], Sherzod Kurambaev¹, Abror Samandarov¹, Mukhabbat Masharipova¹, Nadira Sabirova¹, Oliya Khakimova³</p> <p>¹<i>Urgench state university, Hamid Olimjon st., 14, 220100, Urgench, Uzbekistan</i> ²<i>Tashkent chemical-technological institute, Shaykhantakhur district, avenue Navoi, 32, 100011, Tashkent, Uzbekistan</i> ³<i>Urgench branch of Tashkent Medical Academy, Al-Xorazmiy str.28., Urgench city, 220100, Uzbekistan</i></p> <p>Title of presentation: Study on the acid polysaccharide from the purslane plant <i>Portulaca oleracea</i></p> <p>Abstract: Nowadays, searching for new raw materials and sources of biologically active substances of plant origin is very important. The wide distribution, relative ease of isolation, and high physiological activity have made the practical application of the acid polysaccharide attractive. An intensive study of the relationship between the structure and physicochemical properties of acidic polysaccharides is currently underway. The objective of the research is to isolate and study the physicochemical properties of the acidic polysaccharide (pectic substances) isolated from the medicinal plant <i>Portulaca</i> (lat. <i>Portulacaoleracea</i>) growing on the lower part of the Amu Darya. The article presents the results of the isolation and chemical study of the acid polysaccharide by paper and gas-liquid chromatography. It has been established that this carbohydrate complex is represented by pectin substances. Their qualitative and quantitative monosaccharide composition has been established. The physicochemical parameters and monosaccharide composition of garden purslane have been studied. According to chromatography, the monosaccharide composition consists of uronic acid, galactose, glucose, arabinose, xylose, and minor rhamnose. The obtained pectin substances from the garden purslane plant belong to high molecular weight acidic polysaccharides, arabinoglucouranans.</p>
<p>Paper ID 60</p>	<p>Rustam Baratov¹, Murodjon Begmatov¹, Almardon Mustafoqulov[*], Farrukh Kucharov¹ and Erkin Sabirov¹</p> <p>¹<i>“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, Tashkent 100000, Uzbekistan</i></p> <p>Title of presentation: Study on the methods of measuring power of the rotating mechanisms</p> <p>Abstract: This article is about the methods of measuring the power of rotating mechanisms, in which the sensors that measure the angular parameters of rotating mechanisms are analyzed. Also, several methods of measuring the power of rotating mechanisms are given in the article. The method of power dissipation through angular acceleration and torque is analyzed in more detail. Connections of input and output quantities are given.</p>
<p>Paper ID 61</p>	<p>Firuza Kurbanova[*], Kakhramon Aliboev², Samariddin Mazhidov¹</p> <p>¹<i>Tashkent University of Architecture and Civil Engineering, 100011 Tashkent, Uzbekistan</i></p>



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	<p>Title of presentation: Study on issues of hydrodynamics of the roll squeezing process Abstract: The laws of distribution of hydrodynamic pressure and changes in extracted fluid in the pressing area are developed; they take into account the phenomena of contact interaction in the roll pair of the pressing machine. Hydraulic pressure in the compression zone increases from zero at the initial point of contact to a maximum value at a point lying on the line of centers. The distribution of hydraulic pressure in the recovery zone depends on the position of the water division point. It was revealed that the pattern of change of the removed fluid in the recovery zone depends on the position of the water division point. At the beginning of the recovery zone and up to the point of water division, the fluid flows from the coating into the material, and beyond this point, fluid is reabsorbed from the roll coating, and the amount of fluid removed from the material in the recovery zone is greater than the amount of absorbed fluid.</p>
<p>Paper ID 63</p>	<p>Mansur Khasanov[*], Salah Kamel², Francisco Jurado³, Abror Kurbanov⁴ and Urinboy Jalilov⁴ ¹Tashkent State Technical University, 100095 Tashkent, Uzbekistan ²Department of Electrical Engineering, Faculty of Engineering, Aswan University, 81542 Aswan, Egypt ³Department of Electrical Engineering, University of Jaen, 23700 EPS Linares, Jaen, Spain ⁴Department of Energy, Faculty of Energy and radio electronics, Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</p> <p>Title of presentation: Optimal Sizing and Sitting of Distributed Generation in Distribution Network considering Power Generation Uncertainty Abstract: This paper presents an application of the recent metaheuristic Geometric Mean Optimizer (GMO) for the allocation of renewable energy sources (RES), including wind turbine (WT) and biomass-based Distributed Generation (DG) units in the distribution network (DN). The primary objective function is to minimize the total power and energy losses. The Weibull probability distribution function (PDF) is employed to describe the uncertainty of wind speed. The high penetration of RES with intermittent availability and demand variations has introduced many challenges to DN, such as power fluctuations, voltage rise, high losses, and low voltage stability. Therefore, the use of dispatchable biomass is considered to smooth out supply fluctuations and maintain supply continuity. A standard IEEE 69-bus test system is used to verify the performance of the proposed approach. The simulation results and comparison with other techniques demonstrate the significant energy loss reduction achieved by the proposed technique.</p>
<p>Paper ID 64</p>	<p>Matkarim Ibragimov¹, Dilmurod Akbarov¹, Tajiddin Toshev², Kholiyor Sayyid Safarov² and Oliyaxon Zayniyeva² ¹Department Electrical Technology and Using of Electrical Equipment, "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University, 100000 Tashkent, Uzbekistan ²Department of Electrical Engineering, Karshi Engineering and Economics Institute, 180100 Karshi, Uzbekistan</p> <p>Title of presentation: Exploration of the combined vibration parameters and external magnetic field in diagnosing asynchronous electric motors Abstract: This paper presents the results of the development and application of a software-hardware complex for assessing the vibration level and external magnetic field intensity of asynchronous electric motors with the aim of diagnosing emerging defects. The issues of increasing the reliability and durability of asynchronous electric motors, as the most critical components in technological equipment complexes, are of utmost importance. Theoretical calculations describing the relationship between changes in the intensity of the external magnetic field and the presence of defects in asynchronous electric motors were conducted. Experimental measurements were performed using a compact</p>



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	<p>portable device developed by the authors, equipped with a built-in Hall sensor. Experiments to determine the parameters of the external magnetic field were conducted on several types of electric motors, for which preliminary vibration measurements were conducted. Based on the results of vibration analysis and the distribution of the external magnetic field of the motor, a detailed list of defects detectable using this comprehensive diagnostic method has been compiled.</p>
<p>Paper ID 66</p>	<p style="text-align: center;">Yunus Kenjaev[*], Adiba Tursunkulova² ¹<i>National University of Uzbekistan named after Mirzo Ulugbek, 4, University Street, Student Campus, 100174 Tashkent, Uzbekistan</i> ²<i>Tashkent branch of Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the Influence of Sideration on Soil Microbiological Activity Abstract: In the fall, siderate is used in cotton fields in its pure state; 7.81-31.38 t/ha of biomass was accumulated per heke when rapeseed and rapeseed + rapeseed were planted in a mixed state. When this biomass is crushed in siderate quality and buried in the soil, the microbiological activity increases along with the improvement of the soil properties, and the rapid and short retention of the biomass in the soil accelerates the decay, as a result, it has a positive effect on the increase in the amount of nutrients in the soil.</p>
<p>Paper ID 67</p>	<p style="text-align: center;">Aidai Turatbekova[*], Odina Nazarova², Otabek Khujaev², Sunnatullo Turapov³, Olimjon Ergashev², Irina Allenova⁴, Nodira Kuvvatova⁵, and Erkaboy Khudayberganov⁶ ¹<i>Kimyo International University in Tashkent, 100121 Tashkent, Uzbekistan</i> ²<i>Research Institute of Forestry, Tashkent, Uzbekistan</i> ³<i>Jizzakh Politechnic Institute, 130100 Jizzakh, Uzbekistan</i> ⁴<i>National Research University TIAME, 100000 Tashkent, Uzbekistan</i> ⁵<i>Karshi State University, 180119 Karshi, Uzbekistan</i> ⁶<i>Urgench State University, 220100 Urgench, Uzbekistan</i></p> <p>Title of presentation: Study on frequency of ultraviolet light reflection and absorption in flowering plants Abstract: In addition to the floral shape and colors seen by the human eye, ultraviolet (UV) reflectance serves as a significant visual advertisement for pollinators of many blooming plant species. The interaction between flowers and pollinators is significantly influenced by plant UV patterns. It is common knowledge that many flowers have vacuolated pigments that are UV-absorbing in their petal cells. Nevertheless, the impact of UV reflection and absorption on pollinators to particular plant species hasn't been properly investigated. In this paper, the degree and pattern of UV light reflection in flowers of 240 plant species from 55 families were examined. Four levels of UV absorption and reflection were used to rank the flowers. While white and green flowers often reflect UV weakly, yellow and violet flowers have the highest likelihood of doing so. In general, pollination aids were nonreflective and independent of hue. UV reflection seems to be positively connected with flower size even though it is unrelated to floral symmetry. UV reflection is certainly present in all plant families; however, it seems to be more prevalent in some taxonomic groups. UV reflection and absorption appear to be influenced by the physical features and chemical make-up of the petals, just like other floral petals.</p>
<p>Paper ID 69</p>	<p style="text-align: center;">Aidai Turatbekova[*], Lola Babamuradova², Umida Tasheva², Nasiba Saparbaeva³, Gulnora Saibnazarova⁴, Matluba Turayeva⁵, Yusufboy Yakubov³ ¹<i>Kimyo International University in Tashkent, 100121 Tashkent, Uzbekistan</i> ²<i>TIAME National Research University, 100000 Tashkent, Uzbekistan</i> ³<i>Urgench State University, Urganch 220100, Uzbekistan</i> ⁴<i>Department of Chemical Technology, Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i></p>



