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ICECAE 2022

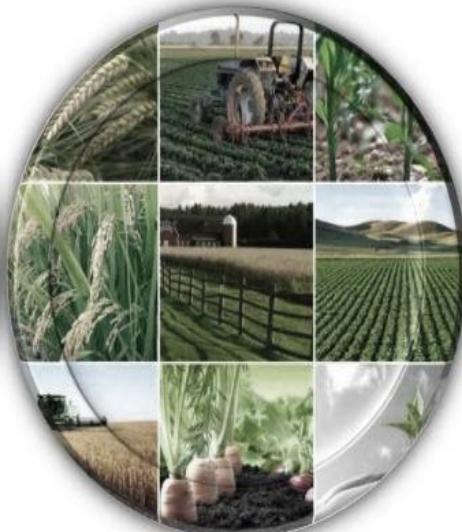
PROGRAM

*3rd 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*



14-16 October, 2022

Tashkent, Uzbekistan



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ICECAE 2022 PROGRAM

3rd International Conference on Energetics, Civil and Agricultural Engineering 2022

DAY 1: OCTOBER 14, 2022

9:00 Onsite registration	
9:30 Welcoming Tea/Coffee	
OPENING CEREMONY [Hybrid: online and onsite] 10.00am – 12.50pm (Tashkent-Uzbekistan time zone) (Chair/Moderator: Prof. Dr. Obid Tursunov) (Main hall of the TIAME – National Research University)	
10.00am–10.10am	Prof. Dr. Obid Tursunov <i>Professor of the “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University – Uzbekistan Fellow of the China Agricultural University – China</i>
10.10am-10.20am	Prof. Dr. Bakhadir Mirzaev <i>Rector of the “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University – Uzbekistan</i>
10.20am-10.40am	Representatives from the Ministries of the Republic of Uzbekistan
10.40am-10.50am	Prof. Dr. Abdushukur Khamzaev <i>Deputy chairman of the Ecological Party of Uzbekistan – Uzbekistan</i>
10.50am-11.00am	Prof. Dr. Alisher Usmankulov <i>Rector of the Jizzakh Polytechnic Institute – Uzbekistan</i>
11.00am-11.10am	Prof. Dr. Romen Zakhidov, academician <i>Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan</i>
11.10am-11.20am	Prof. Dr. hab. eng. arch. Andrzej Bialkiewicz <i>Rector of the Cracow University of Technology – Poland</i>
11.20am-11.30am	Prof. Dr. Izzet Açar <i>Vice-rector of Karabuk Univeristy – Türkiye</i>
11.30am-11.40am	Professor Saifur Rahman <i>Candidate for IEEE President-elect Joseph Loring Professor & Director Virginia Tech Advanced Research Institute - USA</i>
11.40am-11.50am	Mr. Miguel Martin <i>Head of the Department for the Development of Infrastructure Projects and Investment Attraction Embassy of Spain to Moscow (Tashkent residency)</i>



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HONORABLE SPEAKERS	
11.50am-12.10pm	Professor Josep M. Guerrero Managing Director CROM Center for Research on Microgrids Department of Energy Technology Aalborg University - Denmark
Speech title	<i>Neuroscience Inspiration and Brain Models for Space Microgrids</i>
12.10pm-12.30pm	Prof. Dr. Zinovy Novickiy Academician, Research Institute of Forestry - Uzbekistan
Speech Title	<i>Measures to mitigate the negative consequences of the Aral Sea development and their preliminary results</i>
12.30pm-13.00pm	Professor Mohammad Shahidehpour Bodine Chair Professor & Director of the Robert W. Galvin Center for Electricity Innovation Illinois Institute of Technology - USA
Speech title	<i>Hydrogen and Renewable Energy for Low Carbon Operations</i>
END OF OPENING CEREMONY	
Lunch: 13.00pm-14.20pm (Main Canteen of TIAME NRU)	

PLENARY SESSION - KEYNOTE SPEAKERS

[Online]

Venue: TIAME NRU, The Scientific Center: Research & Innovation, bld.V, floor 6, room 603

