



ICECAE 2024

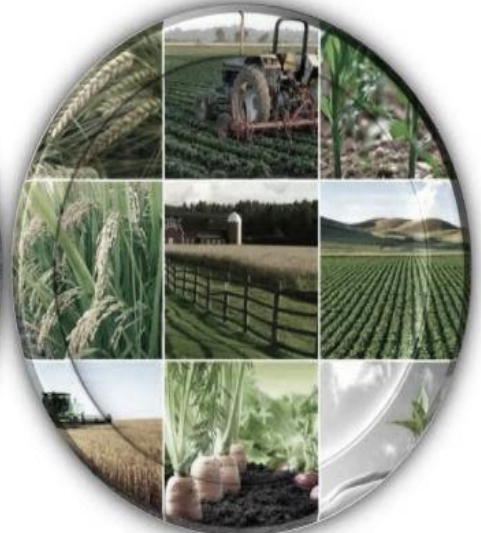
PROGRAM

5th 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



13-14 May, 2024

Registan Plaza Hotel

Samarkand, Uzbekistan



ICECAE 2024 PROGRAM

5th International Conference on Energetics, Civil and Agricultural Engineering 2024

DAY 1: May 13, 2024

9:00 Onsite registration	
9:30 Welcoming Tea/Coffee	
OPENING CEREMONY [Hybrid: online and onsite] 10.00am – 11.40pm (Uzbekistan time zone) (Moderator: Mr. Islom Karimov) (Conference hall – Registan Plaza Hotel; address: 53, Shohruh Street, Samarkand 140100, Uzbekistan)	
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>Visiting Scholar of the China Agricultural University (China)</i>
ICECAE Promotion Video	
10.10am-10.20am	Prof. Dr. Bakhadir Mirzaev <i>Rector of the TIAME National Research University (Uzbekistan)</i>
10.20am-10.30am	Prof. Dr. Alisher Usmankulov <i>Rector of the Jizzakh Polytechnic Institute (Uzbekistan)</i>
10.30am-10.40am	Prof. Dr. Botir Usmonov <i>Rector of the Tashkent Institute of Chemical Technology (Uzbekistan)</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. Renjie Dong <i>Director General</i> <i>National Center for International Research of Bio-Energy Science and Technology</i> <i>Ministry of Science and Technology(iBEST) (China)</i>
11.00am-11.10am	Prof. Dr. İsmail Rakıp KARAŞ <i>Vice rector of the Karabuk University (Türkiye)</i>
11.10am-11.20am	Prof. Dr. Irina Kiturka <i>Rector of the Yanka Kupala State University of Grodno (Belarus)</i>
11.20am-11.30am	Professor dr hab. inż. Jerzy Zając <i>Vice-rector of the Cracow University of Technology (Poland)</i>



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11.30am-11.40am	END OF OPENING CEREMONY Group Photo in Conference hall and in front of Registan Plaza Hotel's entrance
Coffee Break: 11.40am-11.55am	

PLENARY SESSION - KEYNOTE SPEAKERS

[hybrid]

Venue: CONFERENCE HALL, REGISTAN PLAZA HOTEL

Chair/Moderator: Prof. Dr. Yuguang Zhou, Prof. Dr. Yu Qiang, Prof. Dr. hab. inz. arch. Justyna Kobylarczyk, Prof. Ziyodulla Yusupov, Assoc. Prof. Dilshod Kodirov

12:00pm – 14:00pm

Keynote Speaker I: 12.00pm-12.15pm (mode of presentation: onsite)	
	Prof. Dr. Yuguang Zhou <i>College of Engineering, China Agricultural University, Beijing, China</i>
Speech title	Biomass fuel for clean space heating in rural households and future transition: Chinese experiences
Keynote Speaker II: 12.15pm-12.30pm (mode of presentation: onsite)	
	Prof. Dr. Yu Qiang <i>College of Information and Electrical Engineering, China Agricultural University, Beijing, China</i>
Speech title	Biomass High-Value Conversion Technology Driven by Concentrated Solar Power
Keynote Speaker III: 12.30pm – 12.45pm (mode of presentation: online)	
	Assoc. Prof. Dr. Alina Rahayu Mohamed <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	Biomass torrefaction process
Keynote Speaker IV: 12.45pm-13.00pm (mode of presentation: online)	
	Assoc. Prof. Dr. Ku Syahidah Ku Ismail <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	Biomass-based Energy Powered by Microbial Cell Factories
Keynote Speaker V: 13.00pm-13.15pm (mode of presentation: online)	
	Assoc. Prof. Dr. Farizul Hafiz Kasim <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	From Petri Dish to the Farm: Translating Lab Findings into Tangible Benefits
Keynote Speaker VI: 13.15pm – 13.30pm (mode of presentation: online)	
	Assoc. Prof. Ir Dr. Khairuddin Md Isa <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	Hydrogen donor solvents in liquefaction of biomass: A potential to explore



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Keynote Speaker VII: 13.30pm – 13.40pm (mode of presentation: online)	
	Dr. Maha Mohammad AL-Rajabi <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	Cellulose Extraction from Oil Palm Empty Fruit Bunches for Sustainable Agricultural Waste Utilization
Keynote Speaker VIII: 13.40pm – 13.50pm (mode of presentation: online)	
	Dr. Norshah Aizat bin Shuaib <i>Universiti Malaysia Perlis (UniMAP), Malaysia</i>
Speech title	Recycling and reuse of complex materials: Insights and Challenges
Keynote Speaker IX: 13.50pm – 14.00pm (mode of presentation: onsite)	
	Dr. Aigerim Tolegenova <i>Satbayev University, Kazakhstan</i>
Speech title	Paper ID 31: “Vegetable raw materials for the production of fibrous semi-finished products”
Closing Speech: Prof. Dr. Obid TURSUNOV	
Lunch	
END of 1st Day	



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DAY 2: May 14, 2024

[Fully online]

Time: 10⁰⁰ a.m. – 20⁰⁰ p.m.

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

PRESENTERS (ORAL)

S. M. Anas, Rayeh Nasr Al-Dala'ien, Shahbaz Akram, and Mehtab Alam

¹*Department of Civil Engineering, Jamia Millia Islamia (A Central University), 110025 New Delhi, India*

²*College of Graduate Studies, Universiti Tenaga Nasional, Jalan Ikram -UNITEN, 43000 Kajang, Selangor, Malaysia*

³*Civil Engineering Department, College of Engineering, Al-Balqa Applied University (BAU), 19117 Salt, Jordan*

⁴*Department of Civil Engineering, Netaji Subhas University of Technology, 110073 New Delhi, India*

Title of presentation: Accidental Explosions, Beirut ANFO Blast, Ghana Truck Explosion, Global Terrorism Index 2021-22, and Blast Mitigation: A Review

Abstract: Explosions are continually occurring without ceasing in many parts of the world endangering human lives and seriously affecting the health of infrastructures and facilities. Industry accidental mishaps that occurred recently, like those in Ghana (2022; 17 deaths), Russia (2021; 18 deaths), Beirut (2020; 220 deaths; \$8bn economic loss), and Tientsin (2015, 173 deaths; \$6.86bn economic loss), indicate the severity of the industrial devastation one could gauge that explosions may cause. Very recently, another industrial blast occurred at a rocket and explosive factory in the capital city of Turkey leading to the collapse of a nearby building and causing 5 deaths and serious injuries to over 50 civilians, is an eye-opener. This article offers a condensed examination of subjects related to explosions, including accidental detonations, the Beirut ANFO explosion, and the Ghana truck explosion. The report findings from the global terrorism index 2021-22 are analyzed and discussed. Additionally, strategies for both active and passive measures to mitigate the impact of explosions on infrastructure and facilities are emphasized. To ensure safety and durability against damage, the structure needs to possess resilience in the face of explosions. Therefore, it is crucial to analyze how the structure responds to extreme loading in order to enhance the design philosophy. Currently, there is still a lack of understanding regarding the mechanism of blast and how it affects masonry structures. Consequently, further research is required to delve deeper into this subject.

Paper ID 1

10⁰⁰ – 10¹⁵

(5 min discussion)

S. M. Anas^{1*}, Rafat Tahzeeb¹, Rayeh Nasr Al-Dala'ien^{2, 3}, Mehtab Alam⁴, and Mohd Shariq¹

¹*Department of Civil Engineering, Jamia Millia Islamia (A Central University), 110025 New Delhi, India*

²*College of Graduate Studies, Universiti Tenaga Nasional, Jalan Ikram -UNITEN, 43000 Kajang, Selangor, Malaysia*

³*Civil Engineering Department, College of Engineering, Al-Balqa Applied University (BAU), 19117 Salt, Jordan*

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Paper ID 2

10¹⁵ – 10³⁰

(5 min discussion)



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	<p>Title of presentation: Widely Employed Constitutive Material Models in Abaqus FEA Software Suite for Simulations of Structures and Their Materials: A Brief Review</p> <p>Abstract: The structural response of masonry/concrete structures depends upon the load-carrying mechanism and subsequently deformations produced by loads carried. In masonry/concrete structures, identification of the stress/strain including their non-linear relationship under imposing stress conditions and strain hardening/softening makes the structural response more complicated. Elastic damage models or elastic-plastic constitutive laws are inadequate to simulate masonry/concrete response under high strain-rate loadings. Further, irreversible or plastic strain cannot be realized using the elastic damage model. Several constitutive damage models are available in the literature. In this article, a concise explanation of the functioning of different material models in the Abaqus software package has been provided. These models include concrete damage plasticity for concrete and masonry, traction separation constitutive laws for brick-mortar interface, Hashin's criteria for CFRP, Johnson-Cook plasticity for steel, and crushable foam plasticity hardening for metallic foams. Researchers frequently utilize these models for numerical simulations and modeling of infrastructural elements and their respective materials when subjected to various structural loads. Besides, this paper presents a discourse on problem-solving methods and a comparison between explicit and implicit analysis. The research provides valuable input to researchers and practitioners in the field of structural engineering for an in-depth understanding of the functioning of Abaqus' pre-existing material models.</p>
<p>Paper ID 3 10³⁰ – 10⁴⁵ (5 min discussion)</p>	<p>Shahbaz Akram^{1*}, Mohammad Umair¹, Mehtab Alam², and S. M. Anas¹ ¹<i>Department of Civil Engineering, Jamia Millia Islamia (A Central University), 110025 New Delhi, India</i> ²<i>Department of Civil Engineering, Netaji Subhas University of Technology, 110073 New Delhi, India</i></p> <p>Title of presentation: Dynamic Response of Bowstring-arch Highway Bridge Subjected to Above and Below Deck Close-range Large Explosion</p> <p>Abstract: Explosion incidents that are unforeseen can lead to the occurrence of extreme loads, resulting in the generation of remarkably high stress levels within the materials comprising various structures. This can cause significant damage to crucial elements and potentially trigger a disproportionate collapse or even initiate a progressive collapse. Bridge structures, which serve as vital lifelines for cosmopolitan areas and strategic bordering environments, hold immense economic and political significance. The failure of these structures can have severe consequences with far-reaching implications. The use of a steel bowstring-arch bridge is a practical choice for congested crossings and remote border areas where spans are short. However, the current design codes for bridges do not take into account high-strain loadings such as blasts or impacts, nor do they provide recommendations for preventing these occurrences during construction or throughout the lifespan of the bridge. Explosive incidents cause greater damage in terms of material damage and loss compared to earthquakes. There has been limited investigation into how steel-concrete bridges respond to explosions in the past. This study examines the numerical analysis of a bowstring-arch highway girder bridge made of steel and concrete. The bridge is supported at both ends and is subjected to close-range concentric explosions above and below the deck at the center and end of the bridge. To model the bridge and predict its behavior, the authors utilized the Abaqus software suite. For the analysis, a significant quantity of TNT weighing 1.63-tonne has been positioned at the midpoint of the bridge and is defined using the Eulerian-Lagrangian scheme. The transmission of the explosive shockwaves within the bridge material under the given loading circumstances is illustrated and elucidated. The behavior of the bridge is examined in relation to plastic deformations, primary stress, displacement, size of the crater, and overall energy of damage.</p>



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<p>Paper ID 4 10⁴⁵ – 11⁰⁰ (5 min discussion)</p>	<p style="text-align: center;">S. M. Anas^{1*}, Mehtab Alam², Nurmuhamat Asatov³, and Uktam Djuraev³</p> <p style="text-align: center;">¹<i>Department of Civil Engineering, Jamia Millia Islamia (A Central University), 110025 New Delhi, India</i></p> <p style="text-align: center;">²<i>Department of Civil Engineering, Netaji Subhasi University of Technology, 110073 New Delhi, India</i></p> <p style="text-align: center;">³<i>Jizzakh Polytechnic Institute, Jizzakh 130100, Uzbekistan</i></p> <p>Title of presentation: Effect of Obliquely Directed Brick TNT Explosive on Slab Response under Contact Explosion</p> <p>Abstract: To design defense infrastructures and facilities, available prominent resources namely UFC 3-340-02, TM 5-1300, ASCE/SEI 59-11 and IS 4991, primarily consider test results from spherical explosives detonations whereas most of the explosives used in warfare and industrial/conventional operations have cylindrical/brick geometric form. Available research works in the literature considering various aspect ratios of cylinder TNT with its longitudinal axis perpendicular to the slab and of brick TNT having its length parallel to the supports and with its length and breadth in contact with the one-way slab, demonstrate that out of the three geometric forms (cylinder, sphere, and brick) of the explosive of the same mass; cylindrical explosive generates maximum pressure and the brick explosive produces the minimum. The authors discern that the obliqueness of the brick/cylindrical explosive with reference to the boundary condition of the slab influences the energy distribution and corresponding slab damage. In this paper, the effect of obliquely directed brick TNT explosive on slab response under contact explosion is examined in Abaqus software with a focus on comparing the slab damage and other responses with varying obliqueness of the explosive from 0° to 90° with increments of 22-1/2 degree. The numerical findings of the brick explosive having its length aligned with the slab supports demonstrate a strong correlation with the experimental results. The findings indicate that the maximum reflected pressure varies with the obliqueness of the brick explosive and consequently affects the slab damage including perforation size and geometry.</p>
<p>Paper ID 15 11⁰⁰ – 11¹⁵ (5 min discussion)</p>	<p style="text-align: center;">Victor Andre Ariza Flores^{1*}, and Rachel Salvador²</p> <p style="text-align: center;">¹<i>Universidad Tecnológica del Perú, Arequipa, Perú</i></p> <p style="text-align: center;">²<i>School of Civil Engineering, Universidad Nacional Mayor de San Marcos, Peru</i></p> <p>Title of presentation: Adaptive Risk Management in Road Construction: Oyon-Ambo Highway Insights, El Niño 2019 Case Study</p> <p>Abstract: This research provides an in-depth analysis of the challenges faced during the construction of the Oyon-Ambo highway in Peru, particularly during the extreme rainfall events associated with the 2019 El Niño phenomenon. Situated in the high Andean area of the Pasco region, this rigid pavement road project encountered significant disruptions due to the extraordinary weather conditions. The adjacent Chaupihuaranga River experienced increased flow rates, causing extensive damage to the road and necessitating substantial modifications to the engineering plans. Focusing on 14 critical sectors identified in the project's technical file as prone to instability, the study details the accelerated degradation and eventual destruction of these sectors due to the intense rainfall. Emphasizing the importance of adaptive risk management in road construction, especially in regions susceptible to natural phenomena like El Niño, the paper underscores the need for responsive reengineering approaches based on specific damage types. It also highlights the critical role of continuous monitoring and evaluation in adapting to environmental changes. The insights from the Oyon-Ambo highway case offer valuable lessons for future road construction projects, underscoring the importance of proactive and adaptive risk management strategies to minimize the impacts of extraordinary natural events.</p>



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<p>Paper ID 16 11¹⁵ – 11³⁰ (5 min discussion)</p>	<p style="text-align: center;">Victor Andre Ariza Flores^{1*}, Euler Portocarrero² ¹<i>Universidad Tecnológica del Perú, Arequipa, Perú</i> ²<i>Universidad Nacional Mayor de San Marcos, Lima, Perú</i></p> <p>Title of presentation: Integrating Resilience in Construction Risk Management: A Case Study on Peruvian Road Infrastructure</p> <p>Abstract: This research work describes the process of applying resilient risk management on a Peruvian road, as well as the results obtained in the application of this methodology in terms of cost parameters and the perception of project members through surveys. The sample corresponds to the road infrastructure project called "Improvement of the Oyón - Ambo National Road, Section II" located in the high Andean zone of the Pasco region in Peru from 3300 m above sea level to 4800 m above sea level. The research covered a period of 13 months, from June 2020 to June 2021, identifying up to 61 types of frequent risks. The presence of high rainfall was the risk with the greatest impact during the execution of the work; but identifying it, analysing it and planning the anticipated response through a resilient approach allowed corrective actions to be taken that led to recovering the maximum delay in the execution.</p>
<p>Paper ID 17 11³⁰ – 11⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">Euler Portocarrero^{1*}, Rocio Huaman¹, and Victor Andre Ariza Flores² ¹<i>Universidad Nacional Mayor de San Marcos, Lima, Perú</i> ²<i>Universidad Tecnológica del Perú, Arequipa, Perú</i></p> <p>Title of presentation: Comparative evaluation of UAV photogrammetry and mobile laser scanner for flexible pavement failure detection in developing countries</p> <p>Abstract: Flexible pavements constitute a critical infrastructure that, throughout its life cycle, faces degradation caused by climatic variables and traffic loads. This deterioration affects their mechanical properties, leading to cracks and failures that reduce their functionality and longevity. It is therefore imperative that advanced analytical methodologies are applied to identify the appropriate level of intervention to ensure their optimal serviceability. Recently, technological innovations have emerged that allow the detailed assessment of flexible pavements in an efficient manner, covering large areas in a short time. This research focuses on whether drone photogrammetry (UAV) or mobile laser scanning (MLS) is more appropriate for the diagnosis of surface imperfections in flexible pavements in the context of developing countries, as well as the impacts that its adoption could have on road assessment. The qualitative study is based on a literature review and uses the Choosing by Advantages (CBA) method to evaluate and compare the decisive qualities in the selection of technologies. The results indicate that the mobile laser scanner provides accurate topographic and geometric characterisation at the millimetre level. However, drone photogrammetry, standing out for its high flexibility, low cost and ease of operation, presents itself as the most viable solution for continuous road condition monitoring.</p>
<p>Paper ID 27 11⁴⁵ – 12⁰⁰ (5 min discussion)</p>	<p style="text-align: center;">Jun Li[*], Yuanpei Liu², Ruixue Shao², M K Zhudro[*] ¹<i>Belarusian National Technical University, 20013 Minsk, Belarus</i> ²<i>Belarusian State University, 220030 Minsk, Belarus</i></p> <p>Title of presentation: Research on the economic security application of energy economy in a low-carbon sustainable development society</p> <p>Abstract: Research on the economic security application of energy economy in a low-carbon sustainable development society is an important research field. Its purpose is to explore how to achieve the safe development of the national economy in the context of low-carbon sustainable development, including economic structural adjustment, green technology innovation, resource conservation and recycling, environmental protection, etc. This article explores how to ensure green and sustainable development of energy</p>



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	security and the security risk assessment of green energy economy.
<p>Paper ID 28 12⁰⁰ – 12¹⁵ (5 min discussion)</p>	<p style="text-align: center;">Yan Li[*], Viktor Lemiasheuski^{1,2}, Svetlana Maksimova³</p> <p><i>¹International Sakharov Environmental Institute of Belarusian State University, 220070 Minsk, Belarus</i></p> <p><i>²All-Russian research Institute of Physiology, Biochemistry and Nutrition of animals – branch of the Federal Research Center for Animal Husbandry named after Academy Member L. K. Ernst, 249013, Borovsk, Russian Federation</i></p> <p><i>³Scientific and Practical Center of the National Academy of Sciences of Belarus for Bioresources, 220070, Minsk, Republic of Belarus</i></p> <p>Title of presentation: The Simulated Experimental Design and Study of the Synergistic Treatment of Chicken Manure and Traditional Chinese Medicine Residues on Earthworm Growth and Soil Quality</p> <p>Abstract: Annelids conspicuously exert influence upon soil physicochemical attributes through their alimentary, burrowing, and excretion endeavors, thereby imparting ramifications upon soil erosion phenomena. Nevertheless, comprehension of the particular repercussions stemming from annelid activities vis-à-vis soil erosion remains circumscribed. The primary objective of this investigation was to scrutinize the synergistic ramifications of gallinaceous fecal matter and remnants of traditional Chinese medicinal substances on annelid proliferation and soil characteristics within a simulated experiment. In order to gauge the impact of annelid activities upon soil hydric distribution, runoff velocity, and soil erosion, a laboratory-simulated precipitation experiment was executed across three incline gradients (5 degrees, 10 degrees, and 15 degrees), featuring a uniform precipitation intensity of 80 mm/h and a 60-minute precipitation duration post-runoff initiation. Findings evinced that annelids significantly heightened soil hydric infiltration and retention. In tanks inhabited by annelids, the increments in soil hydric retention were 93%, 51%, and 70% more elevated than those in control plots at incline gradients of 5 degrees, 10 degrees, and 15 degrees, respectively. Comparatively, earthworm activities led to a 70% reduction in runoff rate at a 5-degree slope, a 13% reduction at 10 degrees, and a 39% reduction at 15 degrees. However, soil erosion rates increased by 42% and 46% at slope gradients of 10 degrees and 15 degrees, respectively. Earthworms, through their feeding and burrowing activities, not only enhanced soil water infiltration but also mitigated surface runoff while contributing to increased soil erosion. This research proffers invaluable perspicacity regarding the influence of subterranean fauna on the vicissitudes of soil erosion processes, furnishing empirical evidence amenable for assimilation into extant soil erosion simulation paradigms or as a substratum for the construction of nascent models.</p>
<p>Paper ID 29 12¹⁵ – 12³⁰ (5 min discussion)</p>	<p style="text-align: center;">Pavel Navistki^{1*}, Garrison Lucy¹, Tanner Craig¹, Anna Kinnunen², Nate Youmans², Hannah Marie Lucy², Rachel Budavich², William Ranahan², and Stuart Resor²</p> <p><i>¹Oral Roberts University, 7777 S Lewis Ave, Tulsa, OK 74171, USA</i></p> <p><i>²Licensed Architect in the State of Tennessee, USA</i></p> <p>Title of presentation: Innovative Design of an Automated, Modular Vertical Botanical Display with Integration of Architecture and Engineering</p> <p>Abstract: In the current dynamic educational landscape, the challenge of imparting engineering education is increasingly felt by both educators and students worldwide. Universities are striving to furnish students with the essential skills and knowledge that will seamlessly transition them into professional engineering roles, further studies, or other professional domains. This educational approach equips students with practical applications of engineering and science to enhance the physical world. It prepares graduates to join and contribute to the engineering and scientific communities, aiming to better the human condition. The Thurman Botanical Tapestry at Oral Roberts University</p>



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	<p>embodies a revolutionary blend of aesthetics, research, and education in botany. Spanning an impressive 280 square feet within the Biology Department's atrium, this living wall integrates a diverse range of plants such as Monstera, Alocasia, and Philodendron, transcending mere visual appeal to serve as a vibrant research laboratory. Equipped with advanced sensors and methodologies, it offers students an invaluable hands-on experience in plant care and environmental research. This project is a testament to the seamless integration of artistic creativity with scientific innovation, fostering environmental stewardship and nurturing future scientists. Its design, process, and educational implications highlight the collaborative intersection of biology and engineering, making the Thurman Botanical Tapestry not just a remarkable centerpiece but a dynamic platform for ecological and educational exploration.</p>
<p>Paper ID 33 12³⁰ – 12⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">Victor Pchelkin¹, Yuri Bezbodov^{1*}</p> <p style="text-align: center;"><i>¹Russian State Agrarian University - Moscow Timiryazev Agricultural Academy, 49, Timiryazevskaya St. Moscow, 127434 Russian Federation</i></p> <p>Title of presentation: Water balance in the aeration zone at the irrigation of red beets in the Russian Non-Chernozem area</p> <p>Abstract: Basing on experimental data, we obtained the correlation results between the water balance elements in the aeration zone and the calculated layer at the irrigation of red beets on sod-podzolic soils. We provided a methodology to conduct research on experimental plots and in lysimeters. The water balances for the aeration zone in the lysimeters and for the calculated soil layer on the experimental plots are presented. It is shown that the amount of precipitation during the growing season 2010–2011 (97, 195 mm) and the sum of average daily air humidity deficits (12.1, 9.6 mb) influence water consumption (510, 498 mm) and irrigation norms (414, 318 mm). Soil moisture at the conditions of sod-podzolic soil of watershed territories in Moscow Oblast at sprinkler irrigation has a significant impact on all the components of the water balance, especially on the irrigation norm and water consumption of red beets. We stated the relation between the irrigation norm for red beets and the moisture content of the calculated layer of sod-podzolic soil. The correlation coefficient of the considered values is 0,996+0,031. A relation between the water consumption of red beets and the moisture content in the watershed sod-podzolic soil was obtained. The correlation coefficient of the considered values is 0,991+0,053.</p>
<p>Paper ID 38 12⁴⁵ – 13⁰⁰ (5 min discussion)</p>	<p style="text-align: center;">Foluso C. Awe^{1*}, Muyiwa L. Akinluyi², Francis O. Okeke^{3,7}, Isaac O. Ajiboye⁴, Akinyemi Oke⁵, Emmanuel Asse⁶</p> <p style="text-align: center;"><i>^{1,5,6} Department of Architecture, Federal University Oye-Ekiti, Oye-Ekiti, Nigeria</i></p> <p style="text-align: center;"><i>^{2,4} Department of Architecture, Bamidele Olumilua University of Education, Science and Technology Ikere-Ekiti, Ikere-Ekiti Nigeria.</i></p> <p style="text-align: center;"><i>³ Department of Architecture, University of Nigeria, Enugu Campus, Nigeria</i></p> <p style="text-align: center;"><i>⁷School of Engineering, Technology and Design, Canterbury Christ Church University, UK</i></p> <p>Title of presentation: An Examination of Site Meetings: Essential Factors and Implications on Building Quality in Construction Projects within Higher Institutions in Ekiti State</p> <p>Abstract: The building and construction industry (BCI) is made of diverse professionals and despite its emphasis on quality project delivery, the essentials of site meetings have not been adequately explored. The study examined the fundamental aspects of Site Meetings and their impact on the execution of construction projects in the building sector, specifically focusing on higher education institutions in Ekiti State, Nigeria. An online survey questionnaire was used and administered to the Consultants and Contractors, within Higher Institutions in Ekiti State, and only seventy-four (74) Respondents filled out the questionnaire and submitted it. The results indicated that</p>