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	<p style="text-align: center;">⁵<i>Karshi State University, 180119 Karshi, Uzbekistan</i></p> <p>Title of presentation: A brief review on biological and chemical activities of flavonoids in plants</p> <p>Abstract: Flavonoids are a group of plant pigments, the combination of which determines one or another color of flowers and fruits. In plants, flavonoid dyes play the role of light filters that protect tissues from negative influences. Flavonoids are widely distributed secondary metabolites with different metabolic functions in plants. Flavonoids - a group of polyphenolic compounds C₆-C₃-C₆ -series that are synthesized exclusively in higher plants. This review considers four main functions of flavonoids in the plant body. These compounds take an active part in redox processes, in plant reproduction they play the role of bright attractants for insects and animals. An important function of flavonoids is to protect plants from external adverse abiotic and biotic factors. They are signal molecules in auxin metabolism, as well as at various stages of the plant symbiosis with mycorrhizal fungi and nitrogen-fixing bacteria.</p>
<p>Paper ID 70</p>	<p style="text-align: center;">Nargiz Olimova[*], Rena Alieva¹, Sobirjon Boboev², Rashid Kaldybaev³ ¹<i>Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</i> ²<i>Samarkand University of Architecture and Civil Engineering, Samarkand, Uzbekistan</i> ³<i>M. Auezov South Kazakhstan University, Shymkent 160012, Kazakhstan</i></p> <p>Title of presentation: Dust flow motions in dust collection equipment, droplet trajectories and dynamics based on the dust collection chamber's technical characteristics</p> <p>Abstract: In the article, the object of research is the mode of operation of the existing and created at the cotton cleaning enterprise dust collection equipment and the degree of change in the amount of dust in the air. The methods of research in which modern methods of determining the parameters and aerodynamics of dust collecting equipment, experiments to determine the degree of pollution of the dust flow and statistical data, the development of a mathematical model of the dust flow in the networks of dust collecting equipment, the trajectory of droplets and dynamics, based on the technical characteristics of dust and gas cleaning chamber are presented.</p>
<p>Paper ID 71</p>	<p style="text-align: center;">Aktam Denmukhammadiev[*], Abror Pardaev¹, and Erkin Sobirov¹ ¹<i>National Research University "Tashkent institute of irrigation and agricultural mechanization engineers", Tashkent 100000, Uzbekistan</i></p> <p>Title of presentation: A priori data on pre-sowing treatment and primary experiments on electric heating of onion seeds</p> <p>Abstract: Currently, Uzbekistan is among the twenty most advanced countries in the cultivation of onions. The onion plant was interpreted as a symbol of life in ancient Greek mythologies. Onion is one of the most widely consumed foods in the world due to its essential health and preventive properties, as one of the most essential fruits in the kitchen in the daily diet. The article studies the methods of processing onions before planting based on an analysis of the countries of the world. The results of studies of the influence of various electrophysical parameters on onion seeds are presented analytically. The effective influence of the electric field strength on the health of seeds is explained. The authors also referred to the results and methods of scientific research conducted at NRU "TIAME" and analyzed the electrical and mechanical properties of onion seeds based on specific experiments. In particular, we analyzed the mass of 1000 seeds, the filling factor of the cubic container, and the initial (primary) results of determining the electrical and thermal conductivity of soaked seeds. The article also provides information on the impact of alternating electric current on onion seeds, developed special electrodes for determining electrical resistance, and a methodology for conducting research experiments. An electrical circuit is presented that ensures the completeness of seed treatment. There are also materials on the positive effect of "electrically activated" water on the additional health of soaked onion seeds. It is shown that the necessary conditions have been created for the</p>



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<p>Paper ID 72</p>	<p>process of automated intelligent control of the temperature of soaked onion seeds.</p> <p>Akram Mirzabaev[*], Sherzod Mirzabekov², Dilshod Kodirov¹, Temur Makhkamov³, Askar Mirzaev⁴</p> <p>¹Department of Power Supply and Renewable Energy Sources, National Research University TIAME, Tashkent, Uzbekistan ²Tashkent State Technical University, Tashkent, Uzbekistan ³Mir Solar LLC Tashkent, Uzbekistan ⁴Tashkent University of Architecture and Civil Engineering, Tashkent, Uzbekistan</p> <p>Title of presentation: Analysis of photovoltaic power station (PPS) modeling using artificial neural network and PVsyst software Abstract: The possibility of using the method of artificial neural networks to analyze the modes of complex electric power systems with integrated large photovoltaic stations is considered. Based on the correlation analysis, the main factors influencing the energy parameters of photovoltaic power plants were selected and the boundary conditions for the Pearson coefficient were determined. The algorithm of the developed program for calculating the modes of electric power systems using neural networks is described, which makes it possible to more accurately predict generation, taking into account climatic conditions. On the example of calculations of the modes of the South-Western part of the energy system of Uzbekistan, taking into account the change in power flows as the generation of the Navoi photovoltaic plant with a capacity of 100 MW changes, a comparative analysis of the results obtained by calculation with real measurements was carried out.</p>
<p>Paper ID 73</p>	<p>Olimjon Toirov^{1,2*}, Mirzokhid Taniev¹, Muzaffar Hamdamov³, Abdurakhmon Sotiboldiev¹</p> <p>¹National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers", Tashkent, Uzbekistan ²Institute of Energy Problems of the Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</p> <p>Title of presentation: Power Losses of Asynchronous Generators Based on Renewable Energy Sources Abstract: This article discusses the possibility of using asynchronous generators in wind turbines, in particular asynchronous generators with phase rotors, in parallel with the network. Currently, due to the decrease in non-renewable energy sources around the world, the use of renewable energy sources, especially wind energy, is being considered. Also in this article, the power losses and energy balance of asynchronous generators with a phase rotor, all losses in an asynchronous generator, its efficiency, and torque are considered. In addition, a functional diagram of an asynchronous generator in a wind turbine has been developed, as have methods for simplifying calculations due to the generator substitution scheme. Due to this, methods for calculating the impedance of an asynchronous generator are given. With the help of an experimental research stand, the state of a number of parameters was analyzed during the parallel operation of an asynchronous generator with a phase rotor and a network. Taking into account that the indicators of the wind potential of land plots identified for the construction of wind turbines in Uzbekistan are higher than the average indicators of existing wind turbines in the world, it is assumed that the use of asynchronous generators in wind farms in the near future is considered promising.</p>
<p>Paper ID 74</p>	<p>Dildora Badalova[*], Abdumalik Badalov¹</p> <p>¹Tashkent State Technical University, 100095 Tashkent, Uzbekistan</p> <p>Title of presentation: Study on the hydrodynamic characteristics of swirl flow device Abstract: The work examined the hydrodynamic situation, which is created by the interaction of reciprocal twisted flows and the distribution of axial velocity along the radius of the primary and secondary flow inputs and the radius of the exhaust pipe in order</p>



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	to create a complete physical picture. Determination of the radius distribution of the static pressure values determined by the height of the apparatus and the static pressure distribution in the exhaust pipe.
Paper ID 76	<p style="text-align: center;">Narzullo Mirzoyev <i>¹Energoaudit Department, Bukhara Institute of Engineering and Technology, Bukhara, Uzbekistan</i></p> <p>Title of presentation: Study on computerized measurement-control system for determining the condition of electrical network insulation and permitted connections for electrical energy consumption Abstract: In this article electrical distribution in order to ensure the reliability and safe operation of networks, information is provided about the computerized measurement control system that allows determining the state of their insulation. In the article, the functional scheme of the computerized measurement and control system, which allows to determine the state of electrical network insulation and unauthorized connections to electricity, the structural diagram of the connection of the computerized measurement and control device to the electrical network, the structural diagram of the program developed for calculating the electrical network sizes, and the development of mathematical models developed.</p>
Paper ID 77	<p style="text-align: center;">Farrukh Mukhtarov^{1,2*}, Siroj Yarashev¹, Akhmad Akhmedov¹, Nizomjon Usmonov¹ <i>¹Tashkent State Technical University, 100097 Tashkent, Uzbekistan</i> <i>²Department of Power Supply and Renewable Energy Sources, TIAME National Research University, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Development of circuit solutions for a wind turbine on the basis of integrated membrane technologies for steam-gas thermal power plants Abstract: Currently, one of the most promising and effective ways to ensure the necessary quality indicators of desalinated water is the use of devices based on membrane separation technology. At the same time, of great interest are the schemes of water treatment plant, composed only of membrane modules of various purposes: ultrafiltration, reverse osmosis, electrodeionization. The advantages of membrane technology are due to low reagent consumption, easy operation, compact equipment and small amount of highly mineralized wastewater. The increased attractiveness of membrane technologies (especially in recent years) is due to the increase in the prices of reagents, ionites, primary water and also to the tightening of the standards for saline effluent. Thus, the aim of this work is to develop scientific and technical approaches to the creation of water treatment plant on the basis of modern membrane technologies for steam-gas thermal power plant and to develop approaches to design, specialized water treatment plant for humidifying dry air-cooling fan cooling cooling systems.</p>
Paper ID 78	<p style="text-align: center;">Farrukh Mukhtarov^{1,2*}, Akhmad Akhmedov¹, Nizomjon Usmonov¹, Jamshid Usmonov¹ <i>¹Tashkent State Technical University, 100097 Tashkent, Uzbekistan</i> <i>²Department of Power Supply and Renewable Energy Sources, TIAME National Research University, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the cost effectiveness of a combined evaporation unit Abstract: In a thermal power plant, water treatment plants are used to perform body losses in the main steam cycle using one of the following methods of water preparation: chemical, thermal, membrane or combination of them. One of the main advantages of thermal desalination is the low impact on environmental pollution. In the light of the ever-increasing environmental demands on energy processing systems, thermal desalination is becoming an increasingly preferred method of water treatment, since it allows wastewater to be used as feed water for evaporators. In our country, multi-stage evaporation units are quite widespread. They are used as operating units in industrial heating plants and as</p>