Chair/Moderator: Prof. Dr. Obid Tursunov

14:30pm – 18:20pm

Keynote Speaker I: 14.30pm-14.50pm (mode of presentation: online)	
	Dr. Ulrich Berk <i>President of the German Association of Homatherapy – Muchlingen, Germany</i>
Speech title	AGNIHOTRA and HOMA THERAPY for a Sustainable Future
Keynote Speaker II: 14.50pm-15.10pm (mode of presentation: online)	
	Prof. Dr. hab. eng. arch. Justyna Kobylarczyk <i>Professors of the Cracow University of Technology, Poland</i>
Speech title	Ventilation conditions in housing development
Keynote Speaker III: 15.10pm – 15.30pm (mode of presentation: online)	
	Prof. Dr. Jose Osvaldo B. Carioca <i>Professor of the Federal University of Ceara – Brazil</i>



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Speech title	Exploring the complexity of neuronal reality
Keynote Speaker IV: 15.30pm – 15.50pm (mode of presentation: online)	
	Prof. Dr. Agnieszka Klimek-Kopyra <i>University of Agriculture in Krakow - Poland</i>
Speech title	Complementary photostimulation as a new tool for increasing plant productivity
Keynote Speaker V: 15.50pm – 16.10pm (mode of presentation: online)	
	Prof. Dr. Devidas Belsare <i>Professor Emeritus of Bhopal University – India</i>
Speech title	Aquaculture-Apiculture-Sunflower Farming for Farmers of Small Holdings
Closing Speech: Prof. Dr. Obid Tursunov	
END of 1st Day	



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DAY 2: OCTOBER 15, 2021

[Fully online]

Time: 10⁰⁰ a.m. – 18⁰⁰ p.m.

Session chairs: Prof. Dr. Obid Tursunov, Prof. Dr. Justyna Kobylarczyk, Prof. Dr. Ziyodulla Yusupov, Dr. Dilshod Kodirov, Dr. Khushiev Sirojiddin, Dr. Jurabek Izatillaev

PRESENTERS (ORAL)

<p>Paper ID 7237 10⁰⁰ – 10¹⁵ (5 min discussion)</p>	<p>Pirnazar Ganiev¹, Shafolat Namazov², Najimuddin Usanbaev², Uktam Temirov³ and Bakhtiyor Numonov⁴</p> <p>¹Tashkent state technical university named after Islam Karimov, University str., 2, 100095 Tashkent, Uzbekistan</p> <p>²Institute of General and Inorganic Chemistry, 77a Mirzo Ulugbek, 100170 Tashkent, Uzbekistan</p> <p>³Navoi State Mining and Technology University, 210100 Galaba Str. 27, Republic of Uzbekistan</p> <p>⁴Kokand state pedagogical institute, Kokand city, 150700 Turon str. 23, Republic of Uzbekistan</p> <p>Title of presentation: Studies of the physico-chemical properties of humic simple superphosphate obtained on the basis of Central Kyzylkum phosphorites and oxidized coal</p> <p>Abstract: This article presents the results of the physical and chemical properties of humic simple superphosphate obtained by decomposition of the ordinary phosphorous flour of the Central Kyzylkum with sulfuric acid and the addition of oxidized coal from the Angren deposit with hydrogen peroxide. The distinctive characteristics of humic simple superphosphate are shown in comparison with simple superphosphate obtained without the addition of oxidized coal.</p>
<p>Paper ID 5107 10¹⁵ – 10³⁰ (5 min discussion)</p>	<p>Abduhalim Saydullayev¹, Shafaat Namazov², Saodat Mirsalimova¹, Najimuddin Usanbaev² and Uktam Temirov³</p> <p>¹Fergana Polytechnic Institute, Republic of Uzbekistan, 150107 Fergana st. 86, Uzbekistan</p> <p>²Institute of General and Inorganic Chemistry, 77a Mirzo Ulugbek, 100170 Tashkent, Uzbekistan</p> <p>³Navoi State Mining and Technology University, 210100 Galaba Str. 27, Republic of Uzbekistan</p> <p>Title of presentation: Influence of the amount and fineness of grinding of ammonium sulfate on the properties of sulfate-containing urea</p> <p>Abstract: The objective of this work is to determine the optimal technological mode for obtaining sulfated urea with a balanced content of nitrogen and sulfur by adding ammonium sulfate to the urea melt before granulation. The article presents the results of a study of the dependence of the properties of sulfated urea on the degree of grinding and on the amount of ammonium sulfate, expressed by the mass ratio of CO (NH₂)₂: (NH₄)₂SO₄ = 100 : (2.5-50). Methods for obtaining, granulating and studying the properties of sulfated urea samples are presented. In fertilizers obtained with the addition of ammonium sulfate to the urea melt at the studied ratios, the strength of the granules</p>