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	<p>67.6% and 31.1% strongly agreed and agreed respectively that site minutes are important to project implementation. 50% each strongly agreed and agreed that the agenda is a critical tool for project implementation. 37.7% of respondent do not have a definite time for sending notice of a meeting while 10.8% do not have an agenda for their site meetings, also, 52.7% make the minutes of site meetings available before the meeting and 47.3% during the meeting. The study recommended that all stakeholders should take the essentials seriously. Notice of meetings, agendas, and Minutes should be prepared and sent ahead of site meeting dates.</p>
<p>Paper ID 39 13⁰⁰ – 13¹⁵ (5 min discussion)</p>	<p style="text-align: center;">Jing Liuming^{1*}, Liu Qinghua¹, Abrorbek Shukuraliev², Alijanov Donyorbek²</p> <p style="text-align: center;">¹<i>North China University of Technology, 100144 Beijing, China</i> ²<i>Andijan Machine-Building Institute, 170019 Andijan, Uzbekistan</i></p> <p>Title of presentation: Simulation study on capacity planning and allocation of island microgrid</p> <p>Abstract: In this paper, the energy storage capacity planning problem of a real island microgrid is deeply simulated. In the beginning, the overview and basic data of the island microgrid are described in detail, including the composition of the grid and its key parameters. Then, with the help of modeling and simulation technology, the operation of microgrid in various scenarios is comprehensively simulated and analyzed, focusing on how to optimize energy storage planning in the case of wind energy removal to ensure the smooth operation of the grid. The research deeply reveals the core role of stable power system in ensuring the reliability of power supply and the normal operation of the system. Among them, frequency stability is regarded as the cornerstone of power system operation, which is indispensable for maintaining the overall stability of the power grid and ensuring the continuous and stable power supply of users. Through this simulation study, we not only provide feasible schemes and suggestions for the energy storage capacity planning and allocation of island microgrids, but also verify that reasonable energy storage schemes have a positive effect on the overall stability and reliability of the power system.</p>
<p>Paper ID 40 13¹⁵ – 13³⁰ (5 min discussion)</p>	<p style="text-align: center;">Chen Shasha^{1*}, Zhou Jinghua¹, Abrorbek Shukuraliev², Sun Yifei¹</p> <p style="text-align: center;">¹<i>North China University of Technology, 100144 Beijing, China</i> ²<i>Andijan Machine-Building Institute, 170019 Andijan, Uzbekistan</i></p> <p>Title of presentation: An Improved Grid-connected Pre-Synchronization Method based on Virtual Synchronous Generator Control in Power Conversion System</p> <p>Abstract: Under the background of vigorously promoting the construction of new power system, the power conversion system (PCS) plays an important role to transfer high reliable electrical power quality to grid. However, the system is sensitive to the voltage deviation on both side of point of common coupling (PCC) when switching from off-grid mode to grid-connected mode directly, it leads to surge currents or even threaten system stability. In this paper, an improved grid-connected pre-synchronization method for smooth grid connection is proposed. The system adds a pre-synchronization module on the basis of virtual synchronous generator (VSG) control to synchronize the voltage between the PCS and the grid. In addition, a slope control unit is introduced to further avoid the potential surge current problem at the moment of grid connection. Finally, the experimental results of simulation is verified the effectiveness and feasibility of the proposed scheme.</p>
<p>Paper ID 42 13³⁰ – 13⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">Terwase Wuave^{1,2*}</p> <p style="text-align: center;">¹<i>Department of Environmental Management Technology, Abubakar Tafawa Balewa University Bauchi, Nigeria</i> ²<i>National Environmental Standards Regulations and Enforcement Agency (NESREA), Nigeria</i></p>



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	<p>Title of presentation: Leachate migration and percolation consequences on water quality: A case study of Plateau State Nigeria</p> <p>Abstract: Leachate water samples were collected from dumpsite and its adjacent area in Jos metropolis to study leachate migration and percolation consequences on water quality. Concentration of various physico-chemical parameters including heavy metal (Cd, Cr, Cu, Fe, As, V, and Zn) were determined in water and leachate samples. The moderate to high concentrations of Cl, NO₃, SO₄, Fe, Zn, Cd, Cr, Cu, Fe and Biochemical Oxygen Demand (BOD) in water, indicate that water quality in the area is being affected by leachate percolation. Surface water has HPI value of 94.52 with mean value of 48.32 which is of the transition stage of medium to high. HEI value computed was 20.07 with mean value of 16 for the surface water, in ground water, HEI value computed was 5.94 with mean value of 0.88. LPI at Honda village showed the lowest values of 16.5, GeroNyango and Sabon Geri Atu village highest value of 20.1 and 23.4. This suggests that leachate percolation is have an effect on water quality which indicates that water in the area is threatened. Government should consider recycling waste, composting, using waste to generate energy, reuse derived full (RDF), solid Recovered (SRF) and engineering landfill as an option.</p>
<p>Paper ID 43 13⁴⁵ – 14⁰⁰ (5 min discussion)</p>	<p style="text-align: center;">Salim Idris Malami^{1,2*}, Pinar Akpınar³</p> <p style="text-align: center;">¹<i>Institute of Sustainable Built Environment, Heriot-Watt University, United Kingdom</i> ²<i>Kano University of Science and Technology, Kano, Nigeria</i> ³<i>Bahçeşehir Cyprus University, Nicosia, N. Cyprus, via Mersin 10, Turkey</i></p> <p>Title of presentation: A Non-destructive Method for the determination of Carbonation Time for Nominal Concrete Cover Depth Using Non-Linear Ensemble Prediction</p> <p>Abstract: Carbonation, a process involving the reaction of carbon dioxide and moisture, results in the formation of powdery calcium carbonate, a critical durability issue causing reinforcement corrosion. The study analyzed carbonation data from coastal and inland buildings in the Turkish Republic of Northern Cyprus, revealing higher carbonation rates than anticipated within their lifespan. An artificial intelligence model named Support Vector Machine (SVM) was applied to predict carbonation time (T) to penetrate concrete cover of 25mm in the TRNC. Subsequently used two ensemble techniques, namely Neural Network Ensembles (NNE) and Support Vector Machine Ensembles (SVME) to enhance the performance of the prediction of T. Four performance criteria namely Correlation Coefficient (CC), Root Mean Square Error (RMSE), Correlation Coefficient (R²), Mean Absolute Error (MAE) was applied to verify the modelling accuracy. The Values of R² of Ensemble techniques indicated significant increase in the performance, greater than the SVM model. This shows that using ensemble techniques is promising in getting better predictions of carbonation time (T) to penetrate concrete cover. The results obtained showed that NNE and SVME combination demonstrated the best performance under the evaluation criteria of R² = 0.8721 and R² = 0.8644 in testing phases respectively in comparison SVM-M1 to SVM-M3.</p>
<p>BREAK 14:00pm – 14:30pm</p>	
<p>Paper ID 46 14³⁰ – 14⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">Robert Mullins¹, Josiah Knight¹, Sophie X. Liu^{1*}</p> <p style="text-align: center;">¹<i>Engineering School, Oral Roberts University, 7777 S. Lewis Ave, Tulsa OK 74171</i></p> <p>Title of presentation: Study on bio-interference of electronics</p> <p>Abstract: Electronics have come a long way since their beginning conception. Instead of simple switches, they have now evolved to help in every industry. Some of the most advanced electronics have come from medical applications, especially those that deal with reading electrical signals. These types have had a tremendous impact on the healthcare of the population and advanced our understanding of the inner workings of</p>



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	<p>the human body. Though these have had great successes, there is a very prominent issue that arises, bio-interference. This is when any type of biology has interference with the electrical signals trying to be read. EEGs are one of the most prominent electronic signaling detection, and great efforts have been made to minimize bio-interference, such as advances in signal processing, improved materials, multi-modal approaches, miniaturization, and real-time artifact detection. We aim to expound on these and offer a future of where these can lead.</p>
<p>Paper ID 50 14⁴⁵ – 15⁰⁰ (5 min discussion)</p>	<p style="text-align: center;">Emeka J. Mba¹, Francis O. Okeke^{1,2}, Ajuluchukwu E. Igwe¹, Chukwuemerie E. Achara^{1*}, Okwarajesu Chimbuchi¹, Obasi Precious¹, and Udeh Wilson¹ <i>¹Department of Architecture, University of Nigeria, Nsukka 410105, Nigeria</i> <i>²School of Engineering, Technology and Design, Canterbury Christ Church University, Kent, UK</i></p> <p>Title of presentation: Keeping up with changing technologies: The nexus between architecture and engineering</p> <p>Abstract: Advancements in technology are fundamentally transforming architectural and engineering domains within the building and construction sector. This study investigates the intersection of both fields in assimilating emerging innovations by eliciting empirical perspectives from practitioners. Embracing a quantitative approach, a survey was conducted among 203 architects and 392 engineers within Enugu metropolis, Nigeria using proportionate random sampling. Results were analyzed using descriptive statistics, revealing insights into awareness, perception, and collaboration concerning emerging technologies. Findings revealed high awareness but uneven adoption of building information modeling tools, with 97.3% of architects employing them versus only 25.4% of engineers. Although virtual reality and cloud-based platforms showed promise for enhancing project coordination, actual usage lagged significantly, likely owing to systemic and attitudinal barriers. However, respondents strongly endorsed tighter, technologically unified partnerships to smooth industry transformation, necessitating digital literacy interventions, supportive policy and binding protocols bridging persistent digital divides stalling seamless innovation diffusion along construction value chains.</p>
<p>Paper ID 56 15⁰⁰ – 15¹⁵ (5 min discussion)</p>	<p style="text-align: center;">Zabihullah Dalil Shinwari^{1*}, Elyas Yousufi¹, Mujeeb Rahman Haqbani¹ and Najiullah Safi¹ <i>¹Department of Civil Engineering, Kardan University, Kabul, Afghanistan</i></p> <p>Title of presentation: Pertinent Emplacement of Shear Walls to Diminish the Torsional Effects in Asymmetric-RC Framed Buildings</p> <p>Abstract: In seismic conditions, asymmetric structures typically experience lateral deflection. The magnitude of this deflection is dependent on various factors, including the configuration of the structural system, the mass of the structure, and the mechanical properties of the materials used. One critical factor that can reduce a structure's seismic resistance is torsion irregularity. To combat this, shear walls can be installed in the pertinent location to provide stability and stiffness to the structure. This study explores the seismic analysis of a G+10 storey asymmetric RC frame-shear wall structure using the response spectrum method as per ASCE7-16. The study encompasses six models with varying shear wall placements, with the initial model lacking a shear wall. The results are compared, and recommendations are made to avoid torsional irregularity destruction under seismic loads. Based on the analysis, Model-2 (shear wall in the periphery) shows the worst condition from the 1st storey through the 11th storey, possibly due to maximum eccentricity in upper storeys. In contrast, Model-5 (shear wall in core and corners) shows the best performance among all models, likely due to increased stiffness in the corners and core of the structure. Overall, this study contributes to the advancement of structural engineering practices by enhancing the understanding of complex interplay between torsional irregularity, shear wall placement, and structural</p>



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<p>Paper ID 19 15¹⁵ – 15³⁰ (5 min discussion)</p>	<p>asymmetry.</p> <p style="text-align: center;">Meutia Nurfahasdi^{1*}, Amir Husin¹, Muhammad Faisal¹, Silda Adi Rahayu¹, Adinda Azzahra Putri², Ade Citra Nadhira², dan Seby Sabrina², Irina Bozorova³, Abrorbek Shukuraliyev⁴, and Donyorbek Alijanov⁴</p> <p style="text-align: center;">¹<i>Environmental Engineering Study Program, Faculty of Engineering, Universitas Sumatera Utara, Kota Medan, Indonesia</i></p> <p style="text-align: center;">²<i>Student of Environmental Engineering Study Program, Faculty of Engineering, Universitas Sumatera Utara, Kota Medan, Indonesia</i></p> <p style="text-align: center;">³<i>Department of Algorithms and Programming Technologies, Karshi State University, 180119 Karshi, Uzbekistan</i></p> <p style="text-align: center;">⁴<i>Andijan Machine-Building Institute, 170100 Andijan, Uzbekistan</i></p> <p>Title of presentation: Optimization of Efficiency Mercury (Hg) Removal with Electrocoagulation Using Zinc (Zn) Electrode by RSM Methods</p> <p>Abstract: Good and optimal management of the Final Processing Site (TPA) can provide benefits to the community and the surrounding environment. One of the impacts of poor management of the landfill is that the decomposition of waste that occurs at the landfill will produce leachate which will potentially contaminate groundwater. Leachate from landfill can contaminate groundwater if it seeps into the ground and eventually into the groundwater. In one of the landfill's in Medan City, namely Terjun landfill, it is known that the level of mercury (Hg) in leachate is 0.04012 which is categorized as exceeding the quality standard. Electrocoagulation is a promising treatment technology because it has the potential to remove organic matter and persistent pollutants in landfill leachate. The electrocoagulation process was carried out with variations of the electrocoagulation time used, namely 10, 20, and 30 minutes using zinc electrodes. As well as other variations used, namely the electrode spacing of 1 cm, 2 cm and 3 cm and the voltage of 8 volts, 10 volts and 12 volts. The results showed that the optimal variation was obtained at a distance of 2 cm, 30 minutes, and 12 volts with a mercury reduction efficiency of 98.108%.</p>
<p>Paper ID 21 15³⁰ – 15⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">Meutia Nurfahasdi^{1*}, Seby Sabrina¹, Amir Husin¹, Kartini Noor Hafni¹, Novrida Harpah Hasibuan¹, Abdugani Rakhmatov², Matluba Turayeva³, Shirin Yuldosheva⁴</p> <p style="text-align: center;">¹<i>Department of Environmental Engineering, Faculty of Engineering, Universitas Sumatera Utara, Sumatera Utara 20155, Indonesia</i></p> <p style="text-align: center;">²<i>Department of Power Supply and Renewable Energy Sources, National Research University TIAME, Tashkent 100000, Uzbekistan</i></p> <p style="text-align: center;">³<i>Karshi State University, 180119 Karshi, Uzbekistan</i></p> <p style="text-align: center;">⁴<i>Department of Automation and Control of Technological Processes, Karshi Institute of Irrigation and Agrotechnologies, 180119 Karshi, Uzbekistan</i></p> <p>Title of presentation: The Effect of Electric Voltage Variation and Flow Rate on Decreasing Remazol Red Rb 133 Dye Levels in a Continuous Electrocoagulation Process</p> <p>Abstract: The usage of synthetic dyes, such as Remazol Red RB 133, benefits the product by boosting its added value, but it also has a negative influence on the aquatic environment when waste water is disposed of directly. As a result, electrocoagulation technology is utilized to lower the levels of Remazol Red RB 133 dye, ensuring that it does not affect the environment. This study seeks to examine the influence of variations in electric voltage (10, 12, 14 volts) and flow rate (80, 100, and 120 mL/minute) on decreasing concentrations of the colorant RB-133 Remazol in the Continuous Electrocoagulation Process. A UV-Vis spectrophotometer will be used to see the dye concentration after the electrocoagulation process and will be analyzed using the adsorption kinetics model and the Langmuir and Freundlich adsorption isotherm models.</p>



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<p>Paper ID 001 15⁴⁵ – 16⁰⁰ (5 min discussion)</p>	<p style="text-align: center;">Dildora Abdusalomova¹, Olimjon Azizov¹, Kasun Dissanayake¹, Mohamed Rifky^{1,2*}</p> <p style="text-align: center;"><i>¹Tashkent Chemical Technological Institute, Tashkent, 100000, Uzbekistan</i> <i>²Eastern University, Sri Lanka, Chenkalady, 30350, Sri Lanka</i></p> <p>Title of presentation: Antimicrobials in dairy products: Scopus-based bibliometric analysis for the period of 2013-2022</p> <p>Abstract: Antibiotics residue in milk and dairy products has a big influence for food safety and human health all around the world. In this study, we used the keywords “milk”, “dairy product”, and “antibiotic” to search for all English-language Scopus-based publications published over the previous ten years. We analysed the most well-known journals, prominent writers, highly cited works, leading nations, and the most frequent key words in published papers. The quantity of papers written about it and the amount of science being done in this area demonstrate how important it is to guaranteeing consumer food safety.</p>
<p>Paper ID 002 16⁰⁰ – 16¹⁵ (5 min discussion)</p>	<p style="text-align: center;">Jiang Yuhao¹, Li yue², Zhang Kuo³, Volha Holubava^{1*}</p> <p style="text-align: center;"><i>¹Belarusian national technical university, faculty of civil engineering, 220013 Minsk, PR Belarus</i> <i>²Belarusian state university, faculty of business, project management, 220004 Minsk, PR Belarus</i> <i>³Belarusian state university, faculty of economics, 220030 Minsk, PR Belarus</i></p> <p>Title of presentation: Research on the application of BIM technology for cost control in construction</p> <p>Abstract: The cost control of construction projects directly determines the profitability of construction projects. Building information modeling (BIM) technology came into being with the development of modern science and technology, through BIM technology can effectively solve the problem of cost control of construction projects, therefore, the specific application of BIM technology in the cost control work of construction projects is a topic worth studying. This paper mainly outlines the main points of BIM technology and cost control of construction projects, and sets the evaluation indexes of RM, PM and CCD according to the key processes of sub-parts of projects, and evaluates which sub-parts of projects are used in combination with BIM technology as the key processes of cost control of construction projects through the coupling relationship between them, which can significantly reduce the construction cost of construction.</p>
<p>Paper ID 003 16¹⁵ – 16³⁰ (5 min discussion)</p>	<p style="text-align: center;">Xianpeng Wang^{1*}, Haoxuan Yu^{1*}, Kequan Yu^{2*}, Kovshar Sergey Nikolayevich, Leonovich Sergey Nikolaevich¹</p> <p style="text-align: center;"><i>¹Faculty of Civil Engineering, Department of Building Materials and Construction Technology, Belarusian National Technical University, Minsk, 220013, PR Belarus</i> <i>²College of Civil Engineering, Tongji University, Shanghai 200092, China</i></p> <p>Title of presentation: Study on the influence of reed fiber length and moisture content on the mechanical properties of concrete</p> <p>Abstract: This paper adopts a contrastive experimental method to design and prepare reed fiber concrete. It discusses the influence of reed fiber content (2%), fiber length (1.5 cm for short reed fiber and 3 cm for long reed fiber), and moisture content (0% for dry fiber and 85% for wet fiber) on the mechanical properties of concrete, and compares it with the reference concrete without reed fiber. The experiment obtained the flexural and compressive strength of reed concrete, and analyzed the apparent mechanism of concrete specimens after failure. The experimental results show that the addition of reed fiber enhances the mechanical properties of concrete, the compressive strength of concrete increases by 1.13 MPa compared with the reference concrete, and the flexural strength increases by 2.32 MPa. The flexural performance of reed fiber reinforced concrete with 3 cm dry fiber and 0% moisture content is the highest, reaching 3.5 MPa;</p>



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	<p>the compressive performance of reed fiber reinforced concrete with 85% moisture content and short reed fiber is the highest, reaching 2.69 MPa. This paper shows that adding 2% of reed fiber to concrete is feasible, and adding 1.5 cm, 85% moisture content wet reed fiber can better promote the mechanical properties of reed fiber concrete.</p>
<p>Paper ID 005 16³⁰– 16⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">Ahmad Zaki^{1,2}, Seplika Yadi², Firda Ayucahyani², Lina Ekawati² and Khairil Mahbubi¹</p> <p style="text-align: center;">¹<i>Magister of Civil Engineering, Postgraduate Studies, Universitas Muhammadiyah Yogyakarta, Jl. Brawijaya, Bantul 55183, Special Region of Yogyakarta, Indonesia</i> ²<i>Department of Civil Engineering, Faculty of Engineering, Universitas Muhammadiyah Yogyakarta, Jl. Brawijaya, Bantul 55183, Special Region of Yogyakarta, Indonesia</i></p> <p>Title of presentation: The Effect of Curing and W/c ratio Differences on Mechanical Behaviour of Oil Palm Shell Concrete with Fiber Mask</p> <p>Abstract: The use of oil palm shells aims to reduce the amount of waste and make concrete environmentally friendly, but it also has maximum flexural and compressive strength values. The proportion of oil palm shells used is 10%, the optimum value as a substitute for coarse aggregate. The test specimens used concrete blocks of dimension 10×10×50 cm and cylinders of diameter 75 mm and height 150 mm. This study has a variation value of the water–cement ratio (w/c ratio) of 0.37 and 0.48 and contains FM additives with a percentage of 0% and 0.2% and 0.25% superplasticizer. There are five concrete curing methods to find the most effective: soaking concrete with plain water, lime water, and salt water, placing it in a temperature room, and wrapping wet burlap sacks—28-day test samples tested for compressive strength and flexural strength of concrete. Based on the results, the highest flexural strength value is 2.45 MPa in the curing method of soaking with plain water in the concrete with a w/c ratio value of 0.37 and 0% FM. The highest compressive strength value was 31.32 MPa using the burlap sack curing method, w/c ratio value 0.37, and 0.20% fiber mask.</p>
<p>Paper ID 006 16⁴⁵– 17⁰⁰ (5 min discussion)</p>	<p style="text-align: center;">Chukwuemerie E. Achara¹, Emeka J. Mba¹, Francis O. Okeke^{1,2*}, Ajuluchukwu E. Igwe¹, Joy I. Odoba¹, Praise C. Emeka-Idika¹, Osemudiamen Isiwele¹, Chinemerem E. Otuokere¹</p> <p style="text-align: center;">¹<i>Department of Architecture, University of Nigeria, Enugu State, Nigeria</i> ²<i>School of Engineering, Technology and Design, Canterbury Christ Church University, Kent, UK.</i></p> <p>Title of presentation: Study on the prevalence of drug abuse among architecture students: A case study of Enugu, Nigeria</p> <p>Abstract: Drug (substance) abuse is a complex issue with impacts on student wellbeing, performance, and potential. The lack of targeted preventive strategies addressing this critical societal challenge underscores the need for an in-depth investigation into the prevalence and drivers of drug abuse specifically among architecture students. This study investigates the prevalence, motivations and attitudes surrounding substance abuse among 304 architecture students across 5 universities in Enugu, Nigeria. A quantitative research approach was utilized, and primary data was gathered for evaluation through the use of well-structured Questionnaires distribute to students in the study area. Findings reveal concerning 90% alcohol/energy drink usage rates and frequent dependence coping with project deadlines, indicating potentially normalized on-campus misuse. Key triggers include peer influences (42%), performance enhancement (14.5%), enjoyment/ experimentation (19.5%) and self-medication (3%). However, 80% recognize abuse risks, evidencing complex psychosocial dynamics. The study mitigation recommendations centered on awareness creation, policy reforms, faculty training and peer support systems - not punitive sanctions. It concludes that tight-knit studio cultures seemingly propagate usage, transformative educational strategies addressing high-stress design education realities can restrict enablement.</p>



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<p>Paper ID 008 17¹⁵ – 17³⁰ (5 min discussion)</p>	<p style="text-align: center;">Md Ajmal Hussain^{1*}, Asif Husain¹, and S. M. Anas¹ <i>¹Department of Civil Engineering, Jamia Millia Islamia, 110025 New Delhi, India</i></p> <p>Title of presentation: Exploring the Dynamics and Strengthening of Reinforced Concrete Slabs against Close-Range Explosions: A Bibliometric Analysis</p> <p>Abstract: In recent years, the escalation of global incidents involving explosives has engendered profound concern, driven by both deliberate acts of subversion and unintended detonations. Notably, the catastrophic explosion at the fireworks storage facilities in Beirut, Lebanon, stands as a poignant example, leading to substantial loss of life, injuries, and infrastructural damage. This study undertakes an investigation into the dynamic behavior and fortification of Reinforced Cement Concrete (RCC) slabs against close-range explosions, employing a meticulous bibliometric analysis of scholarly publications sourced from the Scopus database. To gauge the impact and dissemination of these publications, alternative metrics such as social network articles and documents within bibliographic reference managers are incorporated. Focusing on articles and reviews published between 2010 and 2023, the research identifies 1064 pertinent papers using the keywords "RCC" and "strength." The bibliometric scrutiny, leveraging 'R' and VOS Viewer software, accentuates the pivotal role of slab strength in scholarly discourse, unveiling a substantial corpus of literature and its profound significance. These insights furnish invaluable guidance for researchers and practitioners, furnishing a holistic comprehension of the contemporary research panorama and steering future advancements in this indispensable domain of inquiry. A bibliometric analysis, characterized by a systematic evaluation of scholarly literature pertaining to a specific subject, furnishes elucidations into its trends, principal contributors, and the broader research terrain. This methodological approach is particularly pertinent in structural engineering and the assessment of blast effects on reinforced concrete structures. The analytical endeavor commences with delineating the research theme, followed by scouring academic databases such as PubMed, Scopus, or Google Scholar utilizing pertinent keywords. Subsequently, it scrutinizes publication trends, authorship delineations, journal and conference preferences, and citation analysis to pinpoint influential and highly cited works. Additionally, the geographical dissemination of contributions is explored, discerning regions or countries where the research proliferates. Keyword analysis is employed to unravel the predominant themes and subjects under investigation within the research corpus.</p>
<p>Paper ID 036 17³⁰ – 17⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">Emeka J. Mba¹, Francis O. Okeke^{1,2*}, Ajuluchukwu E. Igwe¹, Stephanie C. Onyia¹, Donatus E. Okonta³, Chinyelu D.F. Onyia¹, Chinemerem M.B Okeke¹, Emmanuel C. Agu¹, Ifechukwude F. Okwudiafor¹ <i>¹Department of Architecture, University of Nigeria, Nsukka 410105, Nigeria</i> <i>²School of Engineering, Technology and Design, Canterbury Christ Church University, Kent, UK</i> <i>³School of Computing, Engineering and Digital Technologies, Teesside University, Middlesbrough, UK</i></p> <p>Title of presentation: Lucrativeness of the business of architecture: The professional's view</p> <p>Abstract: The architectural profession, situated at the intersection of art, science, and business, faces a multifaceted challenge in balancing creativity and financial sustainability. This study aims to assess the financial viability of the architectural profession by investigating the perceptions of practicing architects in Enugu Urban, Nigeria. Employing a quantitative research approach, a structured questionnaire survey was administered to a sample of 135 registered architects in Enugu Urban, the data collected was analyzed using descriptive statistics to identify influencing variable and patterns in the responses. The findings reveal a strong consensus among respondents concerning the entrepreneurial nature of architecture and its potential for financial</p>