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	<p>backup for condensation plants. These units have high thermal costs and are characterized by an excess of secondary vapour of the last evaporation step, which needs to be continuously removed from the plant to avoid loss of productivity. The main objective of this work is to minimize the total and thermal costs of the production of additive water in the main steam turbine cycle of the thermal power plant and the treatment of wastewater in evaporation complexes, as well as to determine the technical economic effectiveness of applying some technical solutions for the recovery of excess steam in multi-stage evaporation units.</p>
<p>Paper ID 79</p>	<p>Bakhran Mamutov[*], Evgeniy Butkov¹, Hamza Yuldashev¹, Umida Tasheva², Farida Otaeva³, Nusratillo Toshpulatov² ¹<i>Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i> ²<i>National Research University TIAME, 100000 Tashkent, Uzbekistan</i> ³<i>Urgench State University, Urganch 220100, Uzbekistan</i></p> <p>Title of presentation: Influence of carboxy methyl cellulose (CMC) colloid on irrigation frequency of planting material with a closed root system Abstract: This article discusses the impact of different amounts of carboxymethyl cellulose (CMC) colloid on the frequency of watering seedlings with a closed root system in containers. The study found that increasing the CMC dose from 0.05% to 2.0% of the dry soil mass resulted in a decrease in the number of irrigations per month during summer from 5-6 to 2-3, an increase in the frequency from 5-6 to 11-16 days, and a reduction in the volume of irrigation water per container from 3700 cm³ to 2250 cm³ during the growing season. However, it should be noted that doses higher than 0.4% resulted in the formation of a thick soil crust in the containers, which negatively affected seed germination and plant growth.</p>
<p>Paper ID 80</p>	<p>Elmurod Bozorov[*], Husniddin Abdullayev² ¹<i>“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, 100000 Tashkent, Uzbekistan</i> ²<i>Bukhara Institute of Natural Resources Management, Bukhara, Uzbekistan</i></p> <p>Title of presentation: Study on the effect of electric pulse treatment for disinfection of vegetables Abstract: This paper describes a method of using pulsed discharge to control nematode diseases on tomato and cucumber rhizomes and crops grown in dacha plots. When pulsed discharges are applied to living tissue, certain chemical, physical, and biological processes occur, depending on the pulse energy, pulse discharge current, pulse discharge voltage, pulse discharge exposure time, pulse discharge impact current, and other similar factors. Electric pulses were applied to grafts of nematode-infested vegetables, tomatoes and cucumbers, to measure grafting ability. Crop yields were estimated by the total amount of produce grown on arable land, and the level of yield enhancement was determined by land sedimentation and proper placement of varieties and plant species. Proper selection of modern high-yielding varieties imported from Uzbekistan provides resistance to external adverse effects of nature and diseases. The creation of high-yielding varieties requires the discovery and cultivation of resistant hybrid varieties and the development and introduction of new progressive technological methods of plant cultivation. The objective of this study was to identify the main factors affecting the electric pulse discharge treatment of tomato and cucumber root crops infected with nematodes and their larvae. Various diseases occur in cotton, cereals, melons, vegetable crops, and indoors (greenhouses) on newly established farms in the Republic. Yields are particularly high in vegetable, melon, and greenhouse fields. In recent years, the impact of nematodes on plants has caused severe damage to crop yields. Treating crops with this formulation prevents nematode infestation of leaf veins. The economic damage caused by nematodes to agriculture is enormous. For example, in greenhouse vegetables (cucumbers and tomatoes) this indicator reaches 60% and in potatoes 80%. Therefore, the proposed method is</p>



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	<p>realized in combination with an agrotechnical treatment process that is energy-saving, environmentally safe, and productive.</p>
Paper ID 81	<p>Jasurbek Namozov[*], Yakubjon Yuldashov¹, Jasurbek Namozov¹ ¹<i>Department of Forestry and Landscape Design, Tashkent State Agrarian University, 111218 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on morphological parameters of the sweet almond nut (<i>Amygdalus communis</i> L.)</p> <p>Abstract: This article delves into the morphological features of various sweet almond (<i>Amygdalus communis</i> L.) varieties and forms, with the aim of analyzing their characteristics and applying the findings to obtain new types of almonds. Thirteen different sweet almond varieties were studied, including their total weight, kernel mass, number of seeds, and seed ratio. The results showed that one genotype (Qamashi-3) had medium to large nuts, while the other twelve genotypes had small nuts. All genotypes had easily peeled shells. Of the selected varieties, 15.38% were very large, 46.15% were medium to large, and 38.46% were small-fruited. The length, width, and thickness of the nut varied from 22.0 mm to 39.2 mm, 14.0 mm to 23.0 mm, and 11.0 mm to 16.5 mm, respectively. The thickness of the seed coat ranged from 1.5 mm to 3.1 mm. The number of nuts per 1 kg differed across varieties, ranging from 139 to 1076 pieces. Two genotypes had very hard shells (Tosh almond, Qamashi-3), four had hard shells, three had medium-hard shells, and six had soft shells. Most of the genotypes had sweet grains (12 genotypes), while one had a bittersweet taste. Overall, the studied sweet almond genotypes are important for expanding the genetic base in Uzbekistan through hybridization with each other or with standard varieties.</p>
Paper ID 82	<p>Qadam Jumaniyazov¹, Oybek Xolmurotov², Fazliddin Egamberdiyev², Bobur Sharopov² ¹<i>“Paxtasanoati ilmiy markazi” JSC, Tashkent, Uzbekistan</i> ²<i>Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Theoretical analysis of the movement trajectory of a cotton piece thrown from the pile surface</p> <p>Abstract: The article contains information about the theoretical analysis of the trajectory of the cotton piece thrown from the surface of the piled drum in the 1XK aggregates available in cotton ginning enterprises. For this, in the recommended cleaning equipment, cotton pieces are dragged through the mesh surface by hanging the drum piles, and the separated impurities fall through the holes of the mesh surface. The piles eject the cotton piece at the appropriate speed. A piece of cotton moves in different trajectories depending on the value of the initial exit velocity and its mass. In this case, it is necessary to determine the impact zone of pile drums located in a row in the zone of cleaning cotton from small impurities. The results of theoretical studies on determining the mathematical model of the movement of cotton pieces along a drum with piles are presented. The problem of determining the impact zone of the next pile drum depending on the movement trajectory after the cotton piece is thrown from the surface of the pile drum in the process of cleaning cotton from small impurities has been solved. The value of the distance between the axis of pile drums was based on the analysis of the obtained trajectories of the movement of cotton particles and the constructed graphical relationships. In addition, the movement of cotton particles along the surface of the piles was analyzed. The results were obtained by analyzing the movement of a piece of cotton under the influence of external forces in order to ensure the transmission of small impurities separated from the mesh surface of the 1XK equipment, which is currently used in production, and the impact of the pile drum on the cotton flow.</p>
Paper ID 87	<p>Sherzod Toshev[*], Shaxnoza Tosheva², Abror Sadullaev³, Akmal Vokhidov¹ ¹<i>Department of Power Supply and Renewable Energy Sources, “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University,</i></p>



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	<p style="text-align: center;"><i>100000 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">²<i>Joint-Stock Company «UZENERGYENGINEERING», M. Ashrafi str.1st lane 9, 100076 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">³<i>Jizzakh Polytechnic Institute, Islam Karimov str. 4, 130100 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Study on a generator and turbine designed for an efficient wind power plant in low speed wind currents</p> <p>Abstract: This article presents the advantages of improving and developing new types of turbines and generators designed for the production of electricity from low-speed wind and free-flowing water, at a time when the environment is deteriorating and there is a shortage of electricity. It has been analyzed that low-speed micro-hydroelectric power plants and wind power plants bring great benefits to the environment and economy through their mass use in meeting the needs of the population and businessmen for electricity. For this purpose, the effective structure of low-speed generators, micro-hydroelectric power plants and wind power plants were considered, and the issues of improving them so that they work efficiently at low speeds were considered. Mathematical equations of a low-speed generator designed to obtain electricity from low-speed wind and free-flowing water are presented. At the same time, scientific research was conducted to study, improve, and develop new types of micro-hydroelectric and wind power plants suitable for low-speed generators. As a result of scientific research, an improved wind power device designed for small speed was developed and the results of research were analyzed.</p>
<p>Paper ID 88</p>	<p style="text-align: center;">Dilmurod Yusupov^{1,2}, Nodir Artikbayev^{1,3}, Odiljon Kutbidinov⁴, Nusratillo Toshpulatov², Aziz Babayev², Oybek Matchonov², Akmal Vokhidov²</p> <p style="text-align: center;">¹<i>Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</i></p> <p style="text-align: center;">²<i>“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, 100000 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">³<i>Joint Stock Company “Uzbekhydroenergo”, Tashkent, Uzbekistan</i></p> <p style="text-align: center;">⁴<i>Tashkent State Transport University, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Development of a simulation model for assessing the technical condition of transformers exploited in hydroelectric stations</p> <p>Abstract: Supplying consumers with continuous electricity is one of the urgent problems of today. The main part of electricity is produced by hydroelectric stations. The perfect operation of the main electrical equipment of hydroelectric power stations is related to the reliable operation of the electrical equipment in operation. The flawless operation of power transformers in operation at hydroelectric power stations is evaluated by their technical condition. The technical condition of power transformers is determined by their electrical and non-electrical indicator values. In this article, a simulation model for determining the value of the technical condition of power transformers in operation at hydroelectric power stations using fuzzy logic has been developed.</p>
<p>Paper ID 89</p>	<p style="text-align: center;">Dilmurod Yusupov¹, Ibroximjon Ismoilov[*], Abdugani Rakhmatov³, Orifjon Kilichov³, Nusratillo Toshpulatov³, Aziz Babayev³, Oybek Matchonov³</p> <p style="text-align: center;">¹<i>Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</i></p> <p style="text-align: center;">²<i>Fergana polytechnic institute, Fergana, Uzbekistan</i></p> <p style="text-align: center;">³<i>“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Express diagnostics of power oil transformers by vibroacoustics and partial discharges</p> <p>Abstract: This article presents the results of Express Diagnostics conducted in the working state of the autotransformer ATDTN-125000/220/110-U1. Three measurement pribors were used in the research process to determine the vibroacutic, partial discharge,</p>