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	<p>increases from the initial 2,53 to 4,80 MPa, the gyroscopic point decreases from 58,4% to 52,3. It was also revealed that when ammonium sulfate is added to the urea melt, the density and viscosity of the melt increase with an increase in the amount of ammonium sulfate introduced. At 135 ° C, an increase in the addition of ammonium sulfate from 2,5 to 50,0 mass parts per 100 mass parts of urea leads to an increase in density from 1,162 to 1,412 g/cm³, viscosity from 2,56 to 7,91 cПз. It was found that the smaller the particle size of ammonium sulfate, the higher the strength of the urea granules. With a decrease in the dispersion of ammonium sulfate particles from 0,25 to 0,04 mm, the strength of sulfated urea granules increases, the presence of ammonium sulfate in the composition of urea reduces the dissolution rate, which makes it possible to prolong their action, in addition, it lowers the pH of the product, which prevents the release of ammonia during storage and transportation sulfated urea.</p>
<p>Paper ID 2732 10³⁰ – 10⁴⁵ (5 min discussion)</p>	<p>Ngoc Quy Nguyen^{1,2*}, Van Thuy Nguyen², Minh Tien Nguyen², Tri Nhut Pham¹, Tan Phat Dao¹, Thi Yen Nhi Tran^{1*} <i>¹Institute of Applied Technology and Sustainable Development, Nguyen Tat Thanh University, Ho Chi Minh City 700000, Vietnam.;</i> <i>²Department of Pharmacy, Nguyen Tat Thanh University, Ho Chi Minh City, Vietnam</i></p> <p>Title of presentation: Optimization of the technological process for the production of dried soursop (<i>Annona muricata</i> Linn) for vitamin C content by response surface methodology Abstract: Soursop is a popular edible fruit in the world, because of its delicious taste as well as its pharmacological values and therapeutic uses. However, this is also a perishable fruit. To increase the value of this fruit, we conducted a study to optimize the process of creating dried soursop products by the response surface method. The optimal value was osmosis at 45 cmHg pressure and heat pump drying at 25°C, obtaining the dried soursop product with the highest vitamin C content of 0.382 ± 0.011 (mg/g DW).</p>
<p>Paper ID 6688 10⁴⁵ – 11⁰⁰ (5 min discussion)</p>	<p>Durdona Azimova¹, Dilnoza Salikhanova¹, Izzat Eshmetov¹, Farkhod Umirov² and Uktam Temirov² <i>¹Institute of General and Inorganic Chemistry, 77a Mirzo Ulugbek, 100170 Tashkent, Uzbekistan</i> <i>²Navoi State Mining Institute, 210100 Galaba Str. 27, Republic of Uzbekistan</i></p> <p>Title of presentation: Wastewater treatment using heat-treated defecate and MAP solution Abstract: This article presents the results of quantitative and qualitative characteristics of wastewater from the tailing pond of the Navoi Mining and Metallurgical Combine. Pollutants coming from the processing of ores were determined. The studied effluents had high concentrations of dissolved salts and suspended solids. Laboratory tests were carried out for wastewater treatment using samples of thermally processed defecate and MAP solution. It has been shown that thermal processed defecation and monoammonium phosphate (MAP) solution are effective for wastewater treatment from polluting ions. The consumption of thermally processed defecation was 10 g/l and 25% MAP was 15 ml/l, while the degree of reduction of the elements Ca, Mg, K, Be, Al, Mn, Ni, Cu, Zn, As, Se, Sr, Mo, Pb was 87.82, 90.64, 70.72, 96.35. 92.64, 99.79, 63.69, 18.95, 91.12, 98.38, 70.85, 78.56%.</p>
<p>Paper ID 3634 11⁰⁰ – 11¹⁵ (5 min discussion)</p>	<p>Bakhron Boynazarov¹, Tolib Berdiyev², Uktam Temirov³, Pirnazar Ganiev⁴ and Najimuddin Usanbaev⁵ <i>¹Tashkent State Agrarian University, 111218 University str., 2, Uzbekistan</i> <i>²Research Institute of Soil Science and Agrochemistry, 100179, Tashkent, Almazar district, str. Qamarniso 3, Uzbekistan</i> <i>³Navoi State Mining and Technology University, 210100 Galaba Str. 27, Uzbekistan</i> <i>⁴Tashkent state technical university named after Islam Karimov, University str., 2,</i></p>