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	<p>success. However, a notable division in opinion was observed regarding architects' participation in non-lucrative projects, with 62% supporting the idea and 38% opposing it. The results indicate that core architectural services, such as design and project management, are widely perceived as lucrative, while specialized areas like historical preservation and community-oriented projects face challenges in terms of financial viability. The study identifies key challenges faced by architects, including fee negotiation, intense competition, economic fluctuations, and the need to keep pace with technological advancements. Its conclusion highlights potential opportunities for architects to expand their business horizons, such as embracing advanced visualization techniques, offering specialized consultancy services, venturing into real estate development, and engaging in urban planning and research.</p>
<p>Paper ID 046 17⁴⁵– 18⁰⁰ (5 min discussion)</p>	<p>Okwuosa Chiamaka Christiana¹, Basil Amaka-Anolue Martha², Ibem Eziyi Offia³, Francis Ogochukwu Okeke^{4,6*} and Okwuosa Ogechi Emeka⁵ <i>^{1,2,3,4}Department of Architecture, Faculty of Environmental Studies, University of Nigeria, Enugu Campus, Nigeria</i> <i>⁵Subtle City Space Limited, Enugu, Nigeria</i> <i>⁶School of Engineering, Technology and Design, Canterbury Christ Church University, CT1 1QU, Kent, UK</i></p> <p>Title of presentation: Influence of library building design features on daylighting of reading spaces</p> <p>Abstract: Library building design features contribute to the performance of indoor daylight. Reading spaces in library buildings require effective daylighting for high productivity. This study evaluated the indoor daylight quality of three reading spaces, namely Esut-Hall A, Esut-Hall C, and Esut-Hall F, located in the main library of Enugu State University of Science and Technology (ESUT). The research aimed to assess the influence of individual building design features on the daylight performance of these spaces. The study adopted case study research, in combination with building simulation with Velux daylight visualizer software. The first result identified sixteen building design features that influenced the daylight quality. The second result indicated that the daylight quality values of Esut Hall A and Esut Hall F passed the 50% threshold for mean UDI300lux-2000 lux DA, UDI300lux-500 lux DA, and DF, showing that they have good daylight quality. For the remaining reading space, it was recommended that the area of the effective windows should be increased, and top light windows should be introduced.</p>
<p>Paper ID 061 18⁰⁰– 18¹⁵ (5 min discussion)</p>	<p>Emmanuel Annor, Chris Karottukoikal, Sandeep Philip, Sophie X.Liu* <i>¹Engineering School, Oral Roberts University, 7777 S. Lewis Ave, Tulsa OK 74171</i></p> <p>Title of presentation: Comparison of Denoising Methods in Improving V2V/V2X Communication</p> <p>Abstract: Vehicle-to-vehicle (V2V/V2X) communication is essential to our current transportation systems; it enables vehicles to exchange crucial data for better efficiency and safety. However, communication channels in these networks are susceptible to different forms of interference and noise, which causes a deterioration in signal quality and communication reliability. This paper compares different signal denoising techniques for V2V communication channels, focusing on four prominent methods: Fast Fourier Transform (FFT), Discrete Wavelet Transform (DWT), machine learning, and deep residual networks. We evaluate the denoising performance of each method using simulated signals corrupted by different noises and interference. Our experimental results demonstrate the effectiveness of each approach in mitigating noise and possibly improving communication reliability. Specifically, we observe that FFT and DWT offer efficient frequency and time-frequency domain representations for denoising signals. Traditional machine learning methods and residual networks (ResNets) demonstrate superior denoising performance. Our analysis provides insights into the strengths of</p>



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	<p>each denoising technique, and the advantages one can have over the other. Overall, this study contributes to the advancement of signal processing techniques for improving the reliability of V2V communication systems in real-world scenarios.</p>
<p>Paper ID 066 18¹⁵– 18³⁰ (5 min discussion)</p>	<p style="text-align: center;">Vanya Zhivkova^{1*} <i>¹University of Economics – Varna, blvd “Knyaz Boris I” 77, 9002 Varna, Bulgaria</i></p> <p>Title of presentation: Potato waste and sweet potato waste utilization – some research trends</p> <p>Abstract: The aim of the present paper was to show in a summarized and systematized form, with the help of a search of relevant keywords in scientific databases and applying a descriptive approach, some current research trends concerning possibilities for potato waste and sweet potato waste utilization. The areas in which intense work is being done in the field of potato waste and sweet potato waste valorization are heterogeneous and diverse, such as bioethanol production, anaerobic digestion, adsorption of dyes and heavy metals, recovery of bioactive compounds, production of composite films, synthesis of nanoparticles, application as components in animal nutrition, attempts to include them as ingredients in food production. The goal of proper treatment and sustainable handling of these waste materials is to give them additional value and utility, to derive the greatest possible benefit from them, to minimize risks and negative consequences for the environment, and to protect the wellbeing of society as a whole.</p>
<p>Paper ID 074 18³⁰– 18⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">R A U Dhaneswara¹, Ristiyanto Adiputra^{2,*}, A R Prabowo^{1,*} and H Carvalho³ <i>¹Department of Mechanical Engineering, Universitas Sebelas Maret, Surakarta 57126, Indonesia</i> <i>²Research Center for Hydrodynamics Technology, National Research and Innovation Agency (BRIN), Surabaya 60112, Indonesia</i> <i>³Department of Structural Engineering, Federal University of Minas Gerais, Belo Horizonte 31270-901, Brazil</i></p> <p>Title of presentation: Ultimate limit state design of wind turbine tower: A review</p> <p>Abstract: Global demand for a more sustainable energy production continue to increase as the fossil fuel reserves is depleting and the effect of its pollution keeps degrading the environment. Wind energy is emerging as the most promising sustainable energy for its abundant resources and cleanliness. Offshore wind harvesting is a particularly attractive option for wind harvesting as wind speeds are typically higher than onshore. This means that offshore wind farms can generate more electricity per unit of capacity than onshore wind farms. Offshore wind turbine is subjected to more harsh condition of the marine environment, especially the tower as it must sustain the weight of the rotor nacelle assembly and all the loads in those condition. Based on this condition, the tower construction of a wind turbine system is a critical subject that is worth to be studied further. Therefore, this paper is focused on the study of the applied loads that act upon the wind turbine tower and its influence on the ultimate limit state of the tower.</p>
<p>Paper ID 075 18⁴⁵– 19⁰⁰ (5 min discussion)</p>	<p style="text-align: center;">R K Saputra¹, S Suryanto¹, A R Prabowo^{1,*}, D D D P Tjahjana¹, M Jurkovič², S J Baek³, I Istanto⁴ and T Muttaqie⁵ <i>¹Department of Mechanical Engineering, Universitas Sebelas Maret, Surakarta 57126, Indonesia</i> <i>²Faculty of Operation and Economics of Transport and Communication, University of Zilina, Zilina 01026, Slovakia</i> <i>³Advanced-Green Technology Center, Korea Marine Equipment Research Institute, Busan 49111, South Korea</i> <i>⁴Department of Electro-Mechanical, Polytechnic Institute of Nuclear Technology, Yogyakarta 55281, Indonesia</i> <i>⁵Research Center for Testing Technology and Standards, National Research and Innovation Agency (BRIN), South Tangerang, 15314, Indonesia</i></p>



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	<p>Title of presentation: Efforts and regulation developments of maritime environmental recovery based on ship accident and oil spill</p> <p>Abstract: Ship accidents are a matter that needs special attention. This paper aims to provide information about tanker accidents that cause oil spills at sea. The ship accidents in question are the Erika Ship and the Prestige Ship. The impact of this accident is an oil spill at sea that damages the ecosystem of both animals and plants. Overcoming the problem of oil spills at sea can be done in several ways, such as using chemical liquids, mechanical, in situ burning, and bioremediation. As a result of this incident, the European Union issued new regulations related to improving ship safety named Erika Package I, II, and III.</p>
<p>Paper ID 076 19⁰⁰– 19¹⁵ (5 min discussion)</p>	<p>R A Rahman¹, S Suryanto¹, A R Prabowo^{1,*}, I Yaningsih¹, S Ehlers^{2,3}, and M Braun³</p> <p>¹<i>Department of Mechanical Engineering, Universitas Sebelas Maret, Surakarta 57126, Indonesia</i></p> <p>²<i>Institute for Ship Structural Design and Analysis, Hamburg University of Technology, Hamburg 21073, Germany</i></p> <p>³<i>Institute of Maritime Energy Systems, German Aerospace Centre (DLR), Geesthacht 21502, Germany</i></p> <p>Title of presentation: Assessment of ship collision risk based on the recorded accident cases: Structural damage and environmental recovery</p> <p>Abstract: Transportation is vital due to its capability to transport cargo and people massively. However, if maritime accidents take place, they may cause a significant impact not only on the economy and lives lost but also on the environment. This review paper provides a summary of research and reports on marine accidents, including the inclusion of ship type effects, types of accident events, and the accident consequences, especially to the marine environment. The paper covers global accident data, accident reports from various global accident investigation authorities, and the investigation results. Overall, this study aims to highlight the global tendency of marine accidents and how the accident affects the surrounding site's environmental condition. Additionally, the regulations and activities for environmental recovery are elaborated to tackle the damage caused by the ship accident. The contribution of this review is expected to provide a broader view of the maritime casualties and the effects on the marine environment and the regulations to overcome the damaged ecosystem.</p>
<p>Paper ID 077 19¹⁵– 19³⁰ (5 min discussion)</p>	<p>H A A Kautsar¹, R Adiputra^{2,*}, A R Prabowo^{1,*}, B Djordjevic³ and M Jurkovic⁴</p> <p>¹<i>Department of Mechanical Engineering, Universitas Sebelas Maret, Surakarta 57126, Indonesia</i></p> <p>²<i>Research Center for Hydrodynamics Technology, National Research and Innovation Agency (BRIN), Surabaya 60112, Indonesia</i></p> <p>³<i>Innovation Center of Faculty of Mechanical Engineering, Belgrade 11120, Serbia</i></p> <p>⁴<i>Institute Faculty of Operation and Economics of Transport and Communication, University of Zilina, Zilina 01026, Slovakia</i></p> <p>Title of presentation: Structural integrity of tapered cylindrical shell: Study case of tower wind turbine</p> <p>Abstract: The present study investigates the structural integrity of a wind turbine tower structure under axial compression, described as a tapered tubular structure. Initially, the NREL model of the 5 MW-net wind turbine model was adapted and then scaled down to simplify the numerical analysis and for the convenience of future experimental study. The analysis was conducted using the Finite Element Modelling software Abaqus. To ensure the validity of the FEM modelling, the benchmarking study is conducted by referring to previously published work. The case configuration was developed by varying the material properties of the tower (high, medium, and low carbon steels) and</p>



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	<p>the material properties of the tower due to the effect of the site temperature. The results obtained show that high carbon steel has the best properties for use in wind turbine structures. At -80 °C, this is the temperature condition where AH32 material has the best properties.</p>
<p>Paper ID 078 19³⁰– 19⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">M F A Ahzhan¹, T Muttaqie², A R Prabowo^{1,*}, A Fajri³, S Suryanto¹, Q T Do⁴, B Djordjevic⁵ and S J Baek⁶</p> <p style="text-align: center;">¹<i>Department of Mechanical Engineering, Universitas Sebelas Maret, Surakarta 57126, Indonesia</i></p> <p style="text-align: center;">²<i>Research Center for Testing Technology and Standards, National Research and Innovation Agency (BRIN), South Tangerang, 15314, Indonesia</i></p> <p style="text-align: center;">³<i>Department of Manufacturing Engineering Technology, Akademi Inovasi Indonesia, Salatiga 50721, Indonesia</i></p> <p style="text-align: center;">⁴<i>Department of Naval Architecture and Ocean Engineering, Nha Trang University, Nha Trang 650000, Viet Nam</i></p> <p style="text-align: center;">⁵<i>Innovation Center of Faculty of Mechanical Engineering, Belgrade 11120, Serbia</i></p> <p style="text-align: center;">⁶<i>Advanced-Green Technology Center, Korea Marine Equipment Research Institute, Busan 49111, South Korea</i></p> <p>Title of presentation: A procedural and technical experimental review on material tensile and impact properties under cryogenic temperatures</p> <p>Abstract: In this paper, research and comparison of tensile and impact properties were conducted on several materials broadly categorized as Steel and Alloys at cryogenic temperature of 77 K or -196°C. Tensile and impact properties exhibit an inverse relationship due to the nature of metals, where if a material has high strength, its ductility will decrease, and if it has high ductility, its strength will decrease. Generally, cryogenic treatment will result in periodic strength enhancement of materials, but a significant reduction in ductility occurs when the temperature surpasses the ductile to brittle transition temperature (DBTT). However, some materials can be processed to achieve desired property advantages, such as high toughness, high ductility, or a balanced combination of ductility and toughness without significant reduction in either property.</p>
<p>Paper ID 079 19⁴⁵– 20⁰⁰ (5 min discussion)</p>	<p style="text-align: center;">S Suryanto¹, A R Prabowo^{1,*}, R Adiputra², S Ehlers^{3,4}, M Braun⁴, I Yaningsih¹, D D D P Tjahjana¹, N Muhayat¹ and E P Budiana¹</p> <p style="text-align: center;">¹<i>Department of Mechanical Engineering, Universitas Sebelas Maret, Surakarta 57126, Indonesia</i></p> <p style="text-align: center;">²<i>Research Center for Hydrodynamics Technology, National Research and Innovation Agency (BRIN), Surabaya 60112, Indonesia</i></p> <p style="text-align: center;">³<i>Institute for Ship Structural Design and Analysis, Hamburg University of Technology, Hamburg 21073, Germany</i></p> <p style="text-align: center;">⁴<i>Institute of Maritime Energy Systems, German Aerospace Centre (DLR), Geesthacht 21502, Germany</i></p> <p>Title of presentation: Environmental impacts caused by fire and explosion accidents in maritime activities: A review</p> <p>Abstract: Over the past few years, marine transportation accidents have decreased significantly. Marine transportation accidents are complex events often caused by multiple factors through the interaction of multiple parties. These accidents can cause loss of human life and property and ecological and environmental damage. They could disrupt the balance of the industrial and economic situation. This paper comprehensively reviews Fire and Explosion (F.E.) accidents in maritime activities. The subject is narrated through a brief history and the resulting impact on the surrounding marine ecosystem. Then, the study summarizes the policies and regulations derived from international maritime agencies that have governed prevention and countermeasures. Therefore, preliminary research on enhancing the safety and security of composite-based</p>



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	structures is summarized in this review to highlight protection and prevention programs in the maritime scope. Overall, this study covers the current state of the global maritime industry and the policies and regulations for protection from fire and explosion accidents.
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ICECAE 2024 POSTER PRESENTATIONS

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POSTERS	
Paper ID 5	<p>Siarhei Baraishuk¹, Ivan Pavlovic¹, Muzaffar Murodov^{2*}, Murodjon Nabiev²</p> <p>¹<i>Department of Practical Training of Students, Belarusian State Agrarian Technical University, Minsk, Belarus</i></p> <p>²<i>Department of Energy, Namangan Engineering-Construction Institute, Namangan, Uzbekistan</i></p> <p>Title of presentation: The use of hydrogels in mixtures to reduce the transient resistance of the soil - grounding device</p> <p>Abstract: A method for reducing the resistance of the ground loop for high-resistance soils by using mixtures based on hydrogel is considered as backfill materials. Based on the results of the research, an analysis was made of the effect of mixtures on soil resistivity, the seasonality factor and the resistance of the ground loop at various temperatures and humidity.</p>
Paper ID 6	<p>Yunus Kenjaev^{1*}, Razzak Aripov²</p> <p>¹<i>National University of Uzbekistan named after Mirzo Ulugbek, 4 University Street, 100174 Tashkent, Uzbekistan</i></p> <p>²<i>Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology, 77 Mirzo Ulugbek, 140103 Samarkand, Uzbekistan</i></p> <p>Title of presentation: The agrophysical properties effects in syderation used short-row sowing on soil.</p> <p>Abstract: In short-term cotton-crop rotation fields agrophysical features was achieved improvement by sowing pure rape, peas + rape, peas + rape + chick peas are 22–32 tons of biomass per hectare of land is sown in the fall. In particular, when peas + rape, peas + rape + chick peas are used as siderites, macroaggregates in the topsoil increase by 7.87–8.73% and in the subsoil by 3.35–3.50%, when water-resistant aggregates are planted with gooseberry (55.82%) and pea when mixed with rapeseed and peas (56.7%), and increased soil fertility. As a result, the decrease in soil volume had a significant effect on the increase in water permeability and soil moisture more than 2%. The highest moisture content was observed in the mixture of peas + rape + chick peas as a siderite, and when rapeseed was used in its pure form. Sideration has resulted in an increase in organic humus in the soil and an optimal retention of moisture.</p>
Paper ID 7	<p>Gulchekhra Nabiyeva^{1*}, Dilafruz Makhkamova¹, Yunus Kenjaev¹</p> <p>¹<i>National University of Uzbekistan Named After Mirzo Ulugbek. University str., 4, 100174 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Microbiological activity of soils with difficult ecological conditions</p> <p>Abstract: This article presents data on irrigate d meadow-alluvial soils of the Takhtakupyr region of the Karakalpak Republic. The microbiological activity (ammonifiers, spore, oligonitrophils, nitrogen fixers, actinomycetes, microscopic fungi) of meadow-alluvial soils is studied, depending on the degree of salinity. The degree of enrichment with microorganisms of highly saline, medium and slightly saline soils is determined.</p>



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Paper ID 8	<p style="text-align: center;">Yunus Kenjaev^{1*}, Zamira Abdushukurova¹, Salomat Zakirova¹</p> <p style="text-align: center;"><i>¹National University of Uzbekistan Named After Mirzo Ulugbek, University str., 4, 100174 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the influence of sideration on soil density and porosity Abstract: It was achieved to improve agro physical properties of soil by forming of 22.41-52.92 t/ha green biomass of pea, chickpea, rape and barley when sown as green manure as well as tilling it into soil in summer July 10 wheat freed areas, and autumn October 10 cotton freed areas. It was determined that the mass of soil before the first irrigation of cotton in 0-20 cm tilling layer of soil with green manure applied variant was 0.06-0.08 g/cm³; 0.03-0.08 g/cm³ and it was less 0.05-0.07 g/cm³; 0.03-0.08 g/cm³ in 20-40 cm of soil layer relatively to control-without green manure variants. In its turn, it creates best and favorable condition of branching root system of cotton-plant and will be achieved to get high and quality yield.</p>
Paper ID 9	<p style="text-align: center;">Zafarjon Jabbarov^{1*}, Gulkhayo Atoyeva¹, Sardor Sayitov², Rakhmon Kurvantaev³, Nodira Khakimova⁴, Samad Makhhammadiev¹, Yunus Kenjaev¹, Dilafruz Makhkamova¹, Bakhrom Jobborov¹, Gulchekhra Nabiyeva¹, Najmiddin Nurgaliev¹, Malika Aliboyeva¹, Salomat Zakirova¹</p> <p style="text-align: center;"><i>¹National University of Uzbekistan named after Mirzo Ulugbek, 4 University Street, 100174 Tashkent, Uzbekistan</i></p> <p style="text-align: center;"><i>²Institute of Mineral Resources, 64 Olimlar, 100164 Tashkent, Uzbekistan</i></p> <p style="text-align: center;"><i>³Soil Science and Agrochemistry Research Institute, 3 Street Kamarniso, 100179 Tashkent, Uzbekistan</i></p> <p style="text-align: center;"><i>⁴Bukhara State University, 11 Street Mukhammad Ikbol, 200118 Bukhara, Uzbekistan</i></p> <p>Title of presentation: Study on the soil pollution condition around the domestic wastewater Abstract: The rapid development in the population of the earth, the increase in the level of consumption of people leads to an increase in the amount of household waste from year to year, which, in turn, increases the negative impact on the environment of their collection and storage areas, that is, household waste landfills. From these studies, the state of contamination of the soil as scattered around the municipal landfill, the sources factors affecting the contamination were described. The main purpose of the conducted research is to determine the level of pollution of the soil under the influence of household waste. The researches were conducted in the soil scattered around the Tashkent municipal waste dump, located in the Ohangaron district were of the Tashkent province. The results showed that in the chemical pollution of irrigated typical gray soils, the domestic landfill is considered the main pollutant source, and the level of pollution decreases from the distance of 1.2 km from the landfill, and into according to the soil layers, it decreases uniformly from the top to the bottom, starting from the 70 cm layer. The soil scattered around the landfill is contaminated with organic pollutants, ash elements and heavy metals and other pollutants, including the total amount of Cd 3.1 times, As 4.39 times, Sb 2.46 times compared to the permissible limit share. , W 4.6 times and other heavy metals increased to different degrees.</p>
Paper ID 10	<p style="text-align: center;">Zafarjon Jabbarov¹, Urol Nomozov¹, Yunus Kenjaev¹, Zamira Abdushukurova¹, Salomat Zakirova¹, Aliya Mahkamova², Bobir Kamilov², Rakhmon Kurvantaev³, Davronbek Kholdarov⁴, Avazbek Turdaliev⁴, Gulom Yuldashev⁴</p> <p style="text-align: center;"><i>¹National University of Uzbekistan named after Mirzo Ulugbek, 4 University Street, 100174 Tashkent, Uzbekistan</i></p> <p style="text-align: center;"><i>²Tashkent State Agrarian University, 2 University str. Tashkent Uzbekistan</i></p> <p style="text-align: center;"><i>³Soil science and agrochemistry research institute, Str. Kamarniso, 3, 100179, Tashkent, Uzbekistan</i></p> <p style="text-align: center;"><i>⁴Fergana State University, Fergana, Uzbekistan</i></p>



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	<p>Title of presentation: Effects of pollution of saline soils with oil and oil products on soil physical properties</p> <p>Abstract: In the article, pollution of saline soils with oil and oil products, physical and water-physical properties depending on the level of salinity are studied. As a result of the research, it is scientifically based that the increase in the level of contamination of the soil is subject to the decrease in water permeability, and the decrease in the level of pollution is subject to the law of the increase in water permeability. In the article, weakly, moderately, strongly and very strongly contaminated soils with oil were studied. According to the results, it was determined that the water permeability of the soil was observed in 25, 45, 45, 37, 5, 3, 2 minutes, and it carried 75, 26, 44, 45, 540, 1050, 1200 ml of water, respectively, for 90 minutes. The amount of water transfer compared to the control soil for 90 minutes was less in 1%, 2%, 5% contaminated soils, and very high in 15%, 25% and 37.5% contaminated soils. The increase in the level of pollution is explained by the deterioration of water permeability and moisture retention. Also, due to the fact that oil is a viscous organic pollutant, the changes of 0.25, 0.5, 1, 3, 5, 7, 10 mm microaggregates, which are important for soil fertility, as a result of pollution, and changes in the amount of these microaggregates were also determined. It was found that the soils around the South Mirshodi oil field were previously contaminated and the amount of microaggregates smaller than 0.25 mm, 0.25 mm, 1 mm, 2 mm and 3 mm in the irrigated soils increased as the distance from the source of contamination increased. This is explained by the decrease in the concentration of oil in the soil. The amount of 5 mm, 7 mm and 10 mm aggregates has decreased. A similar situation was observed around the Kumkurgan oil base. The effect of petroleum hydrocarbons is more noticeable in microaggregates with a diameter of 10 mm.</p>
<p style="text-align: center;">Paper ID 11</p>	<p style="text-align: center;">Abdivohid Kuchkarov¹, Adamboy Boltaboev¹, Qahramon Ibragimov¹, Olimaxon Ergasheva^{1*}, Mamlakat Makhmudov¹</p> <p style="text-align: center;">¹National University of Uzbekistan, University street 4, 100174 Tashkent, Uzbekistan</p> <p>Title of presentation: Frequency of occurrence of field bugs-mirids on the cotton–alfalfa agrocenosis in the Tashkent oasis</p> <p>Abstract: On the basis of the collections and observations conducted by the authors in 2016–2021, various points within the Tashkent region. The observations on cotton crops and weeds were conducted in the spring and summer seasons. The counts were performed on wild plants and plants surrounded by cotton crops. The seasonal dynamics was studied and the time when the maximum number of field bugs were observed on cotton plants, were identified.</p>
<p style="text-align: center;">Paper ID 12</p>	<p style="text-align: center;">Zafarjon Jabbarov¹, Tokhtasin Abdrakhmanov¹, Maruf Tashkuziev², Nodirjon Abdurakhmonov², Samad Makhmadiyev¹, Orzubeq Fayzullaev¹, Urol Nomozov¹, Yunus Kenjaev¹, Shokhrukh Abdullaev¹, Dilafruza Yagmurova¹, Zamira Abdushukurova¹, Shoira Iskhakova¹, Peter Kováčik³</p> <p style="text-align: center;">¹National University of Uzbekistan named after Mirzo Ulugbek, Tashkent, Uzbekistan ²Research Institute of Soil Science and Agrochemistry, Tashkent, Uzbekistan ³Slovak University of Agriculture in Nitra, Nitra, Slovakia</p> <p>Title of presentation: Cultivation of plants based on new technologies in the dry soil of the Aral Sea</p> <p>Abstract: The article presents the results of research aimed at growing plants on the basis of different technologies in the relic-swamp salt-sand desert soils of the Aral Sea. The amount of annual precipitation on the soils of this area formed in the conditions of the arid climate region is 180-200 mm. Many factors should be taken into account for growing plants in these areas. It is necessary to choose a suitable halophyte plant for marshy saline soils and to take into consideration sharp changes in temperature throughout the season. Planting in these soils is due to atmospheric precipitation and groundwater. Therefore, experiments were carried out on plant cultivation in the pipe method, and the efficiency was up to 1.5 times higher than in conventional conditions. The combined use of different</p>