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	<p>and current strength values in the working state of the oil power transformer. Experimental studies and their analysis have shown that by evaluating the technical condition of the oil power transformer at a short opportunity, it is possible to give a conclusion to its epluation or release into repair.</p>
Paper ID 90	<p>Jakhongir Normuminov[*], Muhiddin Tursunov¹, Abdurauf Unarov¹ and Abdullo Kuchkarov¹ <i>¹Russian ITashkent State Technical University, 100097 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Increasing the efficiency of the use of oil fuel in thermal power stations and boilers</p> <p>Abstract: An organization can achieve good results by properly managing the supply of fuel, ensuring the desired intensity of combustion, and optimizing the volume of the combustion process to promote complete combustion. Additionally, the mixing of fuel with secondary air, provided by combustion devices, is crucial for achieving efficient combustion. Experimental studies conducted on boilers in thermal power plants have demonstrated that heating the secondary air can enhance energy efficiency. This improvement is particularly relevant for fuel oil and gas burning. To optimize the combustion of fuel oil, steam-mechanical nozzles are commonly utilized. These nozzles excel in prolonging the combustion process, leading to more efficient fuel oil burning. When burning gas and fuel oil, a two-stage arrangement of burners in the boiler is more effective than a single-stage configuration, regardless of whether the burners are positioned in opposite directions or in a one-sided frontal arrangement. To mitigate the emission of nitrogen oxides, several measures can be taken. It has been observed that recirculating flue gases from the heat is more effective than solely utilizing flue gas. Additionally, the strategic placement of boilers with furnace gases and the optimization of turning parameters can also contribute to reducing harmful nitrogen oxide emissions.</p>
Paper ID 92	<p>Khabibulloh Norboyev[*], Farrukh Mukhtarov^{1,2}, Hasanov Zokhid¹, Nizomjon Usmonov¹ <i>¹Tashkent State Technical University, 100097 Tashkent, Uzbekistan</i> <i>²Department of Power Supply and Renewable Energy Sources, TIAME National Research University, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study of the influence of cooling water quality and inhibitors on the corrosion rate of brass in cooling water</p> <p>Abstract: At present, our country does not have an effective programme for the organization of water-chemical regimes of circulating refrigeration systems, solving three problems at the same time: the prevention of sedimentation, Reduction of corrosion rates of copper-based construction materials and avoidance of biological growth within the system and on heating surfaces. In addition, the influence of cooling water quality on the corrosion of copper-containing alloys in high-inertial water-cooling systems of turbine condensers has also been largely unknown. The use of film-forming amines (in particular, chelamine and octadesilamine) is a promising method to address this problem, but information on this issue is scarce. Therefore, it is essential to optimize the water-chemical modes of recycling cooling systems of turbine condensers in order to reduce the corrosion rate of brass. Thus, the aim of the work is to study the influence of the quality of cooling water and corrective reagents on the corrosion rate of brass in order to optimize the water-chemical modes of cooling systems of turbine condensers.</p>
Paper ID 93	<p>Khabibulloh Norboyev[*], Khazratov Abbas¹, Farrukh Mukhtarov^{1,2}, Nizomjon Usmonov¹ <i>¹Tashkent State Technical University, 100097 Tashkent, Uzbekistan</i> <i>²Department of Power Supply and Renewable Energy Sources, TIAME National Research University, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Development of a mathematical model of a recycling cooling</p>



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	<p>system of a thermal power plant</p> <p>Abstract: In thermal power plants in Uzbekistan, the drainless recycling cooling system is widespread, in which water of the most favorable and constant quality and heated in the condenser turbines are used in the water treatment plant thermal power plant. Since the recycling cooling system uses technical raw water, low solubility deposits (scale) are formed on heat exchange surfaces in turbine capacitors. It is believed that the cause of precipitation is the concentration of low soluble water components by evaporation of water in cooling towers. Due to the low thermal conductivity of the deposits formed on the heat exchange surface of the capacitors, the temperature pressure increases. As is known from the scientific and technical literature, the pressure in the turbine capacitors depends on the contamination of the cooling surface. Because of this, the vacuum worsens. The deterioration of the vacuum leads to an over-consumption of steam. Thus, the aim of this work is to increase the operational efficiency of the recycling cooling system of the thermal power plant.</p>
<p>Paper ID 94</p>	<p>Dilora Ubaydullaeva[*], Shamsiya Shumkarova², Mohinur Akhmedova¹, Rustam Begmanov³</p> <p>¹Tashkent Institute of Textile and Light Industry, Tashkent, Uzbekistan ²Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan ³Institute of Mechanics and Seismic Stability of Structures Named After M.T.Urazbaev, Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</p> <p>Title of presentation: Study of the mechanical properties of knitted fabrics</p> <p>Abstract: In this article results of analyses physical-mechanical properties of 3 new structures of fleecy knitting interloping made by cotton yarn of different linear density at the flat knitting machine TERROT have been offered. The influence of the location of the lining thread on the physical and mechanical properties of the lining knitted fabric in the composition of the newly formed, it turned out the place of their use can be determined by the type of raw material.</p>
<p>Paper ID 95</p>	<p>Fazliddin Sirojiddinov¹, Botir Mardonov², Ilkhom Abbazov³ and Bobir Sharopov³</p> <p>¹Kattakurgan branch of Samarkand State University, Samarkand, Uzbekistan ²Tashkent Institute of Textile and Light Industry, Tashkent, Uzbekistan ³Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</p> <p>Title of presentation: Investigation of two-dimensional unsteady motion of deformable raw roller during saw ginning</p> <p>Abstract: In this article, based on the analysis of research conducted by scientists in many fields on increasing the productivity of sawing gin, the requirements for sawing gin to improve the workability of gin, increase fiber quality, and reduce energy consumption, as well as its separation into technological parts, and a single conclusion, collecting the conducted research it was mentioned that it should be released. It is explained the requirements for cotton ginning equipment in cotton ginning cluster enterprises and the need to carry out the innovative approach of sawing gins, dividing each technological process into separate technological parts to fulfill these requirements. The technological process of the sawmill consists of a complex of 9 technological parts.</p>
<p>Paper ID 96</p>	<p>Tulkin Ochilov[*], Hilola Yodgorova², Shamsiya Shumkarova², Mavluda Yuldasheva²</p> <p>¹Tashkent Institute of Textile and Light Industry, Tashkent, Uzbekistan ²Jizzakh Polytechnic Institute, 130100, Jizzakh, Uzbekistan</p> <p>Title of presentation: Study the state of deformation of fibers with variable properties</p> <p>Abstract: The method for calculating the tensile and compressive strength of certain fiber systems with different structures in terms of layer thickness was presented. The laws of influence of various parameters, which become invisible in stretching, have been established on the description of two-layer yarn interaction. It was found that the tension (pressure) compressing the fiber in the center of the thread has a maximum value, it</p>



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	<p>increases significantly with the increase of the angle of attack, which leads to an uneven distribution along the radius of the thread. In a two-layer yarn formed from two fiber systems with different mechanical characteristics, the degree of compression of the fibers depends significantly on the ratio. It was expected that the fiber maturity index decreased in the outer layer, and the pressure between the fibers increased as the thickness of the inner layer increased. All the fibers in the two-layer yarn are in a sliding state, and as this indicator increases, starting from the center of the yarn, the fibers begin to be in tight contact with each other, the length of which depends on the radius of the inner layer, the bending angle, and the ratio of the Young's modulus of the fibers of the two-layer yarn. It was observed that the fibers in the thread layer are in tight contact with each other at the value of the angle of sag.</p>
<p>Paper ID 97</p>	<p>Nuriddin Markaev[*], Islom Abdiraxmonov², Ikrom Davletov³, Babur Tukhtaev⁴ ¹<i>National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers", Tashkent, Uzbekistan</i> ²<i>Termiz Institute of Engineering and Technology, Tashkent, Uzbekistan</i> ³<i>Urganch State University, 220100 Urganch, Uzbekistan</i> ⁴<i>Karshi Engineering and Economic Institute, 180100 Karshi, Uzbekistan</i></p> <p>Title of presentation: Energy characteristics of electrotechnological processing of grape cuttings</p> <p>Abstract: The article studies the energy properties of energy input into cuttings during electrical processing of a grape stem, taking into account the state of the system in two media (water and cuttings). At the same time, the energy absorbed by grape cuttings depends on the structure of grape cuttings (bast, xylem, core and peel), resistance between the electrode and water (R1, R7), water resistance between the electrode and the grape cut (R2, R6), resistance between the cut grapes and water (R3, R5), stalk resistance of grapes (R4), conductive water resistance (R8) have been determined and scientifically substantiated. As a result, the distance between the electrode and the grape stem (l1), the length of the stem (l2), the distance between the electrodes (l3), the area of electrode coverage with water (S1), the surface of the grape stems (S2), the diameter of the stems 1.2-1.5 cm, the current density increases with time (0-24 hours) in a humid environment by 1-2 A/m² at 33.33 V/m², the electric field strength at 133.33 V/m changes by 7-8 A/m², and in a dry environment, the useful energy absorbed by the handle between the electrodes placed inside the working chamber decreases to 0.8-0.68 A/m² at 133.33 V/m² over time (0-24 hours). It has been established that the absorption depends on the distance (l), processing voltage (U), and time of exposure to electric current (τ).</p>
<p>Paper ID 99</p>	<p>Anvar Djuraev¹, Sirojiddin Elmonov[*] <i>Tashkent Institute of Textile and Light Industry, Tashkent, Uzbekistan</i> <i>Kattakurgan Branch of Samarkand State University, Samarkand, Uzbekistan</i></p> <p>Title of presentation: Design and methods for calculating the parameters of a machine for cleaning wool from vegetable impurities</p> <p>Abstract: The article presents an effective scheme and principle of operation of the device, working bodies, drive mechanisms of machines for cleaning wool from vegetable impurities. Theory - experimental studies have obtained the laws of motion of the peg feeder, saw cylinder, impact roller, take-off drum, motor shaft, the main parameters of the device for cleaning wool from plant impurities are substantiated. Based on the results of comparative production tests, recommendations were developed for introducing the developed machine into production.</p>
<p>Paper ID 100</p>	<p>Muzaffar Murodov[*], Murodjon Nabiev¹, Mohamad Amir Hababa² ¹<i>Department of Power Engineering, Namangan Engineering-Construction Institute, Namangan, Uzbekistan</i> ²<i>Renewable Energy Laboratory, Higher Institute for Applied Sciences and Technology, Damascus, Syrian Arab Republic</i></p>