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	<p style="text-align: center;">100095 Tashkent, Uzbekistan <i>⁵Institute of General and Inorganic Chemistry, 77a Mirzo Ulugbek, 100170 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Production of bentonite and humus natural organic substances from fluoride compounds Abstract: In this paper, scientific research has been conducted on the production of fluoride disinfectants based on local raw materials in order to neutralize fluorine-contaminated soils in the vicinity of industrial enterprises. At the same time, the processes of fluoride ion binding of environmentally safe, biologically active drugs obtained on the basis of various bentonites, humic substances and chemically and physically modified bentonites were carried out in 0.1 normal sodium fluoride solution. Interaction of fluoride ion in fluoride solution with bentonite samples, oxidized charcoal, humic acid extracted from oxidized charcoal and humic calcium was studied in a wide range (100: 1 to 100:10) of the ratios of fluoride solution and the mentioned drugs.</p>
<p>Paper 7763 11¹⁵ – 11³⁰ (5 min discussion)</p>	<p style="text-align: center;">Erkaeva Nazokat¹, Kaipbergenov Atabek², Erkaev Aktam¹ and Kucharov Bahram³</p> <p style="text-align: center;"><i>¹Tashkent Institute of Chemical Technology, 100011, Navoi st., 32, Uzbekistan</i> <i>³Nukus State Pedagogical Institute named after Ajinyaz, 230100 Nukus Str. 104, Uzbekistan</i></p> <p style="text-align: center;"><i>²Institute of General and Inorganic Chemistry, 77a Mirzo Ulugbek, 100170 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the process of producing sodium percarbonate Abstract: To increase the washing efficiency and more completely remove stained impurities, chemical bleaches are introduced into the composition of SD (synthetic detergents), the most common of which are peroxide salts - sodium peroxocarbonate (percarbonate) and sodium peroxoborate (perborate). The theoretical substantiation of the process of interaction of sodium carbonate and hydrogen peroxide in the three-component reciprocal system Na₂CO₃-H₂O₂-H₂O by the visual-polythermal and isothermal method at 10 and 30°C is carried out. The formation of new compounds of the compositions: Na₂CO₃•1,5H₂O₂, Na₂CO₃•H₂O•2H₂O₂ and Na₂CO₃•2H₂O₂ was established, for which the concentration limits of existence were determined. New compounds are identified by chemical and physico-chemical analysis methods.</p>
<p>Paper ID 3416 11³⁰ – 11⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">Ahmadjon Ahmadjonov¹, Umarbek Alimov¹, Primov Tuychi¹, Atanazar Seitnazarov¹, Ahmed Reimov², Shafolat Namazov¹ Saidjon Sadullayev³</p> <p style="text-align: center;"><i>¹Senior Researcher of the Institute of General and Inorganic Chemistry of the Academy of Sciences, Republic of Uzbekistan st. Mirzo Ulugbek 77a, 100170, Tashkent, Uzbekistan</i></p> <p style="text-align: center;"><i>²Karakalpak State University named after Berdakh</i></p> <p style="text-align: center;"><i>³Institute of Mineral Resources Government Agency, Mirzo Ulugbek district, st. Olimlar 49, Tashkent 100041</i></p> <p>Title of presentation: Effect of temperature on the kinetics of the process of nitric acid decomposition of arvaten serpentinite Abstract: The process of decomposition of serpentinite from the Arvaten deposit (Uzbekistan) with 30% nitric acid at its stoichiometric norm of 100% and temperatures of 313, 323, 333, 343 and 353 K for 120 min was studied in this work. It has been established that with increasing temperature, the decomposition coefficient (C_{dec.}) of MgO, Fe₂O₃ and Al₂O₃ increases from 11.48 to 82.5%; from 13.96 to 41.49% and from 38.87 to 96.61%, respectively. Meaning C_{dec.} iron oxide in the form of magnetite is</p>