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	technologies with the pipeline method has further increased efficiency.
Paper ID 13	<p style="text-align: center;">S. M. Anas^{1*}, Rayeh Nasr Al-Dala'ien^{2,3}, Mehtab Alam⁴, and Shahbaz Akram¹</p> <p style="text-align: center;">¹<i>Department of Civil Engineering, Jamia Millia Islamia (A Central University), 110025 New Delhi, India</i></p> <p style="text-align: center;">²<i>College of Graduate Studies, Universiti Tenaga Nasional, Jalan Ikram -UNITEN, 43000 Kajang, Selangor, Malaysia</i></p> <p style="text-align: center;">³<i>Civil Engineering Department, College of Engineering, Al-Balqa Applied University (BAU), 19117 Salt, Jordan</i></p> <p style="text-align: center;">⁴<i>Department of Civil Engineering, Netaji Subhas University of Technology, 110073 New Delhi, India</i></p> <p>Title of presentation: Effect of Impactor's Taper Angle on the Response of a Square Slab to a Falling Mass</p> <p>Abstract: Reinforced concrete (RC) slabs during their service life experience falling mass impacts which are significantly different from quasi-static loading on account of short-term load transference and higher strain rate. Slab being a thin flexural member is prone to short-term dynamic loadings susceptible to irreparable damage or even collapse. Considerable research has been done with round impacting mass, however, the impacting mass needs not necessarily be round and may have a different geometry such as a rolling boulder or fragmented rock mass. To simulate the practical impacting geometries of the falling mass, eight different variations of the geometries varying from flat of 300mm diameter followed by 40mm flat with tapering from 90° to 0° in increments of 15° keeping the material characteristics and drop height of the falling mass constant across all the eight cases, have been considered herein to investigate the influence of impactor's taper angle on the anti-impact response of the validated square slab in Abaqus Explicit package program. A comparison of several response parameters including displacement, damage, stress distribution, and plastic dissipation energy has been done with the validated model, and the geometries of the impactor causing the maximum and minimum damages are identified. A key finding from this study is that all considered impacting geometries lead to bond failure in the lower layer of the re-bars, however, the impactors having the geometry with taper angles below 45° possess the capacity to induce bond failure in the re-bars of the upper layer too, beyond the impacted region.</p>
Paper ID 14	<p style="text-align: center;">Otabek Khujav^{1*}, Dilshod Obidjanov², Odina Nazarova¹, Nafosat Tokhtamurodova³</p> <p style="text-align: center;">¹<i>Research Institute of Forestry, Tashkent, Uzbekistan</i></p> <p style="text-align: center;">²<i>Scientific-Research Institute of Plant Quarantine and Protection, Tashkent, Uzbekistan</i></p> <p style="text-align: center;">³<i>Karshi Institute of Irrigation and Agrotechnologies, Karshi, Uzbekistan</i></p> <p>Title of presentation: Study on protection of newly established forest plants in the dry zone of Aral Sea</p> <p>Abstract: The bioecological characteristics of diseases of forest and pasture plants planted in the dry part of the Aral Sea were studied, and agrotechnologies were developed based on the system of protection in their cultivation. In research, Redomil gold, 68% n.kuk (2.0-2.5 kg/ha), Fundazol, 50% em.k. (2.0 l/ha) showed high biological efficiency. According to these, the preparats Redomil gold, 68% n.kuk (2.0-2.5 kg/ha), Fundazol, 50% em.k. (2.0 l/ha) are recommended.</p>
Paper ID 18	<p style="text-align: center;">Khusniddin Shamsutdinov¹</p> <p style="text-align: center;">¹<i>Tashkent State Technical University named after Islam Karimov, University str. 2, 100140 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on improving the asynchronous electric drive of ball mills</p> <p>Abstract: In the world, many enterprises in the mining, metallurgical, paint and varnish, chemical industries, as well as in the production of building materials, pay special attention to the problems of starting and accurately stopping ball mills. This article substantiates the expediency of using an adjustable electric motor in grinding mechanisms in electric drives instead of an unregulated asynchronous motor. The problem of facilitating the start-up of</p>



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	<p>ball mills and ensuring accurate stop of the neck of ball mills using the lowest speed is considered. As the review of the literature showed, speed control in electric drives using two-speed motors is a simple, cheap and reliable option.</p>
<p>Paper ID 20</p>	<p style="text-align: center;">Aidai Turatbekova^{1*}, Dilbar Mirzarakhmetova^{1,2,3}, Nan Shang⁴, Nusratillo Toshpulatov⁵, Raykhon Tajibayeva⁶, Nadira Sabirova⁶, Buvzaynab Mamarajapova⁷, Rano Tukhtaeva⁸</p> <p style="text-align: center;">¹<i>Department of Chemistry and Biology, Kimyo International University in Tashkent, 100121 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">²<i>Tashkent State Technical University, Tashkent 100095, Uzbekistan</i></p> <p style="text-align: center;">³<i>National University of Uzbekistan named after Mirzo Ulugbek, Tashkent 100174, Uzbekistan</i></p> <p style="text-align: center;">⁴<i>College of Engineering, China Agricultural University, 100107 Beijing, P.R. China</i></p> <p style="text-align: center;">⁵<i>National Research University TIAME, 100000 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">⁶<i>Urgench State University, Urgench 220100, Uzbekistan</i></p> <p style="text-align: center;">⁷<i>Department of Ecology and Environmental Protection, Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i></p> <p style="text-align: center;">⁸<i>Karshi State University, 180119 Karshi, Uzbekistan</i></p> <p>Title of presentation: Study of biologically active peptides from plant materials: A succinct overview</p> <p>Abstract: The study of the biological activity of various peptide compounds is a novel research topic, as peptides have extensive applications in a wide range of sectors. Biologically active peptides can be obtained from various sources, including animals, plants, and microorganisms. Plants, on the other hand, have immense promise owing to their diverse chemical structures, each of which has unique characteristics and pharmacological actions. These characteristics set the plant world apart for the development of several drugs and insecticides. Plant-derived peptides perform a wide range of biological functions, including antibacterial, anticancer, antihypertensive, and antioxidant activities. This study shows that Mass spectrometry (MS) is the primary method used to identify proteins and native peptides isolated from tissues and biological fluids. Proteomics and peptidomics are two distinct peptide analysis approaches employed in this context.</p>
<p>Paper ID 23</p>	<p style="text-align: center;">Bobur Shodiyev^{1*}, Shuxrat Mannoboyev², Abrorbek Shukuraliyev², Muhammadsodiq Matqosimov², Azimbek Madaminov³, Mirzabek Saporboyev³, Bahadir Suropov⁴</p> <p style="text-align: center;">¹<i>Department of Power Supply and Renewable Energy Sources, National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers", 100000 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">²<i>Andijan Institute of Mechanical Engineering and Construction, Andijan 170119, Uzbekistan</i></p> <p style="text-align: center;">³<i>Urgench State University, Urgench 220100, Uzbekistan</i></p> <p style="text-align: center;">⁴<i>Department of Algorithms and Programming Technologies, Karshi State University, 180119 Karshi, Uzbekistan</i></p> <p>Title of presentation: Electrical energy saving analysis based on solar power collector's thermal system</p> <p>Abstract: This article analyzed the processes of new types of solar collector water heating systems designed to form solar collector thermal energy, air movement mode, including boundary layers of air flow, based on solar energy due to the abundance of sunny days in Uzbekistan. Additional parts in the interior, pipes, structures of the heating surface, methods for calculating basic physics were indicated. Also, the issues of forming the boundary layers of air flow, determining the elongation of the boundary layers and forming the air movement of the air flow, which occur under conditions of laminar or turbulent flow, are determined by changes in the patterns of air flow movement. A mathematical and immersion model was developed based on the results obtained directly</p>



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	<p>in Reynolds number (Re) in the range 1000-5000 of these thermal and hydrodynamic processes. In the research work, the concave dimensions of the air pipe, including the length of the concave step, were determined taking into account the relationship between t and the concave height h, the formation of air flow movements and the breakpoints of the boundary points. Based on this system, traditional fuel resources were saved as well as energy saving problems in the electric power system.</p>
<p>Paper ID 24</p>	<p style="text-align: center;">Rasulov Abdulkhay¹, Nazirova Khilola¹, Badalov Abdumalik^{1*}, Saidova Maftuna¹ <i>¹Tashkent State Technical University, University str. 2, 100095, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on graphs of electrical load and analysis of power consumption modes Abstract: The issues of planning and managing power consumption modes are considered, using electrical load schedules, comparisons of the declared maximum load with the actual one are presented, the main directions for increasing the efficiency of rational use of electricity and regulating electrical load schedules are given</p>
<p>Paper ID 25</p>	<p style="text-align: center;">Muzaffar Khudayarov^{1*}, and Sarvar Kurbonov² <i>¹Department of Power Stations, Networks and Systems, Tashkent State Technical University, 100095 Tashkent, Uzbekistan</i> <i>²Joint Venture Limited Liability Company (JV LLC) "SKB", Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on program methods for energy monitoring of buildings Abstract: Energy monitoring is one of the effective measures aimed at reducing and maintaining energy consumption of residential and public buildings at the proper level, taking into account climatic factors. This article provides information about the process of monitoring the energy consumption of a building. A brief analysis of methods for monitoring the energy consumption of different types of buildings has been conducted. In particular, the methods of "Control and Normalization" based on the Energy-Temperature diagram based on the operating mode of the building are considered. In addition to the methods, information is provided on the information system "energy monitoring of buildings" developed on their basis. Also presented the process of implementing energy monitoring using the developed information system. The use of energy monitoring makes it possible to determine overconsumption in a timely manner and due to this to optimize the current level, as well as to determine the target values of energy consumption in buildings.</p>
<p>Paper ID 26</p>	<p style="text-align: center;">Umar Sherqulov^{1*}, Farhad Rakhimov², Nodira Mamatova¹, Ilkhom Abbazov¹ <i>¹Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</i> <i>²Tashkent Institute of Chemical Technology, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Features of the method for producing cross-knitted knitwear with a discontinuous linear melange effect Abstract: The textile industry occupies one of the most important places in the production of socially significant products and meeting the needs of the economy and population. In recent years, issues of effective use of existing technological capacities and the use of diverse raw materials have been on the agenda. The article reveals the features of the method for producing cross-knitted knitwear with a discontinuously linear melange effect from dissimilar or multi-colored threads or yarn.</p>
<p>Paper ID 30</p>	<p style="text-align: center;">Olimaxon Ergasheva^{1*}, Sharof Qarshiboyev², Surayyo Husanova³, Elyor Atashev⁴, Nusratillo Toshpulatov⁵, Charos Yuldosheva⁵ and Ganisher Mustofoyev⁵ <i>¹National University of Uzbekistan named after Mirzo Ulugbek, University str., 4, 100174 Tashkent, Uzbekistan</i> <i>² Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i> <i>³ Karshi State University, 180119 Karshi, Uzbekistan</i> <i>⁴ Urgench State University, Urgench 220100, Uzbekistan</i></p>



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	<p style="text-align: center;">⁵ <i>National Research University TIAME, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the influence of fertilizers on the yield and quality of barley and potatoes</p> <p>Abstract: Improved plant nutrition when applying organic and mineral fertilizers occurs due to nitrogen, phosphorus and potassium from fertilizers and soil. A significant part of them is fixed by soil. Depending on the amount of fertilizer applied and the mobility of soil nutrients, different conditions for the formation of the crop and its quality are created. Reproduction of soil fertility and increase in crop yields can only be achieved on the basis of the scientifically based use of fertilizers and other chemicals in crop rotations. Currently, the rational use of fertilizers, both organic and mineral, to increase productivity, quality of crops and improve soil fertility is of particular importance. Studying the effectiveness of various fertilizer systems in crop rotations and biologization of agriculture are currently becoming particularly important. Hence, this study highlights the comprehensive information on the influence of various fertilizer on the yield and quality of barley and potatoes.</p>
<p>Paper ID 32</p>	<p style="text-align: center;">Sherzod Toshev^{1*}, Shaxnoza Tosheva², Abror Saodullaev³, Sevara Tengelova¹ ¹<i>Department of Power Supply and Renewable Energy Sources, National Research University TIAME, Kari Niyazov str. 39, 100000 Tashkent, Uzbekistan</i> ²<i>Joint-Stock Company «UZENERGYENGINEERING», M. Ashrafi str.1st lane 9, 100076 Tashkent, Uzbekistan</i> ³<i>Jizzakh Polytechnic Institute, Islam Karimov str. 4, 130100 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Mathematical and simulation modeling of a synchronous generator for micro hydroelectric and low-speed wind power plants</p> <p>Abstract: In this article, in conditions where environmental deterioration and energy shortages are observed throughout the world, a mathematical model for improving and developing new types of synchronous generators for low-speed wind power plants and micro-hydroelectric power plants is developed free of charge extraction of running water and simulation processes. As a result of mathematical and simulation modeling of a synchronous generator, it is based on the analysis of electromagnetic processes and the study of improvement issues to ensure its efficient operation at low speeds. In mathematical modeling, the electromagnetic processes of a low-speed synchronous generator were analyzed using mathematical equations. For this purpose, mathematical and simulation models of an improved generator designed for low speed were developed and research was carried out. The article creates a mathematical model based on the Park-Gorev equations of asymmetric modes of a synchronous generator designed to generate electricity from low-speed wind and freely flowing water. The mathematical model of the generator was expressed in the Simulink package and a simulation model was built, research was carried out and characteristics were obtained.</p>
<p>Paper ID 34</p>	<p style="text-align: center;">Umidjon Djumayozov^{1*}, and Nigora Eshmanova¹ ¹<i>Samarkand branch of Tashkent University of Information Technologies, Samarkand 140100, Uzbekistan</i></p> <p>Title of presentation: Coupled Problem on Thermo-Elasticity in Strains for an Isotropic Parallelepiped</p> <p>Abstract: This work is devoted to mathematical and numerical modeling of the coupled dynamic problem of thermoelasticity in deformations. A numerically related boundary value problem of thermoelasticity in deformations for a parallelepiped with the corresponding initial and boundary conditions is formulated and solved. Grid equations are constructed using the finite-difference method in the form of explicit and implicit schemes. In this case, the solution of the explicit scheme is reduced to recurrent relations with respect to deformations and temperature. In the case of implicit difference schemes, the equations are solved by sequential application of the sweep method. The validity of the</p>



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	<p>formulated boundary value problems is justified by comparing the numerical results obtained with different methods based on two different models.</p>
<p>Paper ID 35</p>	<p>Abdugani Rakhmatov^{1*}, Odil Primov², Maxammadjon Mamadaliyev³, Shoyatbek Tòrayev³, Utkir Xudoynazarov², Shoxboz Xaydarov², Elshod Ulugmurodov², Ilhom Razzoqov⁴</p> <p>¹Department of Power Supply and Renewable Energy Sources, National Research University TIAME, 100000 Tashkent, Uzbekistan</p> <p>²Department of Automation and Control of Technological Processes, Karshi Institute of Irrigation and Agrotechnologies, 180119 Karshi, Uzbekistan</p> <p>³Andijan Machine Building Institute, 170119 Andizhan, Uzbekistan</p> <p>⁴Department of Algorithms and Programming Technologies, Karshi State University, 180119 Karshi, Uzbekistan</p> <p>Title of presentation: Advancements in renewable energy sources (solar and geothermal): A brief review</p> <p>Abstract: This scientific article provides an in-depth review of recent advancements in renewable energy sources, examining their significance in addressing global energy challenges. The paper covers various types of renewable energy, including solar, wind, hydropower, geothermal, and biomass, emphasizing technological developments, efficiency improvements, and environmental considerations. Additionally, the article discusses the current state of renewable energy adoption globally and its potential impact on reducing carbon emissions. The analysis integrates findings from recent studies and research papers to present a comprehensive overview of the current landscape of renewable energy technologies.</p>
<p>Paper ID 36</p>	<p>Farxod Chorshanbiyev¹, Obidjon Abdullayev^{2*}, Kamola Khalilova³, Mamlakat Kodirova⁴, Abduqunduz Xalimjanov⁵, Umarbek Rakhimov⁶, Jakhongir Rakhimov⁶</p> <p>¹Tashkent State Agrarian University, Tashkent, Uzbekistan;</p> <p>²Tashkent Branch of the Samarkand State University Veterinary Medicine of Livestock and Biotechnologies, Tashkent, Uzbekistan;</p> <p>³Department of Forestry and Landscape Design, Tashkent State Agrarian University, Tashkent, Uzbekistan;</p> <p>⁴Karshi State University, 180119 Karshi, Uzbekistan;</p> <p>⁵Andijan Machine Building Institute, 170119 Andizhan, Uzbekistan;</p> <p>⁶Urgench State University, Urgench 220100, Uzbekistan ;</p> <p>Title of presentation: Study on Species and Age Structure of Forests: Optimization of Forest Stand Completeness</p> <p>Abstract: This scientific paper investigates the critical aspects associated with optimizing the species composition and age structure within forest ecosystems to achieve a state of completeness. The study emphasizes the ecological, economic, and social dimensions of forest management, with a focus on enhancing biodiversity, ensuring sustainability, and promoting resilience to environmental changes. Through a comprehensive review of literature, empirical data, and case studies, this paper provides insights into the strategic approaches and key considerations for forest stand completeness optimization.</p>
<p>Paper ID 37</p>	<p>Abduvali Khaldjigitov¹, Umidjon Djumayozov^{2*}</p> <p>¹National University of Uzbekistan, Tashkent, Uzbekistan</p> <p>²Samarkand branch of Tashkent University of Information Technologies, Samarkand, Uzbekistan</p> <p>Title of presentation: Model Equations of the Theory of Elasticity in Strains: Classical and New Formulations</p> <p>Abstract: The article is devoted to the construction of model equations of the theory of elasticity with respect to deformations. Classical and new versions of boundary value problems of the theory of elasticity in strains are considered. In the classical version,</p>



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	<p>model equations in strains are constructed within the framework of the Beltrami-Michell equations. A new version of model equations in strains is based on a new formulation of boundary value problems of the theory of elasticity in stresses. Discrete equations are constructed using the finite-difference method for two-dimensional problems. The well-known problem of tension a rectangular plate with a parabolic load applied on opposite sides has been solved. By comparing the numerical results of boundary value problems in classical and new formulations, as well as the Timoshenko-Goodier solution, the validity of the formulated model equations in strains and the reliability of the obtained numerical results are ensured.</p>
<p>Paper ID 41</p>	<p style="text-align: center;">Mohammed Benzerara^{1*}, Hamda Guedaoura², S. M. Anas³, Mashalbek Yolchiyev⁴, and Barno Daminova⁵</p> <p>¹<i>Materials Geomaterials and Environment Laboratory (LMGE), Faculty of Technology, Department of Civil Engineering, Badji Mokhtar—Annaba University, P.O. Box 12, 23000 Annaba, Algeria</i></p> <p>²<i>Faculty of Sciences and Technology, Department of Civil Engineering, Chadli Bendjedid – El Tarf University, P. O. Box 73, 36000 El Tarf, Algeria</i></p> <p>³<i>Department of Civil Engineering, Jamia Millia Islamia (A Central University), 110025 New Delhi, India</i></p> <p>⁴<i>Andijan Machine Building Institute, Bobur Shox Ave 56, 170119 Andizhan, Uzbekistan</i></p> <p>⁵<i>Department of Algorithms and Programming Technologies, Karshi State University</i></p> <p>Title of presentation: Advanced Strengthening of Steel Structures: Investigating GFRP Reinforcement for Floor Beams with Trapezoidal Web Openings</p> <p>Abstract: Enhancing existing steel structures becomes imperative upon alterations in usage or geometric configurations, such as introducing web openings in floor beams to accommodate various services. The utilization of welded steel plate and conventional strengthening methods often presents challenges, which may be mitigated through the adoption of composite materials like Fiber Reinforced Polymers (FRP). However, research on the application of FRP to steel beams with web openings remains limited, predominantly focusing on beams with rectangular openings of modest dimensions. This study delves into the application of Glass Fiber Reinforced Polymers (GFRP) to strengthen reinforced steel floor beams featuring trapezoidal openings. Leveraging a rigorously validated numerical model derived from previously published findings by a contributing researcher, the investigation showcases that the proposed GFRP reinforcement scheme exhibits performance comparable to conventional steel plate welding techniques, while preserving the inherent strength of the original solid beams.</p>
<p>Paper ID 44</p>	<p style="text-align: center;">Nurmuhamat Asatov¹, Shukhrat Alikabulov¹, Yorkinbek Radjabov¹, Dilshod Ziyaviddinov¹, Bakhodir Sagatov^{1*}</p> <p>¹<i>Jizzakh Polyethnic Institute, 130100 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Determination of total heat transfer resistance, temperature line and moisture formation of condensate of the external walls' multilayer construction</p> <p>Abstract: To create a moderate climate in the premises of newly built low-rise residential buildings, this article presents theoretical calculations of the design of external walls made of small gas blocks, the cavities of which are filled with heavy concrete and thermal insulation material. As a result of theoretical calculations, the total resistance to heat transfer, thermal inertia, temperature in the layers of the wall, temperature line, humidity regime and heat absorption coefficient of the external wall structure, built from small gas blocks filled with heavy concrete and thermal insulation, were determined. material..</p>
<p>Paper ID 45</p>	<p style="text-align: center;">Nurmuhamat Asatov¹, Uktam Djurayev¹, Mashrab Aliyev¹, Bakhodir Sagatov¹, Azizjon Abdurakhmonov¹</p> <p>¹<i>Jizzakh polyethnic institute, 130100 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Research of a modern energy-saving model of the enclosing</p>



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	<p>structure of civil buildings from efficient insulations</p> <p>Abstract: This article examines a modern energy-saving model of the enclosing structure of civil buildings made of effective insulation materials, which varies with different physics and mechanical properties, and complex studies of operational properties and calculations using the developed model of thermal insulation durability made it possible to obtain predictive values of the durability of various types of thermal insulation materials in the construction of wall fencing and make suggestions according to rational areas of application, incl. depending on the degree of capital of the building and the service life of the enclosing structures.</p>
<p>Paper ID 47</p>	<p style="text-align: center;"><i>Aidai Turatbekova^{1*}, Mayjuda Yaxyaeva-Urunova², Rasul Usmanov³, Ikbol Jabbarova⁴, Kamila Shipilova⁵, Bo'stonbek Yuldashev⁶, Yakhshilik Gulbaev⁷, Ulugbek Gulbaev⁷</i></p> <p style="text-align: center;">¹<i>Department of Chemistry and Biology, Kimyo International University in Tashkent, 100121 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">²<i>Faculty of Biology, National University of Uzbekistan named after Mirzo Ulugbek, 100174 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">³<i>Urgench State University, Urgench 220100, Uzbekistan</i></p> <p style="text-align: center;">⁴<i>Karshi State University, 180119 Karshi, Uzbekistan</i></p> <p style="text-align: center;">⁵<i>National Research University TIAME, 100000 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">⁶<i>Andijan Machine Building Institute, Bobur Shox Ave 56, 170119 Andizhan, Uzbekistan</i></p> <p style="text-align: center;">⁷<i>Jizzakh Polytechnic Institute, Jizzakh 130100, Uzbekistan</i></p> <p>Title of presentation: Study on isolation methods of natural polysaccharides</p> <p>Abstract: Polysaccharides are a significant and varied class of biomolecules that are vital to human health. They are complex carbohydrates made up of monosaccharide units. This scientific article provides a comprehensive review of the sources, extraction methods, and biomedical properties of polysaccharides. Understanding the intricacies of polysaccharides is crucial for harnessing their potential in various biomedical applications, ranging from drug delivery systems to immunomodulation. Polysaccharides are abundant in nature and can be found in a range of sources, such as marine organisms, bacteria, and plants. The unique structural diversity and inherent bioactivity of polysaccharides make them attractive candidates for biomedical research. This article aims to elucidate the diverse sources of polysaccharides, methods of extraction, and their biomedical properties.</p>
<p>Paper ID 48</p>	<p style="text-align: center;"><i>Abduvali Khaldjigitov¹, Umidjon Djumayozov^{2*}, Zebo Khasanova¹, Robiya Rakhmonova²</i></p> <p style="text-align: center;">¹<i>National University of Uzbekistan, Tashkent, Uzbekistan</i></p> <p style="text-align: center;">²<i>Samarkand branch of Tashkent University of Information Technologies, Samarkand, Uzbekistan</i></p> <p>Title of presentation: Study on coupled problems of thermoelasticity in Strains</p> <p>Abstract: In the work, within the framework of the strain compatibility conditions of Saint-Venant, two equivalent dynamic boundary value problems of thermoelasticity with respect to strains are formulated. In the case of the first boundary value problem, the dynamic equations of thermoelasticity are obtained from the compatibility conditions, in the second case, instead of the first three equations of thermoelasticity, the equations of motion expressed with respect to deformations are considered. Discrete analogues of boundary value problems are constructed using the finite-difference method in the form of explicit and implicit schemes. The solution of explicit schemes is reduced to recurrent relations with respect to deformations and temperature. Implicit schemes are solved by sequential application of the elimination method. The validity of the formulated thermoelastic boundary value problems is substantiated by comparing the numerical results of the problem of a thermoelastic parallelepiped obtained by different methods, as well as solving a similar problem in displacements.</p>
<p>Paper ID 49</p>	<p style="text-align: center;"><i>Ravshan Rakhmatullaev^{1*}, Valijon Ermatov¹, Abdurahman Yusufaliev¹, Komiljon</i></p>