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	<p>Title of presentation: Calculation of the thermal balance of the photocell during operation and removal of heat</p> <p>Abstract: The heat exchange of the photoelectric module with the environment and its changes in constant temperature were analyzed. Its temperature depends on the ambient temperature and the flux density of solar radiation, the heat balance equation is formed. The maximum concentration coefficient corresponding to the accepted limit temperature of 85 °C of the photocell was determined. It turned out that in the case of arbitrary installation of photoelectric modules, the maximum concentration coefficient does not exceed $K = 3$ at ambient temperature 25 °C, and $K = 2,5$ when installing the roof. An increase in the unit concentration coefficient in the summer leads to a constant temperature rise of the photocells to 18-22 °C, depending on the method of installation. A sandwich structural method of photoelectric module surface cooling was developed taking into account the increase in ambient temperature.</p>
<p>Paper ID 101</p>	<p>Bobur Shodiyev*, Nizomjon Usmonov², Alisher Davirov¹, Rakhimjon Kobilov¹, Rano Tukhtaeva³</p> <p><i>¹Department of Power Supply and Renewable Energy Sources, TIAME National Research University, 100000 Tashkent, Uzbekistan</i></p> <p><i>²Tashkent State Technical University, 100097 Tashkent, Uzbekistan</i></p> <p><i>³Karshi State University, 180119 Karshi, Uzbekistan, Uzbekistan</i></p> <p>Title of presentation: A review of heat recovery technology for passive ventilation applications</p> <p>Abstract: Regenerative heat exchangers are widely used in life support systems, gas turbines, boilers and other high-temperature industrial installations. These heat exchangers are used for cooling and heating gases, humidification and dehumidification of gases, heat recovery from high-potential heat carriers. Today, the increase in energy consumption and the increase in energy prices require a large-scale energy-saving policy in the creation of modern engineering structures – residential, commercial and industrial facilities alike. When designing and creating life support systems to save energy, it is advisable to use secondary energy resources, such as, for example, the heat of the air removed from the room. The energy intensity of conventional ventilation systems is on average 50–80% of the total energy intensity of the engineering systems of the facility where they are operated. The use of rotating regenerative heat exchangers in ventilation and air conditioning systems makes it possible to return up to 85% of heat to the system at a relatively low capital investment. In this regard, when improving such systems, considerable attention should be paid to the calculation, optimization and increase in the efficiency of heat exchangers. Thus, this work is about increasing the efficiency of rotating regenerative heat exchangers in ventilation and air conditioning systems.</p>
<p>Paper ID 103</p>	<p>Aidai Turatbekova*, Dilbar Mirzarakhmetova^{1,2,3}, Jumaniyoz Jumaniyozov⁴, Erkaboy Khudayberganov⁴, Nusratillo Toshpulatov⁵, Abdugani Rakhmatov⁵, and Shavkat Muzafarov⁵</p> <p><i>¹Kimyo International University in Tashkent, 100121 Tashkent, Uzbekistan</i></p> <p><i>²Tashkent State Technical University, Tashkent, Uzbekistan</i></p> <p><i>³National University of Uzbekistan named after Mirzo Ulugbek, Tashkent, Uzbekistan</i></p> <p><i>⁴Urgench State University, 220100 Urgench, Uzbekistan</i></p> <p><i>⁵“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: A brief overview on the methods for extraction and identification of flavonoids</p> <p>Abstract: Flavonoids are active metabolites of plant cells. The significant biological role of these compounds is evidenced by the nature of their distribution in the plant. Flavonoids play an important role in plant reproduction, development and accumulation of pollen, and</p>



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	<p>their content also determines the color of flowers, fruits, and plant seeds. Most flavonoids are found in actively functioning organs: leaves, flowers, fruits (color, aroma), seedlings, as well as in integumentary tissues that perform protective functions. Different organs and tissues differ in the quantity and qualitative composition of flavonoids. Relatively recently, it was found that flavonoids also influence signaling processes occurring in living systems due to specific interactions with proteins that perform regulatory functions. Numerous data have been accumulated on the influence of these compounds on other protein and non-protein structures, which can lead to changes in the functional state of cells and the entire organism as a whole. Despite the fact that currently the redox properties of phenolic compounds are not given so much importance, their comprehensive study still remains an important task. In addition, numerous studies confirm that flavonoids act as effective phytoalexins, exhibiting a wide range of antibacterial and antifungal activities. After all, a significant role of flavonoids is their function of protecting against various unfavorable factors for plants, such as temperature fluctuations, the influence of ultraviolet rays, attacks by viruses, bacteria, and parasites. A correlation has been established between their content in plants and plant resistance to fungal diseases and some pests. The appearance of these compounds in plants in response to the action of parasitic fungi of cultivated plants and inhibition of the growth of fungal mycelium is considered a protective reaction. Flavonoids with antimicrobial activity are found in large quantities in the seed coat. This review paper highlights the basic technologies for extraction and identification of flavonoids from different type of plants.</p>
<p>Paper ID 104</p>	<p>Gani Dadaev^{1,*}, Shakhnoza Sultanova¹, Jasur Safarov¹ and Qobiljon Mukhiddinov¹ ¹Tashkent State Technical University, 2, University street, Tashkent, 100095, Uzbekistan</p> <p>Title of presentation: Calculation of the drying process of dietary materials in solar dryers Abstract: The study introduces a systematic approach to mathematically and computationally model the intricate dynamics inherent in solar storage dryers. A notable contribution of this research lies in the establishment of a methodology for creating mathematical and computer models tailored specifically for solar storage dryers. By devising a structured framework for such modeling, the study endeavors to enhance the understanding of the drying process and its intricacies within the context of herbaceous dietary materials. Through this innovative approach, researchers seek to bridge the gap between theoretical insights and practical applications in the field of solar drying. The developed technique holds the potential to not only deepen our comprehension of drying processes but also pave the way for optimized drying strategies in the context of herbaceous dietary materials. This pioneering effort underscores the role of scientific inquiry in advancing sustainable and efficient practices within the realm of food processing and preservation. Empirical values of drying rate constants and their changes with time are shown. Empirical coefficients $Ku_1= 5.3956$ 1/day; $ku_2= 0.0148$ 1/day; $kw_1=0.9858$; $Kw_2=-7.2359$. Correlation coefficient matrices, showing the relationship between the drying rate constant and the main environmental factors, indicate that the relationship between the drying rate constant and temperature is non-linear. Approximation of the kinetic curves based on the dynamic mass transfer equation and the proposed empirical dependences of the drying rate constants on temperature has been carried out.</p>
<p>Paper ID 105</p>	<p>Irmukhamat Khalismatov^{1,*}, Ravshan Zokirov¹, Azamjon Zakirov¹, Bekhzod Abdurakhmanov¹, Nargiza Botirova¹ and Nargiza Akhmedova¹ ¹Tashkent State Technical University, 2, University street, Tashkent, 100095, Uzbekistan</p> <p>Title of presentation: Main types of reservoirs of pre-jurassic deposits in the Ustyurt region Abstract: This article compiles and presents the tangible records encompassing drilling operations, testing procedures, and geophysical loggings conducted in the Ustyurt oil and gas region of Uzbekistan. These consolidated materials provide a comprehensive overview</p>



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	<p>of the exploration efforts undertaken in this region. The dataset includes information on core samples extracted from drilling, their subsequent analysis, and the outcomes of tests conducted on intervals within the Pre-Jurassic deposits. Through a meticulous examination of core samples, drilled wells, and geophysical loggings, the study delves into the reservoir properties of rock formations in this geological region. The research identifies distinct groups of rocks within the Pre-Jurassic complex, categorized by their porosity characteristics. This categorization serves as a foundational step in understanding the geological composition and potential reservoir properties of these formations. An important outcome of this analysis is the identification of five distinct types of reservoirs based on the structure of the pore space within the pre-Jurassic sediments. This categorization holds immense potential for future predictions and assessments concerning these sedimentary deposits. By amalgamating core data, geophysical readings, and testing outcomes, the research contributes to a holistic understanding of the geological attributes and reservoir potential of the Ustyurt oil and gas region. This foundational information sets the stage for informed decision-making in exploration, production, and resource management activities within this significant geological area.</p>
<p>Paper ID 106</p>	<p>Nurillo Zikrillayev^{1,*}, Zoir Kenzhaev¹, Timur Ismailov², Ugolay Kurbanova¹ and Bakhadir Aliyev¹ ¹Tashkent State Technical University, Tashkent, 100095, Uzbekistan ²Karakalpak State University, Nukus, 230112, Uzbekistan</p> <p>Title of presentation: Effect of nickel doping on the spectral sensitivity of silicon solar cells Abstract: In the modern industrial production of solar cells (SC), there is a growing trend to utilize "solar silicon" as the base material due to its cost-effectiveness. However, solar silicon possesses a drawback - it has a shorter lifetime of minority charge carriers (MCC), making it challenging to achieve high efficiency in solar cells. To address this limitation and improve the efficiency of solar cells based on "solar silicon," two key objectives need to be met. Firstly, it is essential to increase the lifetime of photogenerated charge carriers. Secondly, there is a need to minimize both optical and electrical energy losses. To achieve an increase in the lifetime of minority charge carriers in SCs, a process called gettering can be employed. This process involves utilizing clusters of nickel atoms to trap uncontrolled impurity atoms. The paper presents the results of a study on the additional doping of silicon solar cells with nickel atoms, for factors affecting the long-wave and short-wave efficiency. Nickel doping has been shown to increase the efficiency of solar cells. It is determined that in the visible region of the spectrum the spectral sensitivity of a silicon solar cell doped with nickel is higher up to 25÷35% due to a decrease in surface recombination. Technological recommendations for nickel doping of single-crystal silicon solar cells are proposed to be combined without significant changes with the standard technological process for manufacturing solar cells.</p>
<p>Paper ID 107</p>	<p>Khayrulla Zikrillayev¹ and Timur Sodiqov^{1,*} ¹Tashkent State Technical University, 2, University street, Tashkent, 100095, Uzbekistan</p> <p>Title of presentation: Study on main characteristics of HANWHA solar panels Abstract: In this article a Korean-made HANWHA solar panel is considered. Scientific research has been carried out in the first photovoltaic plant since this type of solar panels was installed at this plant. The scientific research based on the measurement, observation and monitoring methods were carried out in October 2022. It turned out that the characteristics of this solar panels are acceptable and can be used in the natural climate conditions of our country. But, in recent years the parameters of the characteristics of this panel have decreased. The average short circuit current value of this panel during the study was 3.5 Amps, which is about 60.18 % less than the nameplate value and the average power on the first and sixth day of the study was 99.60 and 91 Watt respectively, which differ by 8.63 %. After that the authors suggest that is necessary to increase the parameters</p>