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	<p>relatively low than other components. Cdec. made it possible to reveal the rate constant of decomposition of serpentinite in nitric acid at the above temperatures. The rate of decomposition of the raw material is apparently limited by the diffusion of the layer of amorphous silica particles on the surface of the raw material. Depending on the temperature (313-353 K), the value of the apparent activation energy (E_a) of the Arvaten serpentinite lies from 21.79 to 7.53 kcal/mole or from 91.21 to 31.53 kJ/mole, and the average value ($E_{aver.}$) is 14.226 kcal/mole and 59.68 kJ/mole, respectively. It turned out that the data are similar to other serpentinite deposits. That is, Arvaten serpentinite is reactive towards nitric acid.</p>
<p>Paper ID 7181 11⁴⁵ – 12⁰⁰ (5 min discussion)</p>	<p style="text-align: center;">Mukaddas Fazilova¹, Shodlik Hasanov¹, Umarbek Alimov², Muhabbat Raxmanova³, Saidjon Sadullaev⁴</p> <p style="text-align: center;">¹<i>Mamun Khorezm Academy, Republic of Uzbekistan, Markaz-1, 220900, Khiva, Uzbekistan</i></p> <p style="text-align: center;">²<i>Institute of General and Inorganic Chemistry of the Academy of Sciences, Republic of Uzbekistan st. Mirzo Ulugbek 77a, 100170, Tashkent, Uzbekistan</i></p> <p style="text-align: center;">³<i>Urgench state university, 14 Hamid Olimjon, 220100, Urgench, Uzbekistan</i></p> <p style="text-align: center;">⁴<i>Institute of Mineral Resources Government agency, Mirzo Ulugbek district, st. Olimlar 49, 100041 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study of microelement containing nitrogen fertilizers based on spent lithium-ion battery</p> <p>Abstract: Ammonium nitrate is a hygroscopic and caking product for growing agricultural products. In order to improve the properties of ammonium nitrate, the composition of the calcined and crushed cathode material from the used lithium ion battery was studied. Since the cathode material mainly consists of lithium, cobalt, manganese and nickel, it has been adopted as a polymicroelement-containing additive to improve the composition and properties of ammonium nitrate. Studies have shown that the introduction of cathode powder into the ammonium nitrate melt in the amount of 0.5-3.0 g in relation to 100 g of ammonium nitrate led to an increase in trace elements such as lithium, cobalt, manganese and nickel from 0.0094 to 0.0527; from 0.0561 to 0.2395; 0.0387 to 0.2860 and from 0.0112 to 0.0387%, respectively. The microelement containing nitrogen fertilizers obtained in this way have a significant digestibility of 2% citric acid, 0.2M Trilon B and an aqueous form. The static strength of the granules of the obtained trace-containing nitrogen fertilizers ranges from 4.62 to 6.13 MPa, which is 3.40-4.51 and 2.85-3.78 times greater than pure and industrial ammonium nitrate. High values of fertilizer strength contributed to an increase in the dissolution rate of granules of new types of nitrogen fertilizers from 71 to 87 sec. This suggests that the obtained microelement containing nitrogen fertilizers, according to the established values of the dissolution rate, will be leached out of the soil 1.6–2.0 and 1.5–1.9 times slower, respectively, than pure and industrial ammonium nitrate.</p>
<p>Paper ID 9312 12⁰⁰ – 12¹⁵ (5 min discussion)</p>	<p style="text-align: center;">M A S A Mahmoud¹, and T L Lau^{1*}</p> <p style="text-align: center;">¹<i>School of Civil Engineering, Engineering Campus, Universiti Sains Malaysia, 14300 Nibong Tebal, Penang, Malaysia</i></p> <p>Title of presentation: Experimental study on traditional timber-concrete hybrid house with different types of roofs using shake table</p> <p>Abstract: Buildings with different roofing systems possess different seismic performance during earthquake. Most of the traditional buildings are susceptible to earthquake disaster due to no seismic loading is considered in the design. In addition, irregular buildings have been proven to perform badly during earthquake events. Due to lack of investigations on asymmetrical timber-concrete hybrid building under earthquake loading, a $\frac{1}{4}$ of this type of building model was tested seismically using a unidirectional shake table. Four structural models with frequencies 3.85 Hz, 3.33 Hz, 2.70 Hz and 2.50</p>