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	<p style="text-align: center;">Aynaqulov¹, Muhammad Otaboev¹ ¹<i>Department Agricultural Products Processing Technologies, Gulistan State University, 120204 Gulistan, Uzbekistan</i></p> <p>Title of presentation: Substantiation of the rotary pin installation's working bodies parameters for processing of dried grapes Abstract: The article offers the results of experimental research, the influence of the number of revolutions of the plate and the angle of inclination of the side wall of the plate, internal, and external diameters and heights of pins installed on the plate of a rotary pin installation, as well as the humidity of dried grapes on показателейits performance indicators. When determining the influence of the speed of the plate on the performance of the device, the speed of the plate changed from 200 min-1 to 350 min-1 with an interval of 50 min-1. As well as determining the influence of the angle of inclination of the side wall of the plate on the performance indicators, that when the angle of inclination of the side wall of the plate changes from 25 ° to 35°, the degree of cleaning and loss of dried grapes increased, and the degree of damage decreased. An increase in this angle from 35 ° to 40 ° resulted in a decrease in the degree of peeling and loss of dried grapes, as well as an increase in the degree of damage to them. And at an angle of inclination of 35 ° or more, the probability of getting discarded dried grapes on the walls of the device increases, which negatively affects its quality indicators.</p>
<p>Paper ID 51</p>	<p style="text-align: center;">Shavkat Khurramov^{1*}, Alisher Toshkhujayev¹, and Najimiddin Saidakhmedov² ¹<i>Tashkent University of Architecture and Civil Engineering, Tashkent, Uzbekistan</i> ²<i>Territorial control inspection in the of construction and housing and communal services of the Tashkent region, Nurafshon, Uzbekistan</i></p> <p>Title of presentation: Study on modeling of contact interaction in roll modules Abstract: The main problem of the mechanics of contact interaction in roll modules is to determine the stress-strain state in the technological zone. The article presents mathematical models of the laws of distribution of contact stresses and analytical dependencies of their main indices, which make it possible to calculate the power parameters of roll modules of technological machines. When developing mathematical models, empirical formulas for the laws of distribution of normal stresses along roll contact curves and a friction stress model were used, considering the effect of external forces, roll drive, and compliance of the roll coating on the distribution of shear stresses. It is shown that normal stresses in the compression zone increase from zero to the maximum value by the harmonic law, and in the recovery zone, they decrease from the maximum value to zero by the parabolic law. It was revealed that in the driven roll, the neutral point is located on the left side of the point of maximum normal stress, and the points that determine the maximum normal stress and compression of the interacting bodies coincide and are shifted from the line of centers towards the supply of the processed material into the contact zone.</p>
<p>Paper ID 52</p>	<p style="text-align: center;">Ilkhom Normuratov¹, Ikhtiyor Namozov¹ and Abdumumin Khomidjonov^{1*} ¹<i>Tashkent State Agrarian University, 2 University street, 100140, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Influence of burning methods on the growth development and qualitative yield of apricot seedlings Abstract: This article presents the results of an experiment to determine the optimal height to increase the level of resistance of apricot seedlings with a bud grafting method. In the experiment, a method was tested for grafting the buds of fruitful local varieties of grafted apricot to modern low-growing scions of different heights. In this case, apricot seedlings of the varieties Yubileiny Navoi, Subkhany, Isfarak and Ak Kandak were grafted onto Mirobalan rootstocks. According to observations, the number of dead shoots before the first observation period when grafting the best grafting height of shoots onto scions Morabolan and Morabolan 29C, prop-agated by vegetative means, is 5 cm and is 9-10%,</p>



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	<p>respectively. The largest number of dead buds was observed in the apricot variety Ak Kandak (up to 13%) in this variant of the experiment.</p>
Paper ID 53	<p style="text-align: center;">Jasur Ataev¹, Bakhtijan Sarsenbaev^{2*}, Nietulla Tleuov² and Sharyar Bisenbaev² ¹Urgench State University, Urgench, 220100, Khorezm province, Uzbekistan ²Karakalpak State University, Nukus, 230100, Karakalpakstan, Uzbekistan</p> <p>Title of presentation: Promising directions determination of the forecast values development of agrobiotechnology services in the Aral Sea Basin Abstract: . Based on the developed forecast, stable growth rates are expected for bio laboratory services in the region over the next five years. Specifically, by 2027, there will be a decrease in the growth rate by 5.1%, but an overall increase of 1.3 times is anticipated if the cost of gross services rendered amounts to 5087.6 thousand UZS. Additionally, the number of enterprises is projected to increase by 1.17 times compared to 2022 by 2027. The forecast indicates that in 2023, there will be a 9.6% increase in the number of operating enterprises, but only a 6.4% increase in the volume of services. This leads to a reduction in the volume of services per entity. To address this issue, it is proposed to support entities that supply bio laboratory services. This support could help maintain and improve the quality and availability of bio laboratory services in the region.</p>
Paper ID 54	<p style="text-align: center;">Shavkat Khurramov^{1*}, Akmal Rasulev¹, and Abdumajit Saliyev² ¹Tashkent University of Architecture and Civil Engineering, Tashkent, Uzbekistan ²Tashkent State University of Economics, Tashkent, Uzbekistan</p> <p>Title of presentation: Study on modeling roller squeezing semi-finished leather products Abstract: This study is devoted to the analysis of moisture content in a two-roll module of a machine for squeezing semi-finished leather products after chrome tanning. An analytical relationship was obtained that describes the patterns of variation in moisture content during the roller pressing of semi-finished leather products; inequalities were derived for estimating the residual moisture content of semi-finished leather products. It was revealed that with a decrease in the thickness and initial moisture content of the semi-finished leather product, its moisture content decreases. It was stated that with an increase in the initial moisture content of the semi-finished leather product, its residual moisture content increases and asymptotically approaches a certain value.</p>
Paper ID 55	<p style="text-align: center;">Fozildjon Khoshimov¹, Kamoliddin Kadirov^{1*}, Khulkaroy Yusupalieva¹, Alijon Kushev¹ ¹The Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan, 100076 Tashkent, Uzbekistan</p> <p>Title of presentation: Technological process and laws of change of energy consumption parameters of spinning enterprises Abstract: Textile industrial enterprises are composed of three main sectors, which differ significantly from each other in terms of energy capacity, and include - spinning, weaving and finishing departments. In comparison to other departments, spinning technological processes consumes the most electricity. It is necessary to use modern energy-saving devices and to improve technological processes in accordance with the requirements of the times. Building an energy balance based on the analysis of the enterprise's technological processes, as well as forecasting electricity consumption, is one of the urgent issues. In this article, the issues of energy saving and efficiency improvement and forecasting in spinning departments are considered.</p>
Paper ID 004	<p style="text-align: center;">Dilshod Kodirov¹, Alisher Davirov^{1*}, Abror Shukuraliev², Jakhongir Normuminov³, Tuychi Juraev⁴, Bahadir Suropov⁵ ¹Department of Power Supply and Renewable Energy Sources, National Research University TIAME, 100000 Tashkent, Uzbekistan ²Andijan Machine Building Institute, Andijan, Uzbekistan ³Tashkent State Technical University, Tashkent, Uzbekistan</p>



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	<p>⁴<i>Department of Algorithms and Programming Technologies, Karshi State University, 180100 Karshi, Uzbekistan</i></p> <p>⁵<i>Department of Computer Systems, University of Economics and Pedagogy in Karshi, Karshi 180117, Uzbekistan</i></p> <p>Title of presentation: Modeling of design parameters of a screw turbine for a microhydro power plant</p> <p>Abstract: Microhydroelectric power plants with screw turbines operating on low-pressure watercourses represent a new form of small-scale hydropower. Modeling of the design parameters of a micro-hydroelectric power station with two parallel screw turbines operating in low-pressure water flows, and the optimal values were determined. The purpose of the conducted scientific research is the screw turbine outer diameter (Do), inner diameter (Di), total length of the screw (L), the number of blades (N), the angle of inclination of the screw (β), the length of one revolution of the blade (S), the height (H) of the pressure generator is to increase the efficiency of the impact on the number of revolutions, torque and mechanical power based on the correct selection of optimal options.</p>
<p>Paper ID 007</p>	<p style="text-align: center;">Dilshod Kodirov^{1*}, Valijon Makhmudov², Jakhongir Normuminov³, Abror Shukuraliev⁴, Nodira Begmatova⁵, Yusupov Abdurashid⁴</p> <p>¹<i>Department of Power Supply and Renewable Energy Sources, National Research University TIAME, Tashkent 100000, Uzbekistan</i></p> <p>² <i>“Yashil Energiya” LLC Tashkent, Uzbekistan</i></p> <p>³ <i>Tashkent State Technical University, Tashkent, Uzbekistan</i></p> <p>⁴ <i>Andijan Machine Building Institute, Andijan 170119, Uzbekistan</i></p> <p>⁵<i>Department of Algorithms and Programming Technologies, Karshi State University, Karshi, Uzbekistan</i></p> <p>Title of presentation: Determination of the optimal angle for high efficiency of solar panels in Uzbekistan</p> <p>Abstract: This article examines the potential utilization of solar energy in Uzbekistan, a country blessed with abundant sunshine throughout much of the year, making solar radiation an attractive resource. It discusses various approaches for determining the most effective angle for installing solar panels, drawing upon research conducted by several international scholars. Additionally, it presents findings from the application of one of these methodologies in Andijan, a mountainous region in Uzbekistan, offering insights into its feasibility and performance in the local context.</p>
<p>Paper ID 009</p>	<p style="text-align: center;">S. M. Anas^{1*}, Mehtab Alam², Farman Saifi³, Khurmatbek Jumaniyozov⁴, Dilfuza Saidova⁵</p> <p>¹<i>Department of Civil Engineering, Jamia Millia Islamia (A Central University), 110025 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>Department of Mechanical Engineering, Jamia Millia Islamia (A Central University), 110025 New Delhi, India</i></p> <p>⁴<i>Urgench State University, Urgench 220100, Uzbekistan</i></p> <p>⁵<i>Department of Algorithms and Programming Technologies, Karshi State University, 180117 Karshi, Uzbekistan</i></p> <p>Title of presentation: CEL-FE Numerical Analysis of Blastwave Pressure on Buried Water Pipeline Subjected to Subsurface and Surface Blast Explosions, and Dynamic Response</p> <p>Abstract: Failure of important supporting structural systems such as pipelines carrying water from the faraway source may be disastrous to the site environment and lead to public</p>



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	<p>clamor. Such events resulting from blasts (intentional/unintentional) do not give any warning of impending failure as their duration is very short and intensity is very high as compared to other loadings excited by the earthquake. Therefore, the investigations for the response of buried pipelines under explosive loading are of considerable interest. This study is executed for numerical analyses using an advanced coupled Eulerian-Lagrangian finite-element (CEL-FE) approach to predict the anti-blast performance of a buried steel pipeline loaded by on- and below-ground blast loading. A 3D numerical model of the buried pipeline is first created in the Abaqus software and analyses are performed with Abaqus built-in explicit module to investigate the role of carried liquid (e.g., water) on the anti-blast response of the pipeline. The considered pipeline is seamless and has an outer diameter of 1e+03 mm, a wall thickness of 1e+01 mm, and a total length of 12000 mm; typical dimensions for water, gas, and oil transmission pipelines. It is buried in a brown clayey soil medium at a depth of 2000 mm (= 2 x pipe diameter) below ground level. Simplified Johnson-Cook plasticity (JCP), Jones-Wilkins-Lee(JWL)-Equation-of-State(EOS), ideal gas EOS, Us - Up Hugoniot EOS, and Mohr-Coulomb plasticity (MCP) constitutive models, respectively, are considered to define material properties for the pipeline, TNT, air, water, and soil medium. Responses are compared and discussed. Significant improvement in the blast performance of the pipeline carrying 50% water has been observed in terms of dynamic response and damage compared to the empty pipeline showing that the water proactively contributes to protecting the pipeline from getting severely damaged by the blastwaves.</p>
<p>Paper ID 010</p>	<p>Zafarjon Jabbarov^{1*}, Urol Nomozov¹, Yunus Kenjaev¹ Shokhrukh Abdullaev¹ Salomat Zakirova¹, Mirjalol Qurbonov¹, Bolta Kaxorov¹, Zoyr Rakhmatov, Shavkat Djaborov², Alisher Musurmanov³, Mukhamedali Dauletmuratov⁴</p> <p>¹National University of Uzbekistan named after Mirzo Ulugbek, Tashkent, Uzbekistan ²Tashkent State Agrarian University, Tashkent, Uzbekistan ³Gulistan State University, Tashkent, Uzbekistan ⁴Karakalpakstan Agricultural and Agrotechnological Institute, Nukus, Karakalpakstan</p> <p>Title of presentation: Study on the biological recultivation of oil contaminated soils Abstract: The following studies have shown the results of low, moderate, strong and very strong soil contamination as well as the change of soil morphological characteristics, the strains separation of oil-breaking bacteria and the development of recultivation technology. According to the results, the changes in soil morphological characteristics differ in contamination degree, and the morphological characteristics of very strong soil contamination (more 25 g/kg) have dramatically changed. The oil-breaking bacterial strains such as MFD-100 Pseudomonas stutzeri, MFD-200 Pseudomonas caryophyllis, MFD-5000 Bacillus subtilis are separated from oil-contaminated soils. Based on these strains, the three-stage recultivation technology has been developed, and as a result of the conducted recultivation, the soil cover is purified up to 81.8%. Soil purification rate is divided into the following efficiency indicators: 1 - soil purification rate 0-20%, 2 - soil purification rate 20-40%, 3 - soil purification rate 40-60%, 4 - soil purification rate 60-80% and 5 - soil purification rate 80-100%. After the soil recultivation, the productivity indicators such as nutrient and humus content as well as pH environment are improved.</p>
<p>Paper ID 011</p>	<p>Davronbek Kholdarov¹, Ulmasboy Sobitov¹, Sanoatkhon Zakirova², Ulugbek Mirzaev², Mekhrinisa Kholdarova², Guzalkhon Sotiboldieva², Zikrjon Azimov², Khusnidakhon Abdulkhakimova², Zafarjon Jabbarov³, Yunus Kenjaev³, Zamira Abdushukurova³</p> <p>¹Soil science and agrochemistry research institute, Str. Kamarniso, 3, 100179, Tashkent, Uzbekistan ²Fergana State University, 19, Murabbiylar Street, Fergana, 150100, Uzbekistan ³National University of Uzbekistan named after Mirzo Ulugbek, 4 University Street, 100174 Tashkent, Uzbekistan</p>



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	<p>Title of presentation: Current state of saline soils in the Fergana Valley</p> <p>Abstract: Irrigation, groundwater and subsoil waters (soil solution) in the irrigated lands of the Fergana Valley are integral parts of a chain in the formation, movement and accumulation of salts in the soil, and it is important to study them together in solving reclamation problems. In the process of soil formation, especially in the formation of optimal groundwater regime and balance in the conditions of valley irrigated soils, the role of subsoil waters is particularly large, has a multifaceted effect on the formation of saline soils, functions as the main source of salt in the soil in a certain situation; serves as a means of collecting (cumulating) dissolved salts and expelling them from the territory of irrigated and salt-washed areas (by means of ditches) in the second situation. The mechanical composition of soils plays an important role in the movement, redistribution and accumulation of dissolved salts in the vertical and horizontal directions along the soil profile.</p>
<p>Paper ID 012</p>	<p style="text-align: center;"><i>Olga Filina^{1*}, Azat Khusnutdinov¹, Olimjon Toirov^{2,3}, Khalil Vakhitov¹, Aida Abdylina¹</i></p> <p style="text-align: center;"><i>¹Department of Electrical Complexes and Systems, Kazan State Power Engineering University, Krasnoselskaya str. 51, 420059, Kazan, Russian Federation</i></p> <p style="text-align: center;"><i>²Department of Electrical Machines, Tashkent State Technical University, University str. 2, 100095, Tashkent, Uzbekistan</i></p> <p style="text-align: center;"><i>³Institute of Energy Problems of the Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Investigation the conditions of existence and disturbances of brush-collector contact</p> <p>Abstract: Brush holders of complex design, one of the elements of which is an elastic gasket between the brush and the compression spring, have recently become widespread. Due to the almost unavoidable presence of irregularities in the collector profile, radial vibrations of the brush always occur, which is reflected in the change in contact pressure. As will be shown later, the pressure between the brush and the collector affects the electrical properties of the contact and thus the switching process. Since the change of pressure largely determines the operation of the brush, a distinction is made between: relatively stable contact with preservation of the contact pressure between the brush and the collector, close to the nominal value for the static state; pulsating contact - with contact pressure fluctuations to zero; intermittent contact. In the present work we consider pulsating contact, when the brush is not completely detached from the collector, i.e. the existence of contact is ensured during the entire period of commutation. Of particular interest from the point of view of revealing the role of mechanical factors is the study of the relationship between the shape of the volt-ampere characteristic and the value of the contact pressure, the pulsation of which, as mentioned above, is the basis for assessing the state of mechanics of the collector-brush assembly. Improving the productivity and reliability of railway and mining infrastructure is an important task in achieving this goal. In this article, in order to determine the reliability indicators of the brush-collector unit and the residual life of brushes of electric motors, a mathematical model for processing statistical data has been developed that allows classifying the types of failures, and, unlike existing models, determining the refined life of brushes based on the limiting height of their wear. A method for predicting the residual life of the electric brush of a DC electric motor is presented, which contains a list of controlled reliability indicators that are part of the mathematical model. The described model improves the accuracy of predicting and detecting failures on a DC motor. The derivation of the general formula for calculating the residual life of electric brushes is given. Based on the proposed mathematical model, a study and calculation of the reliability of the brush-collector unit was carried out, the minimum height of the brush during operation, the average rate of its wear, the standard deviation and the mathematical expectation of brush wear were determined.</p>



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Paper ID 013	<p style="text-align: center;">A.B.Mamadjanov^{1*}, D.R.Yusupov¹, E.Kh.Berkinov¹, J.Kh.Akmalov², M.Sh.Jalilov¹ ¹<i>Namangan Engineering Construction Institute, Uzbekistan, Namangan 160605</i> ²<i>Fergana Polytechnic Institute, Uzbekistan, Fergana 150100</i></p> <p>Title of presentation: The effect of conical basin geometry on gravitational water vortex power plant</p> <p>Abstract: This research paper presents an analysis of improving the efficiency of a gravity eddy micro hydropower plant, which is an effective solution for low pressure water flows, by determining the optimal geometry of the conical basin. The geometry of the basin is the main parameter that directly affects the height of the vortex, the suspension of the full air mass in the center of the vortex, the achievement of a high value of the tangential speed of the vortex and, at the same time, the efficiency. Conical basin geometry analyzes were performed using SOLIDWORKS Flow Simulation. In this research work, the tangential speeds of the simulation model vortex formed by changing the cone part of the conical basin at angles of 25°-60° relative to the vertical were determined and it was based on the fact that the optimal value of the deviation angle is 45°.</p>
Paper ID 014	<p style="text-align: center;">Khakim Muratov¹, Kamoliddin Kadirov¹, Alijon Kushev¹, Xulkaroy Yusupaliyeva¹ ¹<i>The institute of energy problems of the academy of Sciences of the Republic of Uzbekistan, 100076 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Increase efficiency at the expense of changing the working mode using time-differentiated tariffs</p> <p>Abstract: This article is devoted to the issue of the role of tariffs in the energy system and the creation of methods for managing and improving electricity consumption regimes with the correct use of tariff periods in electricity consumption. Taking into account the above-mentioned issue, it is possible to smooth the load schedule of the system of electrical energetics by managing the power consumption regimes of industrial enterprises with the correct use of tariff periods. The use of a time-differentiated tariff system for electricity consumption will increase the energy efficiency of industrial enterprises and settling the load schedule the system of electrical energetics.</p>
Paper ID 015	<p style="text-align: center;">Siroj Yarashev¹, Gulnoza Azizova¹, Nizomjon Usmonov² ¹<i>Tashkent State Technical University, 100097, Tashkent, Uzbekistan</i> ²<i>Tashkent international university of financial management and technology, 100128, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study of energy regularities of direct evaporative air-cooling modes</p> <p>Abstract: The state of the air environment in modern agricultural buildings is ensured using microclimate air conditioning systems. However, traditional climate control systems and their equipment are quite expensive, energy-intensive and difficult to operate. Therefore, the problem of developing and using simpler, more reliable, energy-efficient microclimate conditioning systems and devices to create and maintain the required technological parameters of the air environment, ensuring a reduction in energy costs and increasing the productivity of agricultural production (for example, poultry houses), remains relevant, which in addition to being economic for both governments and for individual farms it has important social significance. The microclimate conditioning system of an agricultural building should be a complex application of active (air conditioning systems) and passive (external fences) engineering means. Thus, there was a scientific substantiation of methods for creating and maintaining recommended microclimate parameters in energy-efficient agricultural buildings with air-permeable external fences and the development of a methodology for their calculation.</p>
Paper ID 016	<p style="text-align: center;">Jamshid Usmonov¹, Jakhongir Bekmuradov¹, Nizomjon Usmonov² ¹<i>Tashkent State Technical University, 100097, Tashkent, Uzbekistan</i> ²<i>Tashkent international university of financial management and technology, 100128, Tashkent, Uzbekistan</i></p>



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	<p>Title of presentation: Research of aerodynamic resistance in the channels of heat exchange nozzles for poultry</p> <p>Abstract: The development of agricultural production requires the creation of conditions for increasing labor productivity, which is accompanied by an increase in energy consumption and, above all, an increase in heat and power engineering, which is one of the decisive conditions for the development of agriculture and its transfer to an industrial basis. The increase in the need for energy resources raises the problem of creating efficient and economical equipment for the agro-industrial complex. Successful solution to the problems of increasing poultry productivity is possible subject to the introduction of intensive rearing technologies. The industrialization of poultry farming, with the intensive use of production buildings, places qualitatively new demands on the indoor air environment, therefore, without creating and maintaining an optimal microclimate, it is difficult to obtain high poultry productivity even with proper feeding, care and well-organized breeding work. Temperature, relative humidity and air speed are the main parameters that determine the physiological state and productivity of poultry. Thus, by changing microclimate parameters one can definitely influence the bird's body and help increase productivity.</p>
<p>Paper ID 017</p>	<p style="text-align: center;">Abbos Khazratov¹, Saodat Axmatova¹, Nizomjon Usmonov² ¹Tashkent State Technical University, 100097, Tashkent, Uzbekistan ²Tashkent international university of financial management and technology, 100128, Tashkent, Uzbekistan</p> <p>Title of presentation: Selection of optimal design of heat exchanger for regenerative indirect evaporative cooling</p> <p>Abstract: Air conditioning solves the problem of ensuring the specified microclimate parameters in industrial, public and residential buildings. Maintaining comfortable conditions contributes to maintaining the health of workers and increasing labor productivity. At the same time, energy costs for ventilation and air conditioning systems constitute a significant part of a building's energy consumption. That is, a rather contradictory situation arises - on the one hand, to reduce production costs it is necessary to widely introduce air conditioning systems, on the other hand it is necessary to strive to reduce the capital and operating costs of such systems. In large cities, due to the high density of buildings, it is also necessary to strive to reduce the area occupied by air conditioning equipment and its energy consumption. An important factor is also the constant increase in electricity tariffs and the high cost of connecting to city power grids. The development of new, non-traditional approaches to air cooling in air conditioning systems is required. To improve the energy efficiency of air conditioning units, it is proposed to use water evaporative cooling. Despite their high efficiency, air conditioning units operating using only the principles of water evaporative cooling are not able to provide comfortable microclimate parameters in all climatic zones.</p>
<p>Paper ID 018</p>	<p style="text-align: center;">I.K. Eshatov¹, M.B. Raxmanova¹, R.M. Achildiyev¹ and Inoyatov D.T^{1*} ¹Samarkand State Architecture and Construction University named after Mirzo Ulugbek (SamSACU), Lolazor str. 70, 140143 Samarkand, Uzbekistan</p> <p>Title of presentation: Placement of commercial and household service complexes in Uzbekistan regions according to climate</p> <p>Abstract: One of the urgent problems of modern world urban planning is the process of development and formation of agglomerations. The greatest influence on these processes in recent years has been the growth of the urban population, its concentration in economically developed large cities, the strengthening of ties between individual cities and villages (both transport and social, household and labor ties). In the following years, a significant increase in the development process in the socio-economic sphere of</p>