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	of characteristics of this panels by applying new cleaning system.
Paper ID 108	<p>Rahmatilla Baltabaev^{1,*}, Murod Eshmukhamedov¹, Aziz Abidov and Shokhzodbek Rashidov¹</p> <p>¹<i>Academy of the Ministry of Emergency Situations of the Republic of Uzbekistan, Tashkent, 100084, Uzbekistan</i></p> <p>²<i>Tashkent State Technical University, Tashkent, 100095, Uzbekistan</i></p> <p>Title of presentation: Influence study of thermostabilizers on the properties of cellulose triacetates</p> <p>Abstract: In the chemical and petrochemical industry, the primary focus for workers in the upcoming years is to develop innovative and secure technologies and equipment that comply with stringent quality standards. This imperative encompasses the production of materials, devices, and other products that meet the highest global benchmarks in technical and economic aspects. Emphasizing the implementation of progressive technologies and advanced production methods is crucial for achieving substantial improvements in labor productivity across all sectors of the national economy, with special attention paid to the chemical industry. This paper work presents the results of a study on increasing the thermal stability of cellulose triacetate by introducing stabilizers into its composition. Regularities of plasticization of cellulose triacetate with low- and high-molecular compounds have been established. As a result, the deterioration of the physical and mechanical properties of polymer materials processed at high temperatures occurs due to thermo-oxidative degradation, which leads to changes in the composition of the main polymer chain and a decrease in molecular weight. The application of stabilizers is proposed to prevent this process at high temperatures.</p>
Paper ID 109	<p>Dilnoza Khamdamova^{1,*}, Vasila Umarova¹, Maxmut Primkulov and Arslon Khusenov¹</p> <p>¹<i>Tashkent Chemical-Technological Institute, 32, Navoiy street, Tashkent, 100011, Uzbekistan</i></p> <p>Title of presentation: Study on the microcrystalline cellulose from medicinal plants</p> <p>Abstract: This study employs nitric acid and alkaline hydrolysis methods to extract celluloses from the stems of various medicinal plants, including amaranth, milk thistle, tribulus, and consolida. Furthermore, the research takes a step further by synthesizing microcrystalline cellulose (MCC) from the cellulose extracted from these medicinal plants, employing deep hydrolysis utilizing a mixture of sulfuric acid and hydrogen peroxide. The focus of the investigation extends to comprehending the structural and dimensional attributes of cellulose fibers sourced from milk thistle. This endeavor is aimed at gaining insights into the suspension characteristics of these fibers. Physicochemical attributes and structural characteristics of both cellulose and MCC are meticulously examined. The methods of analysis encompass optical microscopy, infrared spectroscopy (IR), and X-ray diffraction (XRD). These techniques are employed to unveil a comprehensive understanding of the properties and structures inherent in both cellulose and MCC, derived from the medicinal plant sources. Through this multifaceted approach, the research brings to light a comprehensive array of insights. These range from the extraction and synthesis processes to the structural attributes of cellulose and MCC. Such in-depth exploration forms the cornerstone of advancing the utilization of cellulose-based materials in diverse applications, with implications for fields ranging from medicine to materials science.</p>
Paper ID 110	<p>Nigora Akbarova^{1,*} and Zakirdjan Azamatov²</p> <p>¹<i>Tashkent State Technical University, 2, University street, Tashkent, 100095, Uzbekistan</i></p> <p>²<i>Research Institute of Physics of Semiconductors and Microelectronics, 20, Yangi Olmazor street, Tashkent, 100040, Uzbekistan</i></p> <p>Title of presentation: Deformation measurement by digital holographic interferometry</p> <p>Abstract: Nondestructive testing (NDT) methods and techniques play a vital role in</p>



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	<p>enhancing product quality across various industries. Among these methods, the optical approach stands out, relying on the analysis of how optical radiation interacts with the test object. The key information parameters for optical testing of objects encompass their spectral and integral photometric characteristics. These characteristics are influenced by factors such as the substance's structure, temperature, physical state, microrelief, angle of incident radiation, polarization degree, and wavelength. By leveraging optical methods, defects within materials can be detected without causing damage to the object. These defects encompass voids (discontinuities), delaminations, pores, cracks, inclusions of foreign bodies, internal stresses, alterations in material structure, and variations in physical and chemical properties, as well as deviations from specified geometric shapes. It's important to note that optical methods are limited to detecting internal defects only in products made of materials that are transparent within the optical spectrum's region. By harnessing the power of nondestructive optical testing, industries can ensure the integrity and quality of their products, detect potential flaws, and maintain stringent quality standards without causing any harm to the tested objects. The method with use of transformation of Fourier over sequence of the holograms, which are written down in various time points, is described. Possibility of measurement of deformations of composite material when heating is shown by low-power laser radiation.</p>
<p>Paper ID 111</p>	<p>Malikakhon Razikova[*], Durdona Rasulova¹, Dilobar Mirzayeva¹ and Dilobar Mirkhodjayeva¹ <i>¹Tashkent State Technical University, 2, University street, Tashkent, 100095, Uzbekistan</i></p> <p>Title of presentation: Separation and physico-chemical analysis of sericin protein from silk</p> <p>Abstract: Sericin protein was extracted from silk using a water-based method. The impact of sericin on the aquatic environment and its behavior under various temperature conditions were thoroughly investigated. To assess the total protein content in the solutions derived from silk at different temperatures, the Lowry method was employed. Subsequently, sericin protein was isolated in its pure form. In order to gain deeper insights into the characteristics of sericin, both IR-spectrometric and UV-spectrometric analyses were conducted. These analyses provided valuable information about the molecular structure and properties of the sericin protein. Additionally, the study focused on determining the composition of amino acids present in the sericin protein. For this purpose, high-performance liquid chromatography (HPLC) was employed, allowing for precise quantification and identification of individual amino acids within the protein. Through these comprehensive analytical techniques and experiments, researchers aimed to unravel the properties, behavior, and potential applications of sericin protein, contributing to a better understanding of its role and impact in various environmental and temperature conditions.</p>
<p>Paper ID 112</p>	<p>Gappar Rakhmonberdiev^{1*}, Komila Ibragimova¹, Jasur Tilakov¹ and Arslon Khusenov¹ <i>¹Tashkent Chemical Technological Institute, Tashkent, 100110, Uzbekistan</i></p> <p>Title of presentation: Isolation and comparative study of various polymorphic forms of inulin</p> <p>Abstract: Various forms of inulin, differing in structure and solubility in water, have been isolated and identified. A comparative reaction of periodate oxidation of α-, β- and γ-inulin was carried out. It was determined that the highest oxidation level and the rate of formation of aldehyde groups among the polymorphic forms of the polysaccharide are characteristic of α-inulin. Different forms of inulin, displaying variations in structure and solubility in water, have been successfully isolated and identified. To gain insights into their chemical properties, a comparative study involving periodate oxidation was conducted on α-, β-, and γ-inulin. The results of the study revealed that α-inulin exhibited the highest level of oxidation and the fastest rate of aldehyde group formation among the</p>