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	<p>Hz varied using diagonal wooden braces and different roof materials namely heavy metal roof and clay roof tile. The models were subjected to El Centro ground motion excitations scaled to 0.08 g, 0.16 g, 0.24 g and 0.32 g PGA resembling 25%, 50%, 75% and 100% of the actual ground motion strength, respectively. Nine accelerometers and seven LVDTs were used to measure the seismic response of the models during shake table test for acceleration and displacement, respectively. Heavier roof material shows a different trend in the amplitudes across the maximum displacement time history, but a clear decrease in acceleration response for the roof level as compared with lighter roof material.</p>
<p>Paper 5777 12¹⁵ – 12³⁰ (5 min discussion)</p>	<p>R Usmanov^{1*}, R Madaminov², F Jumaniyazov², U Abdurakhimov², Z Bakhodirov³, E Sobirov⁴, and M T Sagdiev⁵ ¹<i>Institute of Genetics and Plant Experimental Biology, 102151 Tashkent, Uzbekistan</i> ²<i>Khorezm Mamun Academy, 220900 Khiva, Uzbekistan</i> ³<i>Scientific Research Institute of Soil Science and Agrochemistry, 100179 Tashkent, Uzbekistan</i> ⁴<i>Scientific Research Center of Water Problems, Tashkent, Uzbekistan</i> ⁵<i>Tashkent State Agrarian University, 111218 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Assessment of drought stress impact on winter wheat using landsat 8 images: comparison of field data and vegetation indices Abstract: In recent years, the use of remote sensing (RS) and geographic information systems (GIS) in observing changes in crop development phases and assessing the impact of various stress factors has been developing around the world. Vegetation indices developed by scientists in the field are widely used in the observation and monitoring of crop conditions, stages of development, biomass and productivity, as well as stress conditions related to water and nutrients. The spectral reflectance characteristics of crops vary under different drought stress conditions. In this article the effect of water shortage on the growth and development of winter wheat is analyzed using satellite data. Within the framework of the research transpiration intensity, water deficiency and water-holding capacity of leaves of winter wheat were studied in climatic conditions of Khorezm region, Uzbekistan.</p>
<p>Paper ID 1463 12³⁰ – 12⁴⁵ (5 min discussion)</p>	<p>Fikedu Rage¹, Abdurrahman Mohammed¹, Asefa Takele¹, Astan Ismailov², and Shuxratbek Mannobboyev² ¹<i>Department of Civil Engineering, Mattu University, Mattu, Ethiopia</i> ²<i>Andijan Machine-building Institute, 170100 Andijan, Uzbekistan</i></p> <p>Title of presentation: Modelling and analysis of vehicle accident under mixed traffic conditions in Ilu Ababor zone, Ethiopia Abstract: Modelling and analysis of traffic accident has vital role in reduction of vehicle accident. This study is aimed to assess the rate traffic accident over the ranges of several years and to model traffic accident with influencing parameters. The data used for study were; Geometry of the road, recorded traffic accidents, traffic volume, surface condition of the road, driver behavior and road infrastructure. The result shows that, the death rate in vehicle accident from 2001 to 2004, 2006 to 2008 and 2009-2010 is increasing. Also, from 2004 to 2006, 2008 to 2009 and 2010 to 2013 shows the decreasing. In major injury, it is increasing in first five years except 2004 which shows some significant change. In the next four years from 2005 to 2009 it shows decreasing except 2007 which shows a significant increasing. From 2010 to 2013 it is decreasing in non-uniform manner. In minor injury due to vehicle accident, it shows increasing in first seven years and decreasing from 2004 to 2013, which improvement in road safety aspect. In property damage, it shows in increasing significantly from 2001 to 2005. After 2005 even though, estimated property lost is increasing or high the number of accidents recorded as property damage is decreasing which shows a little improvement. The</p>