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	<p>Uzbekistan, which is fastly growing, was noticeable. As the cultural level and material well-being of the population of the republic grow, so does its activity, purchasing power, and demand for agglomeration-level institutions focused on entertainment and public services. All this is considered expedient to create objective conditions for the accelerated development of cultural, residential, shopping centers focused on serving public interests. Uzbekistan organizes the solutions and rules for studying the theoretical and practical bases of its application in terms of architecture and urban planning in accordance with the natural and climatic conditions of agglomeration-level trade and household service complexes formed on inter-provincial highways. In the implementation of these tasks, architectural solutions of commercial and household service complexes in city centers and outside the city, improvement of the ways of proper placement of commercial objects, development of design standards for project organizations are of great importance.</p>
<p>Paper ID 019</p>	<p style="text-align: center;">Nodirbek Boyjanov^{1*}, Masnur Radjabov¹, Qamar Serkayev², Islom Boyjanov¹ and Nurbek Yaxshimuratov¹</p> <p style="text-align: center;">¹<i>Urgench State University, 220100 Urgench, Uzbekistan.</i></p> <p style="text-align: center;">²<i>Tashkent Institute of Chemical Technology, Navoi str. 32, 100011Tashkent, Uzbekistan</i></p> <p>Title of presentation: Activation and comparison of indicators of bentonite clay of the Navbakhor deposit</p> <p>Abstract: This article discusses the possibility of using the Navbakhor deposit of bentonite clays in import substitution. Optimal conditions for acid and alkaline activation were found and a comparative analysis was carried out with the Super FF adsorbent imported from Pakistan used in the oil and fat industry. Chemical and structural analysis of the samples was carried out using an energy-dispersive X-ray fluorescence spectrometer NEX DE, a scanning electron microscope CEM-EDS Jaol JSM-IT200 LA and a Micromerelies Gemini VII 2390t analyzer (USA).</p>
<p>Paper ID 020</p>	<p style="text-align: center;">Muminov Makhmudzhon¹, Yuldoshov Khusniddin¹, An Arthur¹, Sotiboldiev Abdurakhmon¹, Khamdamov Aziz¹, AkberdievMurodali²</p> <p style="text-align: center;">¹<i>Almalyk branch of Tashkent State Technical University, 45, M. Ulugbek, 110100, Almalyk, Uzbekistan</i></p> <p style="text-align: center;">²<i>Branch of NUST MISIS in Almalyk,65, Amir Temur Avenue, 100056, Almalyk, Uzbekistan</i></p> <p>Title of presentation: Investigation of automobile generator G- 273 A with excitation from photovoltaic converter</p> <p>Abstract: This article considers the use of photovoltaic converter energy for excitation of autonomous synchronous generators of small capacity. Autonomous power plants include mini hydro power plants, wind generators, diesel power plants, car generators, aircraft generators. Synchronous generators of these installations are initially excited from accumulator batteries and after operation of the generator from semiconductor rectifiers, the power supply of which is taken away from the generator stator.</p>
<p>Paper ID 021</p>	<p style="text-align: center;">Abduvali Khaldjigitov¹, Umidjon Djumayozov^{2*}, Zebo Khasanova¹, Robiya Rakhmonova²</p> <p style="text-align: center;">¹<i>National University of Uzbekistan, Tashkent, Uzbekistan;</i></p> <p style="text-align: center;">²<i>Samarkand branch of Tashkent University of Information Technologies, Samarkand, Uzbekistan;</i></p> <p>Title of presentation: Numerical Solution of the Plane Problem of Thermo-Elasticity in Strains</p> <p>Abstract: In the work, within the framework of the Saint-Venant compatibility conditions, two plane problems of thermoelasticity with respect to deformations are formulated. The closedness of boundary value problems is achieved by considering equilibrium equations on the boundary of a given region. Grid equations of thermoelastic problems are compiled using the finite-difference method and solved by the alternative method. The problem of a</p>



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	<p>free thermoelastic rectangle located in a given temperature field is solved numerically. The validity of the formulated boundary value problems and the reliability of the solution are justified by comparing the numerical results of the formulated boundary value problems regarding displacements and stresses.</p>
<p>Paper ID 022</p>	<p style="text-align: center;">Razzakov Numonkhon¹, Yakhshiboev Sherzod^{1*}, Razzakov Nurmuhammadkhon¹, Buribaev Shavkat¹ <i>¹Samarkand State University of Architecture and Construction named after Mirzo Ulugbek, Uzbekistan</i></p> <p>Title of presentation: Modeling the operational state of suspended roofs with large spans and unique load-bearing elements Abstract: The stress-strain state of hanging systems and support contours in the stages of pre-tensioning of cables, as well as in the processes of construction and operation of unique structures, has been studied. The nature of the operation of hanging systems and support rings is revealed depending on the type and level of loading, without the moment or bending state of the support ring, as well as the mutual connection of the cable belts. An analysis of the limiting state of cable-stayed long-span suspended roofed structures is given. The real states of modeling of cable-stayed systems with different outlines of the support contour were studied. A situation has been determined in which the choice of the optimal shape of a curved support contour is required, with radial and cross cable systems. We studied the features of the operation of external and internal support rings in the stages of pre-tensioning of the cables and the transition of the structure to the installation and operational state. The structural safety of hanging systems under random alternating influences was studied, leading to: overloading of individual sections, breakage of the cables, failure of anchor fastenings, compliance of the support contours, changing the initial geometric shapes of the ring.</p>
<p>Paper ID 023</p>	<p style="text-align: center;">S. M. Anas^{1*}, Mohd Shariq¹, Mehtab Alam², Narhol Eshkaraeva³, Karomat Matyaqubova⁴ <i>¹Department of Civil Engineering, Jamia Millia Islamia (A Central University), 110025 New Delhi, India</i> <i>²Department of Civil Engineering, Netaji Subhas University of Technology, 110073 New Delhi, India</i> <i>³Department of Applied Mathematics, Karshi State University, 180117 Karshi, Uzbekistan</i> <i>⁴Urgench State University, Urgench 220100, Uzbekistan</i></p> <p>Title of presentation: Dynamic Response Analysis of Slab Subjected to Central Contact Blast: Exploring Effects of Blast Placement on Compression and Tension Faces Abstract: The fortification of military and civilian infrastructures against explosive events has garnered heightened consideration among structural engineers, owing to the surge in subversive detonations and inadvertent blasts witnessed in recent times. Notable examples include the Beirut port explosion in 2020 and the Kabul airport attack in 2021, which underscore the critical need for enhanced protective measures in structural design. In the domain of structural engineering, safeguarding slender structural elements, notably slabs, emerges as a pivotal concern. Slabs, integral constituents within architectural constructs, bear significant responsibility in upholding structural integrity and providing support. Nonetheless, their slender configuration exposes them to heightened vulnerability in the face of detonations, particularly those initiated by direct contact. In contrast to sturdier structural components like columns or walls, slabs exhibit diminished mass and intrinsic resilience, rendering them predisposed to deformation, fracturing, and ultimate failure when subjected to explosive forces. This research employs an Integrated Eulerian Lagrangian formulation within the framework of the FEM, utilizing the dynamic computational tool Abaqus/Explicit. Its objective is to scrutinize the behavior and efficacy of a mono-reinforced one-way concrete slab when subjected to a central contact explosion. The computational model undergoes validation through comparison with experimental</p>



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	<p>findings readily available in the public domain. Subsequently, the validated model is applied to explore the response of the slab in two distinct scenarios: in the initial configuration, the TNT charge is positioned on the upper surface, designated as the compression face, while in an alternate configuration, it is situated on the lower surface, known as the tension face. The damages incurred by the slab for the two distinct blast scenarios are compared to gain better insight into the structural response under differing blast conditions. Results showed that the placement of TNT explosives at the lower surface (tension face) of the slab (Scenario: II) led to increased upward deformation and tensile stress in reinforcement bars compared to Scenario I. Specifically, Scenario II exhibited a 1.27-fold increase in deformation and heightened stress intensity, indicating greater severity in terms of damage and structural failure potential.</p>
<p>Paper ID 025</p>	<p style="text-align: center;">Khushiev Sirojiddin^{1*}, Xumoyun Mamadiyev¹ ¹<i>Department of Power Supply and Renewable Energy Sources, "TIAME" National Research University, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the influence of unsymmetrical modes on power transformer efficiency Abstract: It is known that electric power systems cannot be imagined without transformers. Among electrical devices, the transformer is a device with high efficiency when working based on nominal indicators. However, malfunctions are occurring due to various quality indicators of electricity in electric power networks. As a result, it prevents the supply of high-quality and continuous electricity to consumers. In this article, the evaluation of efficiency due to voltage asymmetry in transformers is developed. Matlab/Simulink software was used to observe the voltage asymmetry. A 160kVA transformer was assembled in the model. Its primary data was taken from the manufacturer's manual. The greatest effect of voltage asymmetry on the efficiency of the transformer was observed at the optimal value of the load, 80%. In this case, due to asymmetry, the efficiency decreases by 0.1%. The change in transformer efficiency was evaluated at positive and negative values of the voltage deviation. In this case, when the voltage in the network changes by $\pm 6\%$, a decrease in the efficiency of the transformer by 0.1% was observed.</p>
<p>Paper ID 026</p>	<p style="text-align: center;">Davron Yulchiev¹, Yermat Sherमतov², Maria Radkevich^{1*}, Oleg Pochugevskiy³, Islom Aripov⁴ ¹<i>National Research University "Tashkent Institute of Engineers of Irrigation and Agricultural Mechanisation", Uzbekistan, Kari-Niyaziy 39, 100000 Tashkent, Uzbekistan</i> ²<i>Research Institute of Irrigation and Water Problems, 11 building, Karasu-4 massif, 100000 Tashkent, Uzbekistan</i> ³<i>Krivyi Rih National University, V.Matusevich str. 11, Krivoy Rog, 50027, Ukraine</i> ⁴<i>Gulistan State University, driveway 4th, Guliston 120100, Uzbekistan</i></p> <p>Title of presentation: Monitoring of Soil Salinity by Cotton Leaf Parameters and Planting Density Abstract: The article deals with the problem of organising the monitoring of saline soils using the example of farms in the Hungry Steppe and the Khorezm region of Uzbekistan. Due to the variability of salinity levels, continuous monitoring is required, which is difficult to organise using existing methods. The authors propose the use of a bioindication of soil salinity based on the condition of cotton plants. The aim of the study was to test the possibility of using cotton plants as bioindicators of soil salinity and to search for measurable indicators for the practical implementation of bioindication. As a result of the field studies, possible bioindicators such as leaf thickness, leaf area and the pattern of change in planting density were investigated. It was found that as soil salinity increases, cotton planting density changes according to Poisson's law. In order to minimise the time and work involved in organising the monitoring, it was proposed to use the thickness of the cotton leaf blade, measured with a digital micrometer, as a bioindicator parameter. For</p>



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	<p>the practical implementation of salinity assessment by leaf thickness, the relationship "soil salinity - leaf thickness" was established in the form of a regression equation. The results obtained are similar to those of previous studies on a decrease in plant density, as well as a decrease in the area of the leaf plate and an increase in its thickness with increasing soil salinity. At the same time, the problem of the bioindication of soil salinity by the state of the cotton plant has not been considered so far.</p>
<p>Paper ID 027</p>	<p style="text-align: center;">Elmurad Tulakov¹, Alijon Kurbonov¹, Dilovar Inoyatov^{1*}, Ikrom Eshatov¹ and Sohiba Abdullayeva¹</p> <p style="text-align: center;"><i>¹Samarkand State Architecture and Construction University named after Mirzo Ulugbek (SamSACU), Lolazor str. 70, 140143 Samarkand, Uzbekistan</i></p> <p>Title of presentation: Study on the heat and vapor transfer resistance of the basement's outer walls and calculation of moisture regime: A case study of Uzbekistan</p> <p>Abstract: In the article, the type of effective thermal insulation materials used as a solution to increase the resistance to heat transfer of the outer walls of the basement of the buildings (residential and public) being built in the climatic conditions of Uzbekistan, the solution for determining its thickness, the resistance to vapor transmission of the outer walls of the basement, the appearance of moisture in the barrier structure, Experimental results are presented on the calculation of the moisture regime and its effect on the energy efficiency of the barrier structure. Experiments were conducted in the basement of a public building in use. It contains practical recommendations on the use of thermal insulation material.</p>
<p>Paper ID 028</p>	<p style="text-align: center;">Samad Makhammadiev, Jabbarov Zafarjon, Kenjaev Yunus, Umedillo Kasimov, Zoyr Rakhmatov, Dilafruz Makhkamova, Otamurod Imomov</p> <p style="text-align: center;"><i>¹National university of Uzbekistan named after Mirzo Ulugbek, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Effect of mineral fertilizers on yield and grain quality of winter wheat in the conditions of foothill plains</p> <p>Abstract: Sometimes there is a concept that once applying fertilizer mean there is a good harvest. But it is not. When the soil phases are found crops there is a change in the ratio of nutrients. This ratio is of great importance in the development of these elements. With the help of science - based management to form the ratio of elements in the soil, you can get the expected and high-quality harvest. The use of seeds in different varieties of winter wheat not only increases the yield, but also improves the quality of grain. When developing a mechanism for improving the quality of grain, it is necessary to take into account the genotypic characteristics of varieties. Different varieties have their own reactions due to their different needs for the nutrient medium in the soil [1–4].</p>
<p>Paper ID 029</p>	<p style="text-align: center;">Kholisa Eshova^{1*}, Alevtina Kojevnikova², Zafarjon Jabbarov¹, Shoirsa Saidova³, Dilafruz Yagmurova¹, Otamurod Imomov¹, Dilafruz Makhkamova¹, Zoyr Rakhmatov¹, Shokhrukh Abdullaev¹</p> <p style="text-align: center;"><i>¹National University of Uzbekistan named after Mirzo Ulugbek, Tashkent, Uzbekistan</i></p> <p style="text-align: center;"><i>²Tashkent State Agrarian University, Tashkent, Uzbekistan</i></p> <p style="text-align: center;"><i>³Institute of Zoology, Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Fauna and ecological composition of nematodes of Cucurbitaceae family plants</p> <p>Abstract: The article presents information about phytonematodes found in the soil of Cucurbitaceae family crops and their roots in Romitan district of Bukhara region. As a result of the research, 43 types of phytonematodes were identified. According to the ecological classification, 16 species of devisaprobionts and 11 species of mycohelminths dominated, 8 species of phytohelminths (ectoparasites, endoparasites), 6 species of eusaprobionts, and 2 species of pararhizobionts. In the studied plants, phytonematodes differed from each other in terms of species diversity and the number of their individuals.</p>



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	<p>The maximum number of species was observed in melon and watermelon (30/29 species). The least was recorded in the cucumber crop (26 species). In terms of the number of individuals, the largest number of nematodes was found in watermelon (407) and cucumber (308), and less in melon (245). This situation is explained by the development of the above-ground part of the plants, the condition of the soil and the level of agrotechnical measures applied to the crops. Pairwise comparison of Cucurbitaceae family crops nematode faunal complexes revealed that they are neither exactly similar nor strongly different from each other, the similarity between nematode faunal complexes ranged from 0.50% to 0.67%. Such a similarity indicates that their faunal complexes were formed in the same ecological environment. <i>Bitylenchus dubius</i> from ectoparasites and <i>Ditylenchus dipsaci</i> from endoparasites are relatively common species among the parasitic phytonematodes identified in the crops.</p>
<p>Paper ID 030</p>	<p style="text-align: center;">Avazbek Turdaliev^{1,2*}, Gulom Yuldashev², Mavlonjon Khaydarov², Zafarjon Jabbarov⁴, Gaybullo Mamajonov³, Avazbek Akhmadjonov², Yunus Kenjaev⁴, Zamira Abdushukurova⁴</p> <p style="text-align: center;">¹<i>Kokand branch of Tashkent State Technical University, Kokand, Uzbekistan</i> ²<i>Fergana State University, Fergana, Uzbekistan</i> ³<i>Fergana Polytechnic Institute, Fergana, Uzbekistan</i> ⁴<i>National University of Uzbekistan named after Mirzo Ulugbek, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Influence of energy potential of soil amino acids on wheat yield in typical calcisols Abstract: Winter wheat in agricultural production is the most common and oldest crop. An accelerated and sustainable increase in grain production is a key problem for agriculture both in Uzbekistan and abroad. “According to the FAO, there are about 1.5 billion hectares of soil suitable for agriculture. Neutral and slightly alkaline soils of subtropical zones with a dry climate make up 8177.1 thousand hectares or 5.46% of the entire land area of the globe. 14.5 million km² or 11% of the world’s land stock is suitable for production. Over the past 50 years, the area of irrigated land has increased by almost 12%. As a result, the volume of agricultural production increased by 2.5-3 times¹”. In this regard, the study of the theoretical foundations for improving the soil-ecological, energy conditions and increasing the fertility of neutral, slightly alkaline gray soils, taking into account the evolution of virgin and irrigated lands, the development of theoretical and practical issues of their improvement is of great importance.</p>
<p>Paper ID 031</p>	<p style="text-align: center;">Yunus Rakhimov^{1*}, Berdirasul Khudayarov¹, Ulugbek Kuziev¹, Rustam Khudayqulov¹, Baxtiyor Sarimsakov², Otabek Mirzayev³</p> <p style="text-align: center;">¹<i>Institute of Irrigation and Agricultural Mechanization Engineers (National research university), Kari Niyazov str. 39, Tashkent 100000, Uzbekistan</i> ²<i>Tashkent Agency for the assessment of knowledge and skills under the Ministry of Higher Education, Science and Innovation of the Republic of Bogishamol str.12, Uzbekistan</i> ³<i>Urgench State University, Urgench, Uzbekistan</i></p> <p>Title of presentation: Cotton stalk griding scopus-based bibliometric analysis Abstract: Harvesting of cotton stalks from harvested fields is a major concern in agriculture around the world. The purpose of the study is to describe and quantify the scientific results of cotton stalk harvesting in the world using bibliometric analysis. The Scopus database search engine was used to retrieve data available from 1983 to August 2023. A total of 96 published papers related to cotton stalk milling were identified. Most of the papers were published as original research articles and English was the main publication language. In the period from 1983 to 2023, the results of the study of the total number of articles in the Scopus database show that the growth trend corresponds to the year 2023, when the articles were published the most in this year. The top 13 countries in absolute research output (number of publications) on this topic are China (59); Egypt (8); Turkey; (5); India (4); Australia (3); Greece (3); Israel (3); America (3); Brazil (2); Canada</p>



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	(2); Kazakhstan (2); Pakistan (2); and Uzbekistan (2).
<p>Paper ID 032</p>	<p style="text-align: center;"><i>Tirkishmyrat Pashyyev^{1*}, Kerim Gurbanmeredov², Ilkhom Begmatov³, Mahri Begchayeva⁴, Abdyljelil Azyzov⁵, Bagul Babayeva⁶, Gurbanmyrat Orazov⁷</i></p> <p>¹<i>Lecturer of the Technology of hydromeliorative works Department, Vice Dean of Academic Affairs of Hydromelioration Faculty, S.A.Niyazov Turkmen Agricultural University, Ashgabat, Turkmenistan.</i></p> <p>²<i>Senior Lecturer of Animal husbandry, Dean of Veterinary Medicine Faculty, S.A.Niyazov Turkmen Agricultural University, Ashgabat, Turkmenistan.</i></p> <p>³<i>Professor, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, Tashkent city, Uzbekistan.</i></p> <p>⁴<i>Lecturer of the Organization and management of agriculture Department, Economics and management of Agriculture Faculty, S.A.Niyazov Turkmen Agricultural University, Ashgabat, Turkmenistan.</i></p> <p>⁵<i>Lecturer of Electrification and Automation of Agriculture Department, Mechanization of agriculture Faculty, S.A.Niyazov Turkmen Agricultural University, Ashgabat, Turkmenistan.</i></p> <p>⁶<i>Lecturer of Sewing production Department, Textile production Faculty, S.A.Niyazov Turkmen Agricultural University, Ashgabat, Turkmenistan.</i></p> <p>⁷<i>Specialist of scientific Department, S.A.Niyazov Turkmen Agricultural University, Ashgabat, Turkmenistan</i></p> <p>Title of presentation: Optimizing crop irrigation regimes considering groundwater level and mineralization in Turkmenistan</p> <p>Abstract: This study offers a comprehensive comparative analysis of surface methods, sprinkling, and drip irrigation techniques utilized in the cultivation of crops in Turkmenistan, taking into consideration the region's unique soil and climatic conditions. The primary objective is to assess the advantages and drawbacks of these irrigation methodologies in optimizing crop productivity. By conducting meticulous scientific data analysis, the research explores the performance of each technique in terms of water efficiency, crop yield, and environmental impact. Surface methods, although widely employed, demonstrate limitations in water conservation and susceptibility to weed proliferation. Conversely, sprinkling irrigation highlights effective water dispersion but raises concerns regarding heightened soil erosion. Drip irrigation surfaces as a promising solution due to its precise water application and minimal evaporation loss; however, factors such as technical intricacy and associated costs necessitate consideration. Drawing from the study's findings, it is advisable to selectively implement irrigation methods tailored to specific crop types and geographical regions within Turkmenistan. The adoption of suitable irrigation practices has the potential to significantly bolster agricultural output, while concurrently preserving water reservoirs and mitigating environmental repercussions. Consequently, these findings offer invaluable insights to farmers and researchers, facilitating the development of sustainable irrigation strategies customized to Turkmenistan's agricultural terrain. Ultimately, this research contributes to the advancement of agricultural practices by offering practical guidance for optimizing crop irrigation in Turkmenistan's unique agricultural ecosystem.</p>
<p>Paper ID 033</p>	<p style="text-align: center;"><i>Orazjema Charyyeva¹, Annamuhmet Mommyyev¹, Amangul Bayrammyradova¹, Mahek Atayeva¹, Allaberdi Berdiyev^{1*}, Gulnabat Saparova¹</i></p> <p>¹<i>World Economy Department, Faculty of Management, Turkmen State Institute of Economics and Management, Ashgabat, Turkmenistan</i></p> <p>Title of presentation: Hydrogeospatial analysis and predictive modelling of the dynamics of the Amu Darya River basin under evolving climate scenarios</p> <p>Abstract: This paper conducts an analysis of the hydrogeospatial features and predictive modelling in the Amu Darya River basin in Turkmenistan, considering the evolving climate conditions. It emphasizes the notable influence of climate change on the water</p>



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	<p>resources in the area, characterized by escalating temperatures, reduced precipitation, and heightened aridity. The primary aim of the investigation is to scrutinize the dynamics of the basin by examining crucial climatic elements such as precipitation, temperature, and aridity. The study encompasses three key aspects: evaluation of the present water resources, scrutiny of hydrological patterns over a 50-year period, and formulation of a predictive model for river flow until 2050. Turkmenistan experienced an elevation of 0.6°C in average temperature from 1986 to 2015 compared to 1881-1960, particularly notable during the summer. This rise in temperature was concomitant with a 10% reduction in precipitation across the region. Projections utilizing the REMO 04/06 model indicate a projected 1.5°C temperature increase by 2050, alongside minor modifications in precipitation but increased variability. Consequently, the runoff in the Amu Darya River could see a substantial decline, especially during the summer months. Through the amalgamation of meteorological, hydrological, and satellite data, the study harnessed the WEAP modelling tool to craft an innovative predictive hydrological model. This pioneering analysis furnishes invaluable insights into the repercussions of climate change on water resources in the Amu Darya River basin, presenting pioneering estimations of the impact of climatic factors on water availability.</p>
<p>Paper ID 034</p>	<p>Gulalek Allakuliyeva^{1*}, Azat Omadov², Ilkhom Begmatov³, Maya Miskova⁴, Gulchehre Nurmedova⁵, Selbi Serdarova⁶, Arzuv Bashimova⁷</p> <p>¹Lecturer of the Forestry and parking farm Department, Agroecology Faculty, S.A.Niyazov Turkmen Agricultural University, Ashgabat, Turkmenistan.</p> <p>²Senior Lecturer, Head of the Department of using and repairing of agricultural machinery, Mechanization of agriculture Faculty, S.A.Niyazov Turkmen Agricultural University, Ashgabat, Turkmenistan.</p> <p>³Professor, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, Tashkent city, Uzbekistan.</p> <p>⁴Senior Lecturer of the Processing of agricultural products Department, Processing of agricultural products Faculty, S.A.Niyazov Turkmen Agricultural University, Ashgabat, Turkmenistan.</p> <p>⁵Senior Lecturer of the Textile production Department, Textile production Faculty, S.A.Niyazov Turkmen Agricultural University, Ashgabat, Turkmenistan.</p> <p>⁶Student of Mechanization of meliorative works, Mechanization of agriculture Faculty, S.A.Niyazov Turkmen Agricultural University, Ashgabat, Turkmenistan.</p> <p>⁷Student of Economics (in agriculture), Agricultural Economics Faculty, Aba Annayev International Horse Breeding Academy, Arkadag city, Turkmenistan.</p> <p>Title of presentation: The role of red californian earthworms (<i>Eisenia fetida</i>) in polymer waste decomposition</p> <p>Abstract: This study delves into an in-depth exploration of the physiological and behavioral characteristics of <i>Eisenia fetida</i>, also referred to as the red Californian earthworm, thriving within the arid climate of Turkmenistan. The investigation encompasses an extensive assessment of their growth rates across different seasons, shedding valuable insight into the exceptional adaptability of these earthworms in diverse environmental conditions. Furthermore, it endeavors to elucidate the remarkable potential of red Californian earthworms in effectively consuming polyethylene film and plastic particles, thereby accentuating their substantial and pivotal role in the degradation of polymer waste within ecosystems. The current global production of polyethylene and plastic waste amounts to an astounding 2 billion tons daily, of which a mere 20% undergoes recycling for the production of new goods. The disproportionate amount of unrecycled waste is released indiscriminately into the ecosystem, posing a formidable environmental challenge. Polymer waste exhibits an exceptionally slow decomposition rate, spanning over 400-500 years [1, 2], or emits hazardous compounds, such as dioxins, when subjected to incineration. Hence, the integration of red Californian earthworms in the natural decomposition of polymer waste, facilitating the conversion of hazardous material</p>