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	<p>various polymorphic forms of the polysaccharide. This finding suggests that α-inulin possesses unique chemical reactivity and characteristics compared to the other forms studied. The investigation into the periodate oxidation of inulin polymorphic forms provides valuable information on their respective chemical profiles, aiding in the understanding of their diverse behaviors and potential applications in various fields. This research contributes to the broader knowledge of inulin's properties and may pave the way for its targeted use in specific applications based on its distinctive characteristics.</p>
<p>Paper ID 113</p>	<p>Abduhoshim Karshiev^{1,*}, Otabek Razzakov¹, Bahodir Sakhatov² and Nodir Sultanov² <i>¹Tashkent State Technical University, Tashkent, 100095, Uzbekistan</i> <i>²Karshi Institute of Engineering and Economics, Karshi, 220010, Uzbekistan</i></p> <p>Title of presentation: Effectiveness of compaction of the initial well grid in the late stage of oil and gas field development Abstract: The Kruk oil and gas field development is characterized by its geological structure and various technological indicators. A comprehensive evaluation of the field's properties has allowed for the determination of recoverable oil reserves using water-based oil displacement techniques. Two scenarios were considered for field development: one with an initial well mesh and another with a densified well grid. The results demonstrated the high efficiency of well grid densification during the later stages of field development. This optimization strategy led to a notable increase in the rate of oil withdrawal and enhanced the recovery of geological reserves. The densification of the well grid improved the overall efficiency of oil production and contributed to maximizing the extraction of available oil reserves. The findings highlight the importance of employing advanced technological strategies to enhance oil and gas field development. By carefully considering the geological structure and implementing well grid densification when appropriate, it is possible to optimize oil recovery, increase productivity, and effectively utilize the available geological reserves in the Kruk field.</p>
<p>Paper ID 114</p>	<p>Abdulaziz Murodov^{1,*}, Saidaziz Xabibullaev¹, Nazirila Maxmudov, Temurbek Daminov and Abduhoshim Qarshiyev¹ <i>¹Tashkent State Technical University, Tashkent, 100095, Uzbekistan</i></p> <p>Title of presentation: Creation of technology for desalination of saturated diethylene glycol substance in East Berdak gas complex preparation plant Abstract: This article delves into a range of intricate challenges stemming from the salting issues associated with saturated diethylene glycol substance within the East Berdak complex gas preparation unit of the Ustyurt gas production department at JSC "Uzbekneftgaz." The scholarly discourse encompasses an in-depth exploration of the rigorous scientific inquiry undertaken by a dedicated research team, inclusive of comprehensive laboratory analyses, with a focal emphasis on devising effective solutions to mitigate the challenges posed by diethylene glycol salting. A significant portion of the article is dedicated to elucidating the existing desalination techniques employed to counteract the salting phenomena. A thorough exposition is offered on the novel approach developed as a countermeasure, with a juxtaposition to the conventional methods currently in use. Noteworthy attention is accorded to elucidating the intrinsic distinctions between the newly crafted methodology and the pre-existing solutions, underscoring the innovation inherent in the proposed approach. In essence, this article delves into the complexities and intricacies surrounding diethylene glycol salting issues within the East Berdak complex gas preparation unit. By synthesizing meticulous scientific research, laboratory analyses, and an innovative problem-solving approach, it offers a comprehensive understanding of the challenges posed by diethylene glycol salting and endeavors to pave the way for an efficient, contextually relevant, and effective solution.</p>
<p>Paper ID 115</p>	<p>Rustam Sulaymonov^{1,*} and Amirjon Yuldashev² <i>¹"Paxtasanoat Ilmiy Markazi" JSC, 8, Shota Rustaveli street, Tashkent, 100070,</i></p>



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	<p style="text-align: center;"><i>Uzbekistan</i></p> <p style="text-align: center;">²<i>Ministry of Ecology, Environmental Protection and Climate Change of the Republic of Uzbekistan, 7A, Bunyodkor Avenue, Tashkent, 100043, Uzbekistan</i></p> <p>Title of presentation: Study on vibration of the saw cylinder and its critical speed Abstract: The force impact of the 130 saw cylinder of gins 4DP-130 and 5DP-130 was studied. It was determined that due to the significant weight of the saw cylinder, when it is rotated at 730 rpm, its radial runout increases, leading to shaft deflection and wear of its neck for bearing fit, rapid wear of the working part of the grates in the grate and blunting of saw teeth when saw teeth touching the grate, which led to their rapid wear. Increased wear of the saw blade and grate, increases the consumption of imported saws and grates, reducing their service life. In addition, due to the increase in the radial runout of the saw cylinder, it was impossible to set the necessary gaps of 1.5-2.0 mm along the entire length between the saw cylinder and the air chamber nozzle, which did not ensure complete removal of the fiber from the saw teeth and its transportation to the fiber discharge channel. This led to a decrease in the productivity of the gin and the daily production of fiber. When studying the saw cylinder, it was revealed that with a decrease in the mass of the shaft, the deflection and vibration of it should decrease, increasing stability. In this regard, a hollow shaft for saw gin is proposed. Theoretically, the critical speed of a hollow shaft for 130 saw gins is considered. It is determined that for the stability of the saw cylinder, its critical speed must be.</p>
<p>Paper ID 116</p>	<p style="text-align: center;">Bobir Janibekov^{1*}, Mirali Turapov², Nargiza Tulyaganova¹, Otabek Zokirov¹ and Dilfuza Abdurasulov¹</p> <p style="text-align: center;">¹<i>Tashkent State Technical University, Tashkent, 100095, Uzbekistan</i> ²<i>State Institution "Institute of Mineral Resources", Tashkent, 100060, Uzbekistan</i></p> <p>Title of presentation: Study on Interplay of tension, deformation, and ore formation Abstract: This study undertakes an in-depth exploration of the intricate relationship between gold mineralization in the Tamdytau area within Central Kyzylkum and the underlying tectonic tension and deformation processes. Additionally, the research delves into the interconnection between occurrences of gold ore deposits in Western Uzbekistan and the prevailing regional fault systems. Through thorough investigation, the study unveils compelling insights. The findings demonstrate that a substantial portion, approximately 34%, of the gold ore deposits in the region are geographically situated within zones closely aligned with regional ore-controlling faults that exhibit a predominant northwestern strike. This correlation underscores the significance of these structural features in influencing the distribution of gold mineralization. Furthermore, a detailed analysis of gold ore distribution within the Tamdytau region discloses a noteworthy trend: over 80% of the ore occurrences are strategically located within areas characterized by relatively low shear stress values and stress neutralization conditions. This observation highlights the crucial connection between the geological stress environment and the formation of gold-rich mineralization. These revelations underscore the profound role played by tectonic processes, particularly tension and deformation, in shaping the presence of gold mineralization within the study area. The intricate interplay between geological factors and mineralization patterns has far-reaching implications for the understanding of gold deposition mechanisms and the potential for uncovering valuable resources within this region.</p>
<p>Paper ID 117</p>	<p style="text-align: center;">B Ametova *, G Boboyev1 and N Djumaniyazova2</p> <p style="text-align: center;">¹<i>Tashkent State Technical University, 2, University Street, Tashkent, 100095, Uzbekistan</i> ²<i>Karakalpak State University named after Berdak, 1, Abdirova street, Nukus, 230112, Karakalpakstan, Uzbekistan</i></p> <p>Title of presentation: Implementation of an integrated management system in calcium soda production</p>



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	<p>Abstract: By amalgamating these essential pillars, the integrated management system endeavors to revolutionize the calcium soda production paradigm, ensuring harmonious coexistence between economic progress and ecological responsibility. This manuscript will explore the key components, challenges, and potential benefits of integrating such a system while shedding light on the transformative impact it can have on the industry as a whole. As we embark on this journey towards a more sustainable and efficient future, the implementation of an integrated management system emerges as a cornerstone in shaping the trajectory of calcium soda production and contributing to a greener and safer world. This article highlights the significance of integrating standards in the soda ash production process, focusing on improving product quality, ensuring competitiveness, and meeting high demand in domestic and foreign markets. It also explores the development and implementation of a quality management system (QMS) based on the ISO 9001:2015 standard. Additionally, the advantages and disadvantages of obtaining SMT certification for compliance with international ISO standards are discussed.</p>
<p>Paper ID 118</p>	<p>Sunnatilla Aliev¹, Elmurod Egamberdiev^{2*}, Sadriddin Turabdjano², Shokhzodbek Rashidov² and Asror Juraev¹ ¹Tashkent Chemical-Technological Institute, Tashkent, 100020, Uzbekistan ²Tashkent State Technical University, Tashkent, 100095, Uzbekistan</p> <p>Title of presentation: Role of fillers in the production of wood-polymer composites Abstract: During the examination and analysis of the physical and mechanical properties of wood polymer composites (WPC), researchers have consistently observed alterations in the strength and durability of the material. These changes have been found to correlate with variations in the wood content of the composite as well as its sensitivity to different climatic conditions. This dynamic relationship between composition, environmental factors, and material performance is a critical aspect of scientific research in this field. Moreover, the manufacturing processes and technologies employed in the production of WPC materials are intricately linked to these factors. Researchers carefully tailor production methods and select appropriate fillers based on the specific characteristics mentioned above. The inclusion of wood fillers in the composite composition is an important area of investigation, as it significantly impacts the resulting material properties. This systematic exploration of how different wood fillers influence the properties of the composite material is an integral part of the scientific research conducted in this domain. By comprehensively understanding these relationships, researchers can optimize the composition and production methods of WPC materials to enhance their strength, durability, and overall performance in varying climatic conditions.</p>
<p>Paper ID 119</p>	<p>Latofat Mahkamova^{1*}, Oytura Maksumova², Shukhrat Mutalov³ and Ulugbek Urinov¹ ¹Tashkent State Technical University, Tashkent, 100095, Uzbekistan ²Tashkent Institute of Chemical Technology, Tashkent, 100020 Uzbekistan ³Shakhrisabz branch of Tashkent Institute of Chemical Technology, Shakhrisabz, 181301, Uzbekistan</p> <p>Title of presentation: Copolymerization of acrylonitrile with a nitrogen-containing ester Abstract: In the paper the results of synthesis of binary copolymers with different contents of monomer units by radical copolymerization of 1-chloro-3-piperidino-2-propylacrylate with acrylonitrile in organic solvent medium at 30-60°C in the presence of radical initiator using free-radical polymerization technique not up to high degrees of transformation by gravimetric method are given. Dinitrilazobisobisobutyric acid was used as the radical initiator. Water and dimethylformamide were used as solvent. Under these conditions in water the process proceeds heterogeneously, and in dimethylformamide homogeneously and with high speed. The synthesis rate of copolymers of 1-chloro-3-piperidino-2-propylacrylate with acrylonitrile in the studied solvents increases with increasing temperature. Experimental studies have shown that copolymerization does not proceed in</p>