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	<p>important index of vehicle accident in heterogeneous traffic condition is rate of accident which has been computed for four years. Estimated rate of accident for 2010, 2011, 2012 and 2013 are 152, 98, 469, and 103 respectively. Multiple linear regression model has been developed to show the significance the predictors on the traffic accident. The developed regression model indicates that, lack of geometric design is the major factor that pay role in traffic accident of study area. The determinant of vehicle accident is operating speed. Finally, black spot area in each Woreda has been identified.</p>
<p>Paper ID 6223 12⁴⁵ – 13⁰⁰ (5 min discussion)</p>	<p>Md. Nakibul Kawser¹, Abdur Rahim², Javed Hossen Emon^{3*}, Jinia Bhattacharjee⁴, Pranay Dutta⁵, Otabek Khujaev⁶, and Sarvarjon Karimov⁷ ¹Department of Yarn Manufacturing Engineering, Textile Engineering College, Zorargonj, Chattogram, Bangladesh ²Department of Apparel Manufacturing, Textile Engineering College, Zorargonj, Chattogram, Bangladesh ³Department of Textile Engineering, Uttara University, Dhaka, Bangladesh. ⁴Department of Textile Engineering, Ahsanullah University of Science and Technology, Dhaka, Bangladesh ⁵Department of Wet Processing Engineering, Textile Engineering College, Zorargonj, Chattogram, Bangladesh ⁶Research Institute of Forestry, Tashkent, Uzbekistan ⁷Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</p> <p>Title of presentation: Investigating the properties of cotton fabric coating with polyacrylic rubber and using this polyacrylic rubber coated fabric as an alternative to polyethylene bags Abstract: Cotton fabric coated with polyacrylic rubber can be used as a replacement for polyethylene bags to avoid plastic pollution. In this research, we have investigated the use of polyacrylic rubber with 100% cotton fabric as a finishing agent where 2% of ammonium chloride was used as a catalyst. A pad-dry-cure technique was applied for the preparation of cotton fabric samples varying 6%, 8%, 10%, 12%, and 14% polyacrylic rubber. Tensile strength, tear strength, and bursting strength produced a balanced improvement in properties. After appealing gyro wash on each sample, it is established that the strength of the fabric has decreased slightly. Assessment of these properties has had a good impact on the strength of the fabric making which is a viable substitute for polyethylene bags.</p>
<p>Paper ID 5377 13⁰⁰ – 13¹⁵ (5 min discussion)</p>	<p>B.K. Rakhadilov^{1,2}, Zh.B. Sagdoldina¹, D.B. Buitkenov¹, D.R. Baizhan^{1*} and N.M. Magazov¹ ¹S. Amanzholov East-Kazakhstan University, 070002 Ust-Kamenogorsk, Kazakhstan. ²PlasmaScience Ltd, Ust-Kamenogorsk, 070002 Kazakhstan</p> <p>Title of presentation: Study of structure and properties of structural steels after electrolytic-plasma thermocyclic hardening Abstract: This paper presents the results of the study of electrolytic-plasma thermocyclic modification (heating-hardening) of the surface of medium carbon steel. An aqueous mixture of 15% sodium carbonate Na₂CO₃ was used as an electrolyte. The principle of action of thermocyclic electrolytic-plasma hardening consists in periodic and cyclic increase of voltage and current values at which the sample is heated above the α→γ phase transition temperature and subsequent rapid cooling, during which the iron-based phases formed in the treated material layer as martensite and hardening phases are fixed and contribute to improvement of material performance characteristics.</p>
<p>Paper ID 567 13¹⁵ – 13³⁰</p>	<p>Francis O. Okeke¹, Rosemary C. Nnaemeka-okeke^{2*}, and Foluso C. Awe³ ^{1,2}Department of Architecture, University of Nigeria, Nigeria</p>