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	<p>into a beneficial, waste-free by-product, emerges as a critical and pressing consideration. This investigation represents an inaugural exploration into the capacity of red Californian earthworms to decompose polyethylene and plastic waste, shedding illuminating light on their potential pivotal role in fostering ecologically sustainable waste management practices and furthering our understanding of ecosystem restoration.</p>
<p>Paper ID 035</p>	<p>Gulhayo Juraeva^{1*}, Shuhrat Komilov¹, Nodirbek Mamadaliyev¹, Rustam Muradov¹ ¹<i>Natural fiber engineering department, Namangan Institute of Textile Industry, Namangan city, Uzbekistan</i></p> <p>Title of presentation: Study on the qualitative indicators of raw cotton and fiber during the ginning process Abstract: This article reviewed the classification of fibers and standards, quality indicators, as well as comparisons of fiber analyzes before and after the ginning process, and laboratory studies were conducted on fiber quality indicators. An advanced method for assessing the quality of cotton fiber, called HVI (High Volume Instrument) testing, was also presented.</p>
<p>Paper ID 037</p>	<p>Munisakhon Burkhonova^{1*}, Bakhtiyar Matyakubov², Dilshod Nazaraliev¹, Adkham Mamataliev¹, Shavkat Botirov¹ ¹<i>“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, Tashkent city, Uzbekistan</i> ²<i>Department of Irrigation and melioration, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, Tashkent city, Uzbekistan.</i></p> <p>Title of presentation: Study on the significance of irrigation technology for carrot growth Abstract: This article discusses the cultivation of carrots in various soil conditions in the Tashkent region using water-saving irrigation technology. Furthermore, the history of growing vegetable crops, the methods of determining the mechanical composition of the soil in the experimental field, as well as the application of the principles of using the world's water resources, the areas of carrot cultivation in the republic, and the varieties used in cultivation are discussed. In addition, research methodology and mathematical-statistical analysis were conducted. The experiment was carried out in accordance with methodological manuals and agrotechnical measures, and 220 kg of nitrogen, 160 kg of phosphorus, and 100 kg of potassium were given per hectare, taking into account the gray soil of the researched area.</p>
<p>Paper ID 038</p>	<p>Vladimir Rimshin¹, Ravshan Khamrakulov², Shukhrat Alikabulov², Yorkinbek Radjabov², Azizjon Abdurakhmonov², Gulbahor Mirazimova², Mokhigul Jamolova³ ¹<i>Research Institute of Building Physics of the Russian Academy of Architecture and Construction, 127238 Moscow, Russian Federation</i> ²<i>Jizzakh polyethnic institute, 130100 Jizzakh, Uzbekistan</i> ³<i>Samarkand State University of Architecture and Construction named after Mirzo Ulugbek, 140143 Samarkand, Uzbekistan</i></p> <p>Title of presentation: Study on the possibilities of increasing the effectiveness of thermal insulation of enclosing structures in window openings using low-emission coatings and films Abstract: This article discusses issues related to increasing the energy efficiency of buildings through the optimization of window structures and ventilation systems. The difficulties of analytical calculation of heat and moisture transfer in building envelopes are considered, and methodologies for research in this area are presented. Special attention is paid to the roles of window fillings and methods for reducing heat losses through window openings, such as the use of low-emissivity coatings and filling the space with inert gases. Methods for controlled air inflow through window structures without compromising airtightness are presented. The economic and practical aspects of implementing energy-</p>



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	<p>efficient windows are discussed, and their contribution to the overall energy efficiency of buildings is evaluated.</p>
<p>Paper ID 039</p>	<p>Islon Aripov¹, Otabek Ochildiev², Durdona Majdunova^{3*}, and Oleg Pochuzhevskiy⁴ ¹<i>Guliston State University, 4 driveway, Guliston, 120100, Uzbekistan</i> ²<i>Termez Institute of Engineering and Technology, 288A, Islam Karimov str., Termez, 190100, Uzbekistan</i> ³<i>Tashkent Pharmaceutical Institute, 45 Aybek St., Tashkent, 100015, Uzbekistan</i> ⁴<i>Krivoy Rog National University, 11, V. Matusевичa Street, Krivoy Rog, 50027, Ukraine</i></p> <p>Title of presentation: Assessing the Technical and Economic Efficiency of Improving the Ameliorative State of Saline Land: A Case Study of the Syrdarya Region Abstract: This article examines the economic efficiency of land reclamation measures for desalinating saline land, using the example of a hypothetical farm in the Syrdarya province of Uzbekistan. The evaluation method employed is the calculation of discounted costs. The results indicate that the payback period for works on weakly and moderately saline lands is 4 years and 3 years, respectively, with a net discounted income of \$58,375 and \$143,678 for the hypothetical farm under analysis. It is established that desalinisation of highly saline lands is unprofitable and they should be excluded from agricultural turnover.</p>
<p>Paper ID 040</p>	<p>Botir Abdurakhmanov^{1*}, and Otabek Ochildiev² ¹<i>International Water Management Institute (IWMI), Osiyo Street 6, 100000 Tashkent, Uzbekistan</i> ²<i>Termez Institute of Engineering and Technology, 288A Islam Karimov Street, 190100 Termez, Uzbekistan</i></p> <p>Title of presentation: Estimation of possible volumes of solar panel waste generation in the Republic of Uzbekistan Abstract: . This article is devoted to discussing the issue of solar panel waste in connection with the growing share of solar energy in the Republic of Uzbekistan. The main causes of solar panel failure are end of life, failures during normal operation, and weather-related emergencies. The climatic conditions of Uzbekistan were studied and it was found that in some regions of the country there are strong winds, which are a potential danger for solar panels. Calculations showed that the probability of destructive winds is 0.00045, which can lead to emergency destruction of panels (up to 1,224 tonnes of waste per lifetime). High air dustiness can cause increased water consumption for cleaning the panels (68 times the design flow rate) and consequently an increase in the volume of polluted wastewater. Thus, it is clear that the problem of waste associated with solar energy development has not yet been adequately addressed. In order to take timely action, it is necessary to develop appropriate regulatory documents for accounting and handling of solar energy waste.</p>
<p>Paper ID 041</p>	<p>Masharif Bakiev^{1*}, Bakhodir Kulumbetov², Komiljon Nazarov³, and Khojiakbar Khasanov¹ ¹<i>“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, 10000 Tashkent, Uzbekistan</i> ²<i>“TEMELSU INTERNATIONAL ENGINEERING SERVICES INC”, 100128 Tashkent, Uzbekistan</i> ³<i>Research Center of Republican Engineering Research and Laboratory, 100100 Tashkent, Uzbekistan</i></p> <p>Title of presentation: The influence of soluble salts in water and soil salinity on the formation of cracks in concrete channels Abstract: In the Republic of Karakalpakstan in Uzbekistan, characterized by a sharply continental climate and precipitation of less than 150 mm per year, saline soils and groundwater with high salt concentrations are widely distributed. The situation is exacerbated by the drying up of the Aral Sea and the appearance of salt aerosols in the</p>



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	<p>region. The Bustan Canal is located in this area and is intended for irrigating 100,000 hectares of farmland. The reconstruction of the canal allows for the abandonment of mechanical irrigation and the transition of the system to gravity irrigation. After the canal was put into operation, longitudinal cracks appeared at three stations: 47+20, 202+80, and 218+00. To identify the causes, concealed work was carried out at these locations where cracks appeared. Laboratory analysis of water and soil was conducted to examine the concrete strength, soil particle size distribution, and free swell index. This article presents the results of water analysis for concrete and its maintenance, as well as chemical analysis of the soil. All analyses were performed in licensed laboratories following the relevant national standards. Water for moistening the soil to optimal moisture during embankment construction, for concrete, and for concrete maintenance was sourced from two wells drilled at PK 183+20 and PK 218+45. The analysis showed that the pH of the water was between 4 and 12.5, with a value of 8.2. The sulfate ions (SO₄) were 845.54 mg/L, below the limit of 2700 mg/L; chloride ions were 222.7 mg/L, below the limit of 4500 mg/L; suspended particles were 800 mg/L, exceeding the norm of 300 mg/L. The total content of sodium ions (Na⁺) and potassium ions (K⁺) was 319.47 mg/L, below the norm of 1500 mg/L. The water from the wells did not contain films of petroleum products, oils, fats, or coloring impurities. Overall, the water was suitable for concrete and concrete maintenance. Further compression strength tests on the concrete showed that the design strength of V 15 (M200) was achieved. The chemical analysis of the soil was conducted using the water and salt-acid extraction method. The sum of the percentage contents of the main ions ranged from 0.159% to 0.289%, indicating a low degree of overall salinity. The content of sulfate ions reached 37.5 eq.%, and sodium and potassium cations reached 41.951 eq.%. The gypsum content was 1.185%, which is below the norm of 5%. The soil was not gypsumized and was sulfide-stable. The soil pH was within the normal range, at pH = 7.4 ± 7.6.</p>
<p>Paper ID 042</p>	<p style="text-align: center;">Maria Radkevich^{1*}, Olga Ashirova¹, and Kamila Shipilova¹ ¹<i>National Research University "Tashkent Institute of Irrigation and Agricultural Mechanisation Engineers", Kori Niyoziy 39, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Possibilities of organising microclimate systems on the basis of ultrasonic mist generator Abstract: The increase in average annual and summer temperatures in cities adversely affects the health of residents. To address the effects of climate change on urban populations, outdoor microclimate systems that spray liquid droplets are utilized. However, these systems have significant drawbacks, including high water usage and limited efficiency in reducing temperatures. In areas facing water scarcity, such as many Asian countries, microclimate systems that utilise ultrasonic mist generators appear to be a more viable option. This article presents a study examining the operation of a physical model of a climate system incorporating ultrasonic mist generators. Experimental data indicate that the cooling effect is evident within the first 2-3 minutes of system operation, with a temperature decrease rate of 0.7 oC/min observed. A mathematical model has been derived that describes the process of temperature reduction in the unit operation zone. The model is based on a hyperbolic function.</p>
<p>Paper ID 043</p>	<p style="text-align: center;">Adilbek Akhmetov¹, Sherzodbek Akhmedov^{1,2*} ¹<i>Department of Tractors and Automobiles, National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers", 39 Kari Niyazov Street, Tashkent 100000, Uzbekistan</i> ²<i>Department of General Engineering, Chirchiq Higher Tank Command and Engineering School, 15 Amir Temur, Chirchiq, Uzbekistan</i></p> <p>Title of presentation: Influence of Tractor Tires on Soil: A Bibliometric Analysis Based on Scopus Abstract: The role of agricultural machinery interacting with the main soil is performed</p>



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	<p>by its wheels, which either amplify or mitigate adverse effects. Faced with climate change and population pressure, urgent research is needed in sectors like agriculture to enhance productivity, assess land suitability, optimize crop yields, and support sustainable development. This article presents a bibliometric analysis of tractor wheel impact on agricultural fields. Using the Scopus database, thousands of documents from 1948–2023 were processed. Results show a rising trend in publications. Leading sources include Agricultural and Biological Sciences, Earth and Planetary Sciences, Grains Research and Development Corporation, Ministry of Prosvete, Nauke i Tehnološkog Razvoja, and the National Natural Science Foundation of China. Influential countries are Great Britain and Poland. Common search terms include "soils," "compression," "tractors (agriculture)," and "tractors (truck)." The study provides detailed information on the soil-tractor relationship for the entire 1948–2023 period".</p>
<p>Paper ID 044</p>	<p style="text-align: center;">Bakhodir Muslimbekov¹, Nozimjon Teshae^{1*}, Sarvar Abdurakhmonov¹, Oybek Gaybulloev²</p> <p style="text-align: center;">¹“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, Kary-Niaziy str. 39, 100000 Tashkent, Uzbekistan ² Bukhara Institute of Natural Resources Management of the National Research University of “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers”, 32, Gazli shokh Ave., Bukhara 105009, Uzbekistan</p> <p>Title of presentation: Monitoring Trends of SO₂ level Using Time-Series Sentinel-5 Images Based on Google Earth Engine</p> <p>Abstract: This research delves into an extensive examination of Sulphur dioxide (SO₂) column density patterns within the Tashkent region, Uzbekistan, employing advanced spatial analysis techniques facilitated by Google Earth Engine (GEE) and leveraging high-resolution Sentinel-5P satellite data. The investigation spans the critical years of 2019 and 2023, meticulously scrutinizing monthly maximum and mean SO₂ values to elucidate nuanced temporal trends and spatial distributions. The comprehensive analysis divulges a multifaceted narrative of air quality dynamics, particularly unveiling pronounced spatial heterogeneity in SO₂ emissions across the Tashkent region. Notably, the southern expanse emerges as a focal point of heightened SO₂ concentration, prominently linked to the extensive presence of industrial complexes and manufacturing facilities. Moreover, a distinct circular pattern of elevated SO₂ concentrations concentrically encircling the capital city, Tashkent. This spatial anomaly is attributed to a numerous of anthropogenic factors, prominently including the combustion of fossil fuels within greenhouse infrastructures, compounded by the escalating vehicular emissions stemming from the increasing urban populace and its concomitant resource consumption patterns.</p>
<p>Paper ID 047</p>	<p style="text-align: center;">Saidjon Sidiqov[*], Lazizakhon Gafurova, Olimaxon Ergasheva, Sayyorakhon Yunusova, Salomat Zakirova, Zamira Abdushukurova, Rano Rustamova</p> <p style="text-align: center;"><i>National University of Uzbekistan named after Mirzo Ulugbek, University str., 4, 100174 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Changes in the composition and concentration of soil solutions in seasonal dynamics of irrigated agriculture</p> <p>Abstract: The investigation focused on examining the seasonal fluctuations in the chemical composition and concentration of soil solutions in irrigated automorphic soils within diverse agricultural zones. It was observed that the composition, concentrations, and relative ratios of various compounds in the soil solutions undergo seasonal variations throughout the growing season, influenced by the process of plant nutrition. The initial stages of the growing season exhibited elevated concentrations of soil solutions, gradually declining towards lower concentrations as the growing season advanced and approached its conclusion. These fluctuations are indicative of dynamic changes in the soil's chemical profile, influenced by the varying nutritional demands of plants at different stages of growth. The observed patterns underscore the intricate interplay between plant</p>



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	<p>development and the temporal dynamics of soil solution constituents. This study enhances our understanding of the seasonal nuances in soil chemistry, emphasizing the importance of considering the temporal dimension in agricultural soil management practices to optimize plant nutrition and overall crop health.</p>
<p>Paper ID 048</p>	<p>Mahmud A. Muminov^{1,2*}, Ismailkhujaev Bohodirjodzha¹, Burkhan Avutkhanov², Alisher Khujanov², Anvar Tursunov², Olimaxon Ergasheva³, Arofat Ismailova³, Dilnoza Umarova⁴</p> <p><i>¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers National Research University 100000, Uzbekistan, City: Tashkent, District: Mirzo Ulugbek, Street Kari Niyazi, 39</i></p> <p><i>²Samarkand State University named after Sharof Rashidov 140104, Uzbekistan, City: Samarkand Boulevard,15</i></p> <p><i>³National University of Uzbekistan named after Mirzo Ulugbek</i></p> <p><i>⁴Tashkent State Technical University named after Islam Karimov</i></p> <p>Title of presentation: Monitoring and Mapping rangeland health using remote sensing and GIS methods: a case study in the foothill Artemisia-ephemeral rangeland region in Samarkand</p> <p>Abstract: This paper describes the use of NDVI analysis to assess the health condition of the rangeland in a specific study area. NDVI values were used to determine the vegetation cover and its condition by dividing the values into different classes based on field samples. The study found that the rangeland health condition could be classified into four classes based on the NDVI values ranging from -0.26 to 0.63. The results indicated the presence of both healthy and unhealthy vegetation cover in the study area. However, the study emphasizes that NDVI values can vary depending on different factors, such as season, weather conditions, and vegetation type, and therefore, these factors must be considered when interpreting the results. Overall, the study highlights the importance of using NDVI analysis as a valuable tool to assess the health condition of rangelands and to inform management practices. The paper presents the results of a study on rangeland health classification in a particular study area. The study utilized remote sensing and GIS technologies to classify the rangeland into healthy and degraded categories. The results showed that only 4.4% of the land area was classified as healthy rangeland, while most of the study area was classified as degraded. Specifically, 36.1% of the land area was classified as moderately degraded, 24.3% as low degraded, and 35.2% as highly degraded. These findings suggest that the health of rangelands in the study area is poor and requires effective management and restoration practices to improve productivity. The study demonstrates the usefulness of remote sensing and GIS technologies in monitoring rangeland health and supporting sustainable management practices.</p>
<p>Paper ID 049</p>	<p>Khadzhev Azamat Shamuratovich^{1*}, Atabaev Farrukh Bakhtiyarovich^{1,2}, Tursunova Gulsanam Ruzimurodovna²</p> <p><i>¹ Urgench State University, Urgench, ul. H.Olimjon 14, 220100, Uzbekistan.;</i></p> <p><i>²Institute of General and Inorganic Chemistry of the Academy of Sciences of Uzbekistan, 77 Mirzo Ulugbek Street, 100170,Tashkent</i></p> <p>Title of presentation: Influence of sandstone on physical and chemical processes of interaction of components and genetic formation of cement composite</p> <p>Abstract: This paper highlights the results of studies to establish the influence of sandstone of the Khodzhakul deposit on the processes of hydration, the origin of new formations and their genetic formation in the structure of the cement composite. The chemical, mineralogical compositions of the sandstone of the Khodjakul deposit have been established. Their quality indicators meet the requirements for additives to cements of the PC400-D20 brand.</p>
<p>Paper ID 050</p>	<p>Dilnoza Jumaeva^{1*}, Nigora Raxmatullaeva², Ra`no Ahrorova¹, Akmal Abduraximov², Sayyora Barnoeva¹, Umidjon Raximov³, Zuvur Toirov⁴</p>



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	<p>¹<i>Institute of General and Inorganic Chemistry, Academy of Sciences, Republic of Uzbekistan, Tashkent, Uzbekistan</i></p> <p>²<i>Tashkent Institute of Chemical Technology, A. Navoi, 32, Tashkent Uzbekistan</i></p> <p>³<i>Namangan Institute of Engineering and Technology, Namangan, Uzbekistan</i></p> <p>⁴<i>Bukhara Institute of Engineering and Technology, Kayum Murtazaev str. 15, Bukhara, Uzbekistan</i></p> <p>Title of presentation: Technologies for producing traditional and non-traditional adsorbents for deep purification of aqueous-alcohol solutions based on Paulownia wood</p> <p>Abstract: This article presents the technology of obtaining activated carbon adsorbents from Pavlovnia tree waste in two different ways and in two stages. In the process of pyrolysis, the product is charred in an oxygen-free environment, and then activated in the presence of steam at temperatures from 300°C to 800°C. In the process of thermal activation of adsorbents, separation of tar resin and carbonaceous gases - CO, CO₂, CH₄ and other gases was observed between 250-400°C. When activated in the presence of water vapor, with the help of a steam generator with a temperature of 180°C-200°C, for 1.5 hours, under a pressure of 50-100 Pa, the loss of tarry resin substances was achieved. It is possible to obtain an adsorbent with high pores.</p>
<p>Paper ID 051</p>	<p>Ilgizarbek Sotimboev¹, Umidbek Baltaev², Sanjarbek Shamuratov², Ruzimov Shamsiddin², Umarbek Alimov^{1,3*}, Mirzabek Saporboyev⁴</p> <p>¹<i>Secondary school, N 15, Urgench, Uzbekistan</i></p> <p>²<i>Urgench State University, Hamid Olimjon str., 14, 220100 Urgench, Uzbekistan</i></p> <p>³<i>Institute of General and Inorganic Chemistry, Uzbek Academy Sciences. Mirzo Ulugbek str., 77a, 100170 Tashkent, Uzbekistan</i></p> <p>⁴<i>Urgench State Pedagogical Institute, Urgench, Uzbekistan</i></p> <p>Title of presentation: Technical and economic efficiency of processing acidic wastewater from the oil and fat industry into necessary agricultural products</p> <p>Abstract: In this artist the economic efficiency of organizing the production of crude fatty acids in the fat and oil industry of Uzbekistan is presented. Cotton soapstock is a difficult-to-saponifiable oily substance, which requires a long time for its saponification. Therefore, to intensify it, it is proposed to saponify the soap stock using the ultrasonic method. The resulting crude fatty acids after the new approach led to a reduction in the cost of the product. The second problem of enterprises is the formation of acidic wastewater, which, after neutralization with an expensive reagent sodium carbonate, is discharged into the city sewerage system. Therefore, it is proposed to neutralize wastewater with carbonate phosphorite of the Central Kyzylkum. As a result, after processing the wastewater, phosphorus fertilizer was obtained. Technical and economic calculations showed that the cost of phosphorus fertilizer is only 616,978 sums or 50 US dollars per ton. Thus, in oil and fat industry enterprises it is possible to organize the production of fertilizers, a product with an additional amount.</p>
<p>Paper ID 052</p>	<p>Lazizakhon Gafurova¹, Mirjalol Kurbanov¹, Saidjon Sidiqov¹, Olimaxon Ergasheva¹, Zamira Abdushukurova¹, Salomat Zakirova¹, Sayyorakhon Yunusova¹, Hafiza Artiqova²</p> <p>¹<i>National University of Uzbekistan named after Mirzo Ulugbek, 4 University Street, 100174 Tashkent, Uzbekistan</i></p> <p>²<i>Bukhara State University, Uzbekistan, Bukhara, Uzbekistan</i></p> <p>Title of presentation: Study of evolution and fertility of degraded soils in the Kashkadarya river cone spread</p> <p>Abstract: This article provides insights into the evolution of degraded soils in the Kashkadarya cone spread and the current factors influencing it. A comprehensive assessment of agrophysical, agrochemical, chemical, and microbiological properties of the degraded pale gray soils is presented, accompanied by the development of agricultural measures aimed at enhancing soil fertility. In the middle and lower segments of the cone,</p>



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	<p>notable variations exist, as highlighted by M.A. Pankov. Flat elevations are characterized by light sandy and sandy soils, whereas the slopes of these elevations exhibit heavy and medium sandy soils. Flat depressions, on the other hand, feature clayey soils. This pattern extends to the bedrock within the soil, where the mechanical composition ranges from sand and loam to heavy sand and silt. In heavy sandy layers, there are occurrences of sand and silt layers and lenses, contributing to the overall mechanical composition.</p>
<p>Paper ID 053</p>	<p>Aidai Turatbekova^{1*}, Malokhat Abdukadirova², Sanjarbek Shamuratov³, Bakhodir Latipov³, Mirzabek Saporboyev⁴, Jafar Shamshiyev⁵, Yusuf Makhmudov⁶ ¹<i>Department of Chemistry and Biology, Kimyo International University in Tashkent, 100121 Tashkent, Uzbekistan</i> ²<i>Department of Ecology and Water Resources Management, National Research University TIHAME, 100000 Tashkent, Uzbekistan</i> ³<i>Urgench State University, Urgench 220100, Uzbekistan</i> ⁴<i>Urgench State Pedagogical Institute, Urgench 220100, Uzbekistan</i> ⁵<i>Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</i> ⁶<i>Tashkent Institute of Textile and Light Industry, Tashkent 100100, Uzbekistan</i></p> <p>Title of presentation: Investigation of the effect of fertilizers on the biochemical and physical characteristics of carrots (<i>Daucus carota</i> L.)</p> <p>Abstract: Carrots (<i>Daucus carota</i> L.) are one of the most consumed and economically significant vegetables worldwide, prized for their nutritional value and versatile culinary applications. The biochemical composition of carrot roots, including their phytochemical content, sugars, vitamins, and minerals, plays a crucial role in determining their quality and nutritional benefits. Fertilizers are commonly utilized in carrot cultivation to enhance yield and optimize growth parameters. However, the application of fertilizers can significantly influence the biochemical composition of carrot roots, thereby impacting their nutritional quality and health-promoting properties. This review comprehensively examines the current body of literature on the influence of fertilizers on the biochemical parameters of carrot roots, including changes in phytochemical content, sugars, vitamins, and minerals. Furthermore, it discusses the underlying mechanisms driving these effects and explores potential implications for carrot cultivation practices and consumer health.</p>
<p>Paper ID 054</p>	<p>Aidai Turatbekova^{1*}, Nigora Parmanova², Malokhat Abdukadirova³, Azamat Khadzhiyev⁴, Xusnidin Arzikulov⁵, Muhammad-Bobur Xodjimatov⁵ ¹<i>Department of Chemistry and Biology, Kimyo International University in Tashkent, 100121 Tashkent, Uzbekistan</i> ²<i>Department of Environmental Monitoring, National University of Uzbekistan named after Mirzo Ulugbek, Tashkent 100174, Uzbekistan</i> ³<i>Department of Ecology and Water Resources Management, National Research University TIHAME, 100000 Tashkent, Uzbekistan</i> ⁴<i>Urgench State University, Urgench 220100, Uzbekistan</i> ⁵<i>Andijan Machine Building Institute, Andijan 170119, Uzbekistan</i></p> <p>Title of presentation: Study on the effect of organic fertilizers for enhancing the yield and quality of the white cabbage (<i>Brassica oleracea</i> var. <i>Capitata</i> f. <i>alba</i>)</p> <p>Abstract: White cabbage (<i>Brassica oleracea</i> var. <i>capitata</i>) is a widely cultivated vegetable with significant nutritional value and economic importance. The influence of fertilizers, particularly organic fertilizers, on the yield and quality of white cabbage has garnered considerable attention in agricultural research. These fertilizers contribute to improved soil structure, enhanced nutrient availability, and balanced microbial communities, thereby fostering optimal conditions for plant growth. Furthermore, organic fertilizers have been found to positively influence the quality attributes of white cabbage, including increased levels of essential nutrients such as vitamin C, enhanced total phenolic content, and heightened antioxidant activity. These improvements in quality not only enhance the nutritional value of the crop but also confer additional health benefits to consumers.</p>