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	<p>the absence of the initiator and this indicates a radical nature of the reaction. The structure of synthesized compounds was confirmed by IR, NMR spectral analyses. The participation of multiple bonds of both monomers during copolymerization was determined. The composition of copolymers has been determined which indicates that the copolymer formed at early stages is enriched with 1-chloro-3-piperidino-2-propylacrylate units. The values of relative activities of monomers were calculated by Feinemann-Ross method. The found values of copolymerization constants $7:1=0.28$, $7:2=0.62$ and the value of product of copolymerization constants less than unity that both types of formed polymer radicals react much faster with foreign monomer than with their own.</p>
<p>Paper ID 120</p>	<p>Abduhamid Makhsomov¹, Yusubjon Holboyev², Nailya Valeeva³, Boburbek Ismailov¹ and Ibragim Askarov⁴ ¹Tashkent Institute of Chemical Technology, Tashkent, 100110, Uzbekistan ²Andijan State Medical Institute, Andijan, 240030, Uzbekistan ³Tashkent State Technical University, Tashkent, 100095, Uzbekistan ⁴Andijan State University, Andijan, 240016, Uzbekistan</p> <p>Title of presentation: Synthesis of 1-nicotinoylo-3-(meta-nitrophenyl)- thiourea derivatives with anti-inflammatory activity Abstract: Thiourea derivatives are used in many industries: medicine, agriculture, engineering, rubber industry, organic synthesis. On their basis, various preparations for the needs of the national economy were obtained. The latest studies of thiourea derivatives, carried out at the present time, are prompted not only by theoretical, but also by practical needs. From this point of view, thiourea derivatives are of undoubted interest in substances with different biological activities. They are widely used in agriculture and have been used as herbicides, fungicides, insecticides, bactericides, dyes, growth stimulants, etc. Of particular interest is the use of these compounds in medicine as antitumor, antiviral, anti-inflammatory, antiarrhythmic, vasodilator and other drugs. Today, most of the derivatives of thiourea, urea, the search for new highly effective low-toxic biologically active compounds based on them is constantly ongoing, as can be judged by the large number of publications in the world scientific and patent literature. This article proposes a simple and convenient method for the preparation of 1-nicotinoyl-3-(m-nitrophenyl)-thioureas based on heterocyclic thioisocyanate with nitroaniline in a dimethylformamide medium, in rather high yields. And also studied the anti-inflammatory activity of the synthesized drug.</p>
<p>Paper ID 121</p>	<p>Gulnora Ikhtiyarova¹, Nailya Valeeva^{1*}, Munira Aripdzhanova¹, Mukhabbat Ayupova¹ and Gulnoza Usmanova¹ ¹Tashkent State Technical University, Tashkent, 100095, Uzbekistan</p> <p>Title of presentation: Development of a sorbent based on chitosan and vermiculite for purification of textile wastewater Abstract: The study detailed in the article has led to the creation of a novel botanical adsorbent. This adsorbent is formulated using a combination of chitosan, which is sourced from <i>Apis mellifera</i> (honeybees), and vermiculite. The primary application of this adsorbent is targeted towards the treatment of wastewater generated by the textile industry. The article also presents a comparative analysis of two distinct procedures: one involving organovermiculite and the other involving vermiculite that has been modified using hydrochloric acid. The objective of this research is to explore the potential of this newly developed adsorbent as an effective solution for treating wastewater generated by the textile sector. The inclusion of chitosan derived from <i>Apis mellifera</i> enhances the adsorption capabilities of the material. Additionally, vermiculite, a naturally occurring mineral with adsorption properties, is incorporated to further augment the adsorbent's efficiency. The article systematically compares two methodologies for preparing the adsorbent: one involves the utilization of organovermiculite, while the other involves the modification of vermiculite through treatment with hydrochloric acid. This comparison delves into the nuances of each approach, assessing their respective effectiveness and</p>



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	<p>potential advantages for textile wastewater treatment. This study underscores the innovative strides being taken in the field of wastewater treatment, utilizing unique combinations of natural materials to address environmental challenges posed by industries like textiles. The development of this botanical adsorbent demonstrates a promising approach to tackling wastewater issues and promoting sustainable practices within the textile sector.</p>
<p>Paper ID 122</p>	<p>Azimjon Parpiev^{1*}, Nozimjon Akhmatov¹ and Mamarasul Akhmatov¹ ¹<i>Tashkent Institute of Textile and Light Industry, 5, Shokhjakhon street, Tashkent, 100100, Uzbekistan</i></p> <p>Title of presentation: Experimental analysis of cotton distribution in a drying drum Abstract: The moisture efficiency of foreign cotton drying equipment is limited, with only 3-4% improvement, and the cleaning efficiency for small impurities is not substantially higher, reaching only 10-15%. To address these challenges, researchers have explored alternative methods for cotton drying. One such approach involves the use of ceramics as a basis for effective cotton drying, which not only saves electric energy but also ensures high-quality drying. However, this method does not fully address the issue of cleaning the cotton from small impurities during the drying process. The aim is to improve the overall cotton processing efficiency in ginning enterprises, enhancing the quality of the final product and optimizing energy consumption during the drying phase. In this article, the results of experiments on cotton distribution and drying in the actual drying drum are analyzed, the same experiments are carried out on the basis of experiments in a special laboratory for the study of the distribution of cotton in the drying drum, the maximum use of the drop zone of the drum by improving the internal devices of the drum, ensuring that there are no empty zones of cotton in it. Also, the scientific results of placing drum shovels in one row at an angle of $\varphi=5-10-150$ with respect to the radius of the drum are presented.</p>
<p>Paper ID 125</p>	<p>S. M. Anas^{1*}, Rayeh Nasr Al-Dala'ien^{2,3}, Mehtab Alam⁴, Manal Hadi Ghaffoori Kanaan⁵, Shahbaz Akram¹, and Mohd Haris¹ ¹<i>Department of Civil Engineering, Jamia Millia Islamia, 110025 New Delhi, India</i> ²<i>College of Graduate Studies, Universiti Tenaga Nasional, Jalan Ikram -UNITEN, 43000 Kajang, Selangor, Malaysia</i> ³<i>Civil Engineering Department, College of Engineering, Al-Balqa Applied University (BAU), 19117 Salt, Jordan</i> ⁴<i>Department of Civil Engineering, Netaji Subhas University of Technology, 110073 New Delhi, India</i> ⁵<i>Technical Institute of Suwaria, Middle Technical University, Baghdad, Iraq</i></p> <p>Title of presentation: Numerical Analysis of Compound Walls of Brick Masonry, Strengthened with C-FRP Laminate under Explosive Detonations - Afghanistan Scenario Abstract: Afghanistan, a nation plagued by wars, terrorism, and counter-terrorism, has borne the brunt of these conflicts. The common people of Afghanistan are weary of the continuous cycle of attacks and counter-attacks by warlords. Even places of worship and those who gather there are not spared from these acts of violence. For years, explosive blasts have targeted the compound walls surrounding these religious structures. In this research, we investigate the impact of such blasts on free-standing URM walls commonly used in Afghanistan. Using ABAQUS/Explicit code, we conduct nonlinear analysis to examine the blast performance of these walls. Additionally, we retrofit the walls with a high-strength C-FRP laminate. To optimize computational time, we employ a macro strategy. The results show that the strengthened walls exhibit comparable blast performance. Importantly, when the laminate is applied to both faces, there is no longer a need for increased wall thickness in the masonry construction.</p>
<p>Paper ID 126</p>	<p>S. M. Anas^{1*}, Mehtab Alam², Manal Hadi Ghaffoori Kanaan³, Oybek Matchonov⁴, and Shavkat Muzaffarov⁴ ¹<i>Department of Civil Engineering, Jamia Millia Islamia (A Central University), 110025</i></p>



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	<p style="text-align: center;"><i>New Delhi, India</i></p> <p>²<i>Department of Civil Engineering, Netaji Subhas University of Technology, 110073 New Delhi, India</i></p> <p>³<i>Technical Institute of Suwaria, Middle Technical University, Baghdad, Iraq</i></p> <p>⁴<i>“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Numerical Modeling of Steel Column for its Response to Large Explosive Loading using CEL-FEM Approach</p> <p>Abstract: In the past few decades, there has been a growing public concern regarding the protection of infrastructures against extreme events, specifically explosive detonations. Traditional structural design has predominantly focused on accounting for gravity, seismic, and wind loads as the primary factors to consider. The rise in subversive attacks has led to a heightened focus on blast load and its impact on infrastructures. Unconfined, surface explosions are a common type of terrorist attack that occurs outside of buildings. This has necessitated a greater understanding of the effects these explosions can have on structures. A comprehensive numerical model was created in Abaqus for a steel column measuring 2.41m in length and having a W150x24 cross-section. The model was then subjected to a powerful explosion equivalent to 100kg-TNT, with a standoff distance of 10.30m. To achieve this, an Eulerian-Lagrangian approach coupled with the Finite-element method (CEL-FEM) was employed. A thorough investigation was conducted by modifying the explosion's altitude (i.e., blast height), and the subsequent dynamic responses were analyzed and discussed. The outcomes of this investigation significantly enhance our comprehension of how steel columns respond when subjected to intense explosive forces.</p>
<p>Paper ID 127</p>	<p style="text-align: center;">Ural Khoshimov^{1*}, Sirojiddin Khushiev² and Shamsiddin Karakulov³</p> <p>¹<i>Tashkent State Technical University Named after Islam Karimov, University str. 2, Tashkent, Uzbekistan</i></p> <p>²<i>“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on energy consumption regulation of devices in industry enterprises</p> <p>Abstract: As a result of the implementation of certain standards for the energy consumption of electricity consumers used in industrial enterprises, the work on prevention of excess energy waste in the enterprise is gaining urgent importance. Grouping devices with the same performance into groups, monitoring energy consumption and early detection of deviations from established limit parameters, has a positive effect on energy and resource saving in the enterprise.</p>

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12 October 2023 at 10:00 a.m. (Tashkent, Uzbekistan, GMT+5)

13 October 2023 at 10:00 a.m. (Tashkent, Uzbekistan, GMT+5)

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