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	<p>Through an analysis of current studies, this paper provides insights into the potential benefits, challenges, and future directions in utilizing organic fertilizers to enhance white cabbage production sustainably.</p>
<p>Paper ID 055</p>	<p style="text-align: center;">Aidai Turatbekova^{1*}, Muxabbat Masharipova², Feruza Umarova³, Ezoza Khalmuradova³, Rano Rustamova⁴, Muslimbek Abdixoshimov⁵, Rivojiddin Teshaboyev⁵</p> <p style="text-align: center;">¹<i>Department of Chemistry and Biology, Kimyo International University in Tashkent, 100121 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">²<i>Urgench State University, Urgench 220100, Uzbekistan</i></p> <p style="text-align: center;">³<i>National Research University TIAME, 100000 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">⁴<i>National University of Uzbekistan named after Mirzo Ulugbek, University str., 4, 100174 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">⁵<i>Andijan Machine Building Institute, Andijan 170119, Uzbekistan</i></p> <p>Title of presentation: Research into biologically active plant terpenoids and the mechanisms underlying on biological activity</p> <p>Abstract: Plant terpenoids, a diverse class of natural compounds, have garnered significant attention due to their wide-ranging biological activities and therapeutic potential. This review provides a comprehensive overview of the role of plant terpenoids as biologically active substances. It explores their structural diversity, biosynthesis pathways, ecological functions, and their applications in various fields including medicine, agriculture, and industry. Furthermore, the review highlights recent advancements in terpenoid research, challenges, and future prospects in harnessing their full potential.</p>
<p>Paper ID 056</p>	<p style="text-align: center;">Khurmatbek Jumaniyozov¹, Feruza Adambaeva²</p> <p style="text-align: center;">¹<i>Urgench State University, Hamid Olimjon str., 14, 220100 Urgench, Uzbekistan</i></p> <p style="text-align: center;">²<i>Urgench Branch of Tashkent University of Information Technologies named after Muhammad al-Khwarizmi, Urgench, Uzbekistan</i></p> <p>Title of presentation: Study on the Production of Glass-Ceramics from Diabase Rocks: A case study of Uzbekistan</p> <p>Abstract: The article discusses the features of the chemical and phase composition of diabase rocks, including the rocks of Arvaten and Uzunbulak deposits of Uzbekistan. Glass materials based on diabase rocks have been obtained. The physicochemical properties and structural formation of glasses during crystallization were studied by X-ray analysis. Analysis of the chemical and mineralogical compositions of the diabases of the studied deposits indicates their multiphase character. IR spectroscopic, electron microscopic, microscopic and X-ray data show the presence in diabases of several main phases in the form of oligoclase with the formula (Ca,Na)Al₂Si₂O₈, orthoclase K(AlSi₃O₈), iron-containing pyroxene solid solution of the augite type (Mg, Fe²⁺)[Si₂O₆CaFe(AlSiO₆)], calcite CaCO₃, chlorite (clinochlore) with the formula Mg_{4.5}Al_{2.5}[OH]8(Si₃AlO₁₀), olivine (MgFe)₂SiO₄ and low contents of low-temperature quartz β-SiO₂.</p>
<p>Paper ID 057</p>	<p style="text-align: center;">Azamat Khadzhiev^{1*}, Farrukh Atabaev^{1,2}, Arslon Jumaniyozov², Yusufboy Yakubov¹</p> <p style="text-align: center;">¹<i>Urgench State University, Urgench, ul. H.Olimjon 14, 220100, Uzbekistan;</i></p> <p style="text-align: center;">²<i>Institute of General and Inorganic Chemistry of the Academy of Sciences of Uzbekistan, 77 Mirzo Ulugbek Street, 100170, Tashkent</i></p> <p>Title of presentation: Study on pozzolanic activity of porphyrites of the Karatau deposit</p> <p>Abstract: This paper presents the results of a comprehensive analysis and determination of the hydraulic activity of porphyrites from the Karatau deposit to determine the possibility of using it as an active mineral additive to cement. Based on the results obtained, new types of local hydraulic additives are recommended for use, providing partial replacement of expensive Portland cement clinker and improving the performance properties of Portland cement.</p>



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Paper ID 058	<p style="text-align: center;">Abduvali Khaldjigitov¹, Umidjon Djumayozov^{2*}, Dilnoza Sagdullaeva³ ¹<i>National University of Uzbekistan, Tashkent, Uzbekistan;</i> ²<i>Samarkand branch of Tashkent University of Information Technologies, Samarkand, Uzbekistan;</i> ³<i>Institute of Mechanics and Seismic Stability of Structures, Tashkent, 100125, Uzbekistan;</i></p> <p>Title of presentation: Numerical Simulation of Elastoplastic Problems in Strains and Displacements Abstract: Within the framework of Saint-Venant's compatibility conditions, plane problems of the theory of plasticity with respect to strains and displacements are formulated in this paper. Grid equations for displacements and strains for a rectangular plate are compiled using the finite-difference method. Difference equations for displacements and strains were solved, respectively, by the iterative method and the method of alternating directions. By comparing the numerical results for a rectangular plate, the validity of the formulated plastic problem with respect to deformations is shown.</p>
Paper ID 059	<p style="text-align: center;">Shavkat Muzafarov^{1*}, Vladlen Balitsky¹, Aziz Babayev¹, Orifjon Kilichov¹, Nusratillo Toshpulatov¹, Azamat Tabaev¹ and Orifjon Sattorov¹ ¹<i>National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers"</i></p> <p>Title of presentation: Investigation the formation of a spark discharge from a layer of deposited dust on a grounded electrode and dependence of air purification degree on the potential electrode voltage Abstract: This article presents the methodology and results of experimental studies of the formation of a spark discharge from a layer of deposited dust on a grounded electrode and the dependence of the degree of air purification on the voltage at the potential electrode. Based on the research results, the limiting density of the deposited dust and the need to clean the precipitation electrode from the deposited dust layer, as well as the use of spark protection circuits, were determined. It was also revealed that the level of fluctuation of the mains voltage practically does not affect the degree of purification of the air stream from dust.</p>
Paper ID 060	<p style="text-align: center;">Shavkat Muzafarov¹, Vladlen Balitsky¹, Aziz Babayev^{1*}, Orifjon Kilichov¹, Zafar Ruzikulov², Gulnoza Tashkhodzheva¹ and Muzaffar Rakhmatalliev³ ¹<i>National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers"</i>. ²<i>Scientific and technical center with a design bureau and pilot production of the Academy of Sciences of the Republic of Uzbekistan.</i> ³<i>Tashkent State University of Economics</i></p> <p>Title of presentation: Influence of temperature and humidity of the air on discharge processes in electric filters Abstract: The article presents the results of an analysis of data sources of information on the use of electric fields in the processes of air purification from small dust particles (aerosols), and it is found that when developing existing devices for air purification from aerosol particles, the influence of the parameters of the purified air on the operation of electric precipitators was not taken into account. There is also no unified methodology for determining the parameters of electric precipitators, which is confirmed by the significant difference in the geometric and energy parameters of the developed electrostatic precipitators. The advantage of using a streamer form of corona discharge in electric gas cleaning processes is described. A methodology for conducting experimental studies to determine the influence of pressure, temperature and humidity is presented. Purified air on discharge processes in discharge gaps when powered by constant voltage and unipolar high voltage pulses with a duty cycle of more than 5. The results of experimental studies are presented.</p>



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Paper ID 062	<p style="text-align: center;">Munisakhon Burkhonova^{1*}, Jamshid Narzullayev¹, Bakhtiyar Matyakubov¹, Sabirjan Isayev¹</p> <p style="text-align: center;"><i>¹Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University, Tashkent 100000, Uzbekistan</i></p> <p>Title of presentation: Study on the application of sprinkler irrigation technology for the growth of carrots and cauliflowers</p> <p>Abstract: In this research paper, there is information about carrots and cauliflower, their cultivation in different soil conditions using water-saving irrigation technologies, focusing on sprinkler irrigation was discussed. The effectiveness of application of sprinkler irrigation was compared with furrow irrigation system and recommendations were given. The research was conducted in Tashkent region, Uzbekistan. Moreover, the methods of determining the mechanical composition of the soil in the experimental field, the application of the principles of using the world's available water resources, the areas of carrot and cauliflower cultivation in the republic, and the varieties used in cultivation, as well as the history of growing vegetable crops were discussed. In addition, research methodology and mathematical-statistical analysis were conducted.</p>
Paper ID 063	<p style="text-align: center;">Palvan Kalandarov¹, Kanat Zhunussov^{2*}, Abdurazak Kassimov², Bagzhan Baibolov², Nuridin Junussov², Kazima Kaliyeva³</p> <p style="text-align: center;"><i>¹National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers", Tashkent, Republic of Uzbekistan;</i></p> <p style="text-align: center;"><i>²Kazakh National Research Technical University named. after K. Satbayev;</i></p> <p style="text-align: center;"><i>³L.N. Gumilyov Eurasian National University;</i></p> <p>Title of presentation: Changes in pH during the ozonation process of surface water</p> <p>Abstract: This work considers the ozonation of surface water as an effective method for treating water to eliminate microorganisms and remove organic pollutants. However, the ozonation process changes the physicochemical properties of water, notably the pH level. Changes in pH can significantly affect the efficiency of water purification and potentially impact the condition of aquatic ecosystems when the treated water is discharged. This paper presents the results of experimental studies evaluating the dynamics of pH changes in various water bodies (distilled, ionized, tap, and river water) during the ozonation process. Special attention is given to the presence of heavy metal salts in water, which can catalyze the decomposition of ozone and intensify changes in pH. The study shows that ozonating surface water can lead to a decrease in pH, which may necessitate subsequent pH adjustments to maintain optimal levels for various uses of the treated water. The work is of practical significance for improving the efficiency of ozone use in industrial and municipal services and for water purification processes.</p>
Paper ID 064	<p style="text-align: center;">Palvan Kalandarov¹, Yerassyl Balpankul², Kurmangazy Sarsanbekov², Aldabergen Bektilevov², Anar Khabay^{2*}</p> <p style="text-align: center;"><i>¹National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers", Tashkent, Republic of Uzbekistan;</i></p> <p style="text-align: center;"><i>²Kazakh National Research Technical University named. after K. Satbayev</i></p> <p>Title of presentation: The effect of ozone technology in the process of surface water decontamination on coagulants and filters</p> <p>Abstract: The presence of natural organic matter (NOM) poses many challenges in the process of purifying water intended for drinking. The presence of NOM leads to high coloration due to natural conditions. During the coagulation and flocculation processes, NOM stabilizes dispersed and colloidal particles. Currently, there are many methods for removing natural organic matter. In Kazakhstan, coagulation is commonly used for treating most waters, which effectively reduces color and NOM. It is known that the efficiency of ozonation and coagulation is high when they are used together. The impact of ozonation on the properties of coagulation is significant because coagulation is the most</p>



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	<p>widespread process for treating drinking water. The combination of ozonation with coagulation has been proposed as an improved method for reducing coloration and removing surfactants. The studies were conducted at the K.I. Satpayev Kazakh National Technical University, where a liquid phase ozonation laboratory system was developed. The aim of the research was to demonstrate the positive effect of combining ozonation with coagulation on the removal of color and surfactants in surface waters. Studies were conducted on model waters with different contents of humic substances. Positive results were obtained at low concentrations of ozone (0.1...0.8 mg/l) and low doses of coagulant. A low dose of ozone showed improvement for coagulation. The results of the study indicate that ozonation, combined with coagulation, has a positive effect on color removal, enhances the removal of NOM, and reduces the necessary dose of coagulant.</p>
<p>Paper ID 065</p>	<p>Palvan Kalandarov¹, Anar Khabay^{2*}, Aruzhan Sabyrova³, Muratbek Yermekbayev³, Nurbol Kamzanov², Nurmakhan Magzym²</p> <p><i>¹National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers", Tashkent, Republic of Uzbekistan;</i></p> <p><i>²Kazakh National Research Technical University named after K. Satbayev</i></p> <p><i>³Almaty University of Power Engineering and Telecommunications named after G. Daukeyev.</i></p> <p>Title of presentation: Development and implementation of ozone purification systems for water pipes and wells</p> <p>Abstract: This paper is dedicated to the study of the importance and efficiency of developing and implementing ozone purification systems for disinfecting drinking water sources, water pipes, and wells. Ozone is a powerful oxidizer capable of effectively eliminating microorganisms, including bacteria, viruses, and protozoa in water pipes and wells. Such systems serve as alternatives to traditional chlorination methods and leave no polluting purification by-products in the environment. The research explores the technical parameters of applying ozone to various water sources and purification systems, as well as operational parameters like ozone concentration, treatment time, and water flow regime. It also covers issues related to the design, installation, and operation of ozone purification systems. The topic contributes to the development and improvement of efficient and ecologically sustainable water disinfection solutions by providing an overview of the working principles, technical specifications, and mobility capabilities of ozone purification systems. The introduction of ozone purification systems extends the possibilities for improving water quality and adhering to safety standards. This study also identifies key factors such as ozone solubility, reaction time, and its efficiency in dispersing through water, which can enhance the effectiveness of this method.</p>
<p>Paper ID 067</p>	<p>Z Masaliyeva¹, A Karimov², J Adhamov³</p> <p><i>¹National Research University, Tashkent Institute of Irrigation and Mechanization of Agriculture, Kary-Niyaziy-39, 100000 Tashkent</i></p> <p>Title of presentation: Estimating reference evapotranspiration using the Hargreaves - Samani formula for end-user applications</p> <p>Abstract: Reference evapotranspiration is one of the main geophysical parameters, the reliable assessment of which is important in irrigation water management, planning, distribution and regulation of water resources. The Food and Agriculture Organization of the United Nations recommends using the Penman-Monteith formula to estimate ETo. However, its' application by end-users is limited since the formula requires several parameters which are often missing. In such cases, it recommends the Hargreaves-Samani formula. In this study, the reference evapotranspiration is estimated as the case study for Uzbekistan applying both, the Penman - Monteith and the Hargreaves - Samani methods. Data used is taken from 13 state climate stations of Uzbekistan. The results of the study indicate that under data-scarce conditions, the Hargreaves – Samani formula, can be recommended for end-user applications, after the adjustment to local conditions, in order</p>



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	to determine the water requirements of crops and irrigation scheduling.
Paper ID 068	<p style="text-align: center;">Dilmurod Ergashev, Shokhida Khamdamova, Ozodbek Khakimov, Askarkhoja Akramjonov</p> <p style="text-align: center;"><i>¹International Institute of Food Technology and Engineering, Republic of Uzbekistan, Fergana, Al-Ferganiy, 204. 150105;</i></p> <p>Title of presentation: Study of the physical and chemical processes of new type fertilizer based on local raw materials</p> <p>Abstract: The solubility of components in the $\text{Ca}(\text{NO}_3)_2\text{-Mg}(\text{NO}_3)_2\text{-H}_2\text{O}$ system was studied in a wide range of temperatures and concentrations using the visual-polythermal method. Based on the data obtained, a polythermal solubility diagram of the system was constructed, on which the crystallization fields of ice, four, three and two aqueous calcium nitrate, and nine and six aqueous magnesium nitrate are delimited. System of simple eutheic type. Analysis of the solubility diagram of the $\text{Ca}(\text{NO}_3)_2\text{-Mg}(\text{NO}_3)_2\text{-H}_2\text{O}$ system shows that due to its good solubility, calcium nitrate has a significant salting-out effect on magnesium nitrate, which increases with increasing temperature and concentration of the system components. Also, to develop technological solutions for the production of fertilizers, the physicochemical properties of the system solutions were studied and a “composition-property” diagram of the system was constructed depending on the composition of the components.</p>
Paper ID 069	<p style="text-align: center;">Mukhammedali Dauletmuratov¹, Lazizakhon Gafurova², Gulnora. Djalilova², Olimaxon Ergasheva², Xalmuratova Baxitgul¹, Muxammad Umarov³</p> <p style="text-align: center;"><i>¹Karakalpak Institute of Agriculture and Agrotechnology, Nukus, Republic of Karakalpakstan</i></p> <p style="text-align: center;"><i>²National University of Uzbekistan named after Mirzo Ulugbek, Tashkent, Uzbekistan</i></p> <p style="text-align: center;"><i>³Tashkent State Agrarian University, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on agrochemical information and analytical systems in irrigated agriculture</p> <p>Abstract: This paper presents findings on the creation of digital agrochemical maps for irrigated meadow-alluvial soils in Uzbekistan through the application of contemporary GIS technologies. Additionally, it explores the utilization of these maps to establish optimal fertilizer application rates and timings for various agricultural crops. The research aims to leverage Geographic Information System (GIS) technologies to develop digital agrochemical cartograms specifically for irrigated meadow-alluvial soils in Uzbekistan. These cartograms serve as digital representations of the agrochemical characteristics of the soils in the region. The adoption of GIS facilitates a comprehensive and spatially explicit understanding of soil attributes, enabling a more precise and informed approach to agricultural management. The primary objective is to determine optimal rates and timings for fertilizer application tailored to the distinct characteristics of irrigated meadow-alluvial soils. By integrating soil information into the GIS framework, the study seeks to establish a connection between spatial variability in soil properties and the corresponding agricultural practices. This approach allows for the development of targeted fertilization strategies based on the unique attributes of each soil type.</p>
Paper ID 070	<p style="text-align: center;">S. M. Anas^{1*}, Mohd Shariq¹, Mehtab Alam², Zamira Masharipova³, Boxodir Azizov⁴</p> <p style="text-align: center;"><i>¹Department of Civil Engineering, Jamia Millia Islamia (A Central University), 110025 New Delhi, India</i></p> <p style="text-align: center;"><i>²Department of Civil Engineering, Netaji Subhas University of Technology, 110073 New Delhi, India</i></p> <p style="text-align: center;"><i>³Urgench State University, Urgench 220100, Uzbekistan</i></p> <p style="text-align: center;"><i>⁴Andijan Machine Building Institute, Andijan 170119, Uzbekistan</i></p> <p>Title of presentation: Comprehensive Methodology for Low-Velocity Drop Weight Impact Testing of Structural Slabs: Instruments, Procedures, and Analysis</p>



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	<p>Abstract: The significance of Low-Velocity Drop Weight Impact (LDWI) testing cannot be overstated, as it plays a crucial role in assessing the impact resistance of structural components across various sectors, including aerospace, automotive, construction, and defense. Low-velocity impacts are evident across a spectrum of circumstances, spanning from occurrences in nature to mishaps within industrial settings. Instances encompass boulders striking rooftops amidst landslides, plummeting rocks posing threats to infrastructure within mountainous terrain, and industrial mishaps entailing collisions among equipment or machinery. The response of structures to rapid loading induced by LDWI is of utmost importance, necessitating precise and dependable testing methodologies. For researchers and professionals engaged in LDWI testing, a deep comprehension of essential equipment is essential to ensure the accuracy and reliability of experimental outcomes. Central to this endeavor is the drop weight apparatus, comprising components such as a descending weight, an impactor, and a guiding mechanism, which are pivotal in regulating impact parameters like velocity and trajectory. This research offers a thorough examination of the fundamental equipment necessary for LDWI analysis and delineates the procedures for conducting such assessments on structural elements like slabs. By amalgamating insights from diverse scholarly sources, the authors present a comprehensive overview of indispensable apparatus and assessment techniques. This exposition serves as a valuable asset for both researchers and practitioners, furnishing guidance in equipment selection, procedural comprehension, and precise interpretation of experimental results. The assimilation of this knowledge enriches the proficiency and effectiveness of LDWI testing efforts, thereby facilitating informed decision-making in material selection, structural design, and optimization of impact resistance across a wide array of engineering applications.</p>
<p>Paper ID 071</p>	<p>Akram Mirzabaev¹, Abdusaid Isakov^{1,2}, Barna Rakhmankulova¹, Temur Makhkamov³, Asqar Mirzaev⁴ and Latiflon Mannabov³</p> <p>¹<i>“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research university, Uzbekistan, Tashkent, 39 Kari Niyazov Str., 100000,</i></p> <p>²<i>Institute of Energy Problems of the Academy of Sciences of the Republic of Uzbekistan, Uzbekistan, Tashkent, 9a Muxtor Ashrafiy Str., 100204,</i></p> <p>³<i>“Mirsolar” OOO, Uzbekistan, Tashkent, 176 Axsikat Str. 100076,</i></p> <p>⁴<i>Tashkent University of Architecture and Civil Engineering, Uzbekistan, Tashkent, 9 Yangi Shahar Str. 100194</i></p> <p>Title of presentation: Experience in implementing modern energy storage systems in Uzbekistan</p> <p>Abstract: This article studies the features of the project and operation of a modern energy storage system (ESS) in the climatic conditions of the Republic of Uzbekistan. The technical features of the ESS are revealed, the connection diagrams and operating modes of the ESS are analyzed. Recommendations are given for the project of similar systems to increase their efficiency, considering the climatic characteristics of the Republic of Uzbekistan.</p>
<p>Paper ID 072</p>	<p>Sherkul Rakhmanov¹, and Kakhramon Turaev²</p> <p>¹<i>Tashkent Institute of Irrigation and Agricultural Mechanization Engineers National Research University, 100000, Tashkent, Uzbekistan</i></p> <p>²<i>Termez State University, Termez, Uzbekistan</i></p> <p>Title of presentation: Parametric analysis of chlorella microalgae cultivation process and mathematical modeling of intensive growth process</p> <p>Abstract: In this paper, based on the analysis of the parameters of the technological process of growing Chlorella microalgae, the construction of its mathematical model and its main parameters obtained in the experiments carried out in intensive growth processes were considered and analyzed within the framework of the influence on the increase of biomass. A structural scheme for the intensive cultivation of Chlorella microalgae has been</p>



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	<p>developed. A kinetic and mathematical model representing the dependence of the growth time of the biomass of Chlorella microalgae was obtained based on the experiments. In the experiment, it was found that the change of the kinetic curve corresponds to the Verhulst logistic equation for limited population growth.</p> <p>The equation of the state of consumption of nutrients in the periodic cultivation of Chlorella microalgae was determined, and based on the kinetic model of this process, a mathematical model was developed. When the biomass x concentration of Chlorella microalgae reaches the maximum value E_p, growth stops. In this case, it was proved on the basis of experiments that the increase in the amount of lipids formed in the biomass stops. The relationship between the increase in the concentration of the C substrate and the increase in biomass was confirmed by Andrew's equation.</p> <p>In the process of cultivation of chlorella microalgae, the composition of the most optimized nutrient medium was determined, taking into account the proportions of the proposed macro and micronutrients. It was found that the maximum concentration of chlorella microalgae cells from the optimized nutrient medium is 10-15% higher than the maximum concentration in the Tamiya nutrient medium, and the cost of one cubic meter of the proposed nutrient medium is 2 times lower than the Tamiya medium.</p>
<p>Paper ID 073</p>	<p style="text-align: center;">Risbek Yusupaliyev, Nozima Musashayxova, Abdullo Kuchkarov <i>Tashkent State Technical University, 2 Universitet Str., Tashkent city, Uzbekistan</i></p> <p>Title of presentation: Methods of Purification of Polluted Water from Ammonia Compounds at Nitrogen Fertilizer Plants</p> <p>Abstract: This article discusses the possibilities of wastewater purification polluted with ammonia compounds at enterprises producing nitrogen fertilizers by various chemical methods, as well as using air in a scrubber installation. In wastewater generated during the production of nitrogen fertilizers at the “Fergana Azot” enterprise of the Republic of Uzbekistan, the content of ammonia in the dissolved state is higher than normal. Due to the fact that ammonia compounds also have a high degree of binding to gases such as CO₂, NO₂ and SO₂, which are in a gaseous state under various conditions, the possibility of cleaning such waters from ammonia compounds in a scrubber using flue gases containing CO₂, NO₂ and SO₂ gases, as well as the amount of air supplied in this technological process, the speed of its passage through the scrubber nozzles, what it will be, what height the nozzles will be, is indicated according to the data obtained as a result of the experiment. Together with this shown the reasons of formation of sedimentary substances in scrubber nozzles and the options for cleaning from waste substances in which formation in scrubber nozzles in this process is current.</p>
<p>Paper ID 080</p>	<p style="text-align: center;">Mukhammedali Dauletmuratov¹, Lazizakhon Gafurova², Gulnora. Djalilova², Olimaxon Ergasheva², Xalmuratova Baxitgul¹, Muxammad Umarov³ <i>¹Karakalpak Institute of Agriculture and Agrotechnology, Nukus, Republic of Karakalpakstan</i> <i>²National University of Uzbekistan named after Mirzo Ulugbek, Tashkent, Uzbekistan</i> <i>³Tashkent State Agrarian University, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Agrochemical information and analytical systems in irrigated agriculture</p> <p>Abstract: The paper presents findings on the creation of digital agrochemical maps for irrigated meadow-alluvial soils in Uzbekistan through the application of contemporary GIS technologies. Additionally, it explores the utilization of these maps to establish optimal fertilizer application rates and timings for various agricultural crops. The research aims to leverage Geographic Information System (GIS) technologies to develop digital agrochemical cartograms specifically for irrigated meadow-alluvial soils in Uzbekistan. These cartograms serve as digital representations of the agrochemical characteristics of the soils in the region. The adoption of GIS facilitates a comprehensive and spatially explicit understanding of soil attributes, enabling a more precise and informed approach to</p>



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	<p>agricultural management. The primary objective is to determine optimal rates and timings for fertilizer application tailored to the distinct characteristics of irrigated meadow-alluvial soils. By integrating soil information into the GIS framework, the study seeks to establish a connection between spatial variability in soil properties and the corresponding agricultural practices. This approach allows for the development of targeted fertilization strategies based on the unique attributes of each soil type.</p>
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13 May 2024 at 10:00 a.m. (Tashkent, Uzbekistan, GMT+5)

14 May 2024 at 10:00 a.m. (Tashkent, Uzbekistan, GMT+5)

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