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<p>(5 min discussion)</p>	<p>³<i>Department of Architecture, Federal University Oye Ekiti, Nigeria</i></p> <p>Title of presentation: The imperative of social sustainability and procurement in the Nigerian construction industry</p> <p>Abstract: The social sustainability transition in the construction sector seeks to improve safety and health of workers, gainful employment and total inclusiveness. However, it is novel in the Nigerian construction industry and a less debated domain within this framework is how employment requirements provide opportunities for the socially disadvantaged such as the poorly educated, youths, immigrants and disabled individuals to be employed in the construction industry. In Nigeria alone, there are over 27 million disabled human species, most of who are living in extreme poverty with poor quality of life. Furthermore, there are evidence of development projects designed and built in developing countries that have failed socially and many mass housing scheme in Nigeria suffices as examples. Drawing on a systematic review of relevant literature, this research qualitatively examines social sustainability practices in the Nigerian construction industry, and highlight strategies for diffusing the approach at each phase of the project life cycle. The outcome of the result will initiate a novel research domain and promote sound academic debate towards improving total inclusiveness in Nigerian and Africa's built environment. The potential impact of this research is that it will contribute to the knowledge base of the social sustainability concept and provide an alternative solution to the increasing shortage of skilled labour force in the construction industry. Its conclusion surmises that social procurement is a strategic tool for creating employment for the disadvantaged in the construction sector.</p>
<p>Paper ID 3170 13³⁰ – 13⁴⁵ (5 min discussion)</p>	<p>Viability and reproducibility of acclimatized shrubby plants in the conditions of Akmola region</p> <p>¹<i>S. Seifullin Kazakh Agrotechnical University, Zhenis avenue, 62, 010011 Nur-Sultan, Kazakhstan</i></p> <p>²<i>Astana Botanical Garden, Orynbor str. 16, 10010016 Nur-Sultan, Kazakhstan</i></p> <p>Title of presentation: Viability and reproducibility of acclimatized shrubby plants in the conditions of Akmola region</p> <p>Abstract: This article considers the issues of increasing the stability and durability of spaces, as well as optimizing and expanding the range of industrial plantings by improving the esthetic properties of industrial plantations and the introduction of shrubs into the culture to enrich the visual environment. In introduced plants, in the process of restructuring the cycle of seasonal development, the start and end times of phenological phases change, and their duration decreases. At the same time, the flowering period is characterized by its elongation and duration no less than the most favorable climatic conditions. In general, the growing season of introduced plants in the Akmola region is much shorter than in their homeland and other geographical areas.</p>
<p>Paper ID 3263 13⁴⁵ – 14⁰⁰ (5 min discussion)</p>	<p>Arvind Bodhe^{1*}, Anoop Kumar Vishwakarma², Abhilash Tatekar¹, and Dheeraj S Deshmukh³</p> <p>¹<i>G H Rasoni University Saikheda, G H Rasoni Nagar Gram Doda, Borgaon, Madhya Pradesh 480337, India</i></p> <p>²<i>SPM Instrument India, Hyderabad 500081, India</i></p> <p>³<i>G H Raiso College of Engineering and Management, Wagholi, Pune, Maharashtra 412207, India</i></p> <p>Title of presentation: Study on the analysis of cotton ginning machine transmission system</p> <p>Abstract: India is the second ranked large cotton producing country of world. Separation of fibre and seed is initial process desired for converting cotton crop to any finished product. Mostly ginning machines are developed as per need and volume of</p>



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	<p>work to be processed. Ginning machine is main processing tool between cotton producers and textile industries. Commonly machines using double roller are utilized in India. As per the need from time to time Indian farmers adopted tools and techniques to provide high-quality cotton to local and overseas textile mills, ginning machines are upgraded step by step to cope up the demands. Twin roller ginning machine needs to be further developed and enhanced so as to improve performance of textile industries. In this paper , the analysis is conducted for betterment of current design. Double roller gin is focused here using analytical analysis for force acting on gears while transmission of torque, as well as balancing of components and thrust force acting on the bearing that creates vibration in the complete ginning machine assembly. Innovative design aspects considered in this work are found to be very effective for improve of double rolling gin machine performance.</p>
<p>BREAK 14:00pm – 15:00pm</p>	
<p>Paper ID 1811 15⁰⁰ – 15¹⁵ (5 min discussion)</p>	<p style="text-align: center;">N A Abdullaev^{1*}, P J Axaopoulos², E I Sakellariou², A Sh Shaislamov¹, and R R Juraev¹</p> <p style="text-align: center;"><i>¹Tashkent State Technical University, 2 Universitet str., Tashkent, Uzbekistan</i> <i>²Department of Mechanical Engineering, University of West Attica, 250 Thivon & P. Ralli Str., Campus Ancient Olive Grove, Athens, Greece</i></p> <p>Title of presentation: Experimental investigation of solar powered refrigerator in Uzbekistan climate</p> <p>Abstract: The energetic performance of autonomous solar powered refrigerator is analyzed. In this refrigerator, the solar energy is converted into electrical energy by a photovoltaic (PV) array, then the generated electrical energy is used to power a vapor – compression system which produces cooling energy at its evaporator. The evaporator is sunk to the water so that produced cooling energy is used to formation water ice, thus accumulates cooling energy in the form of ice. While, compressor is working during the daylight hours, cooling energy is produced. During the night, the cooling energy comes from latent heat of fusion of ice which is collected in day time. The results of experiments showed that not only the solar energy has influence on the energetic performance of solar refrigerator but ambient temperature is also crucial factor in this case.</p>
<p>Paper ID 3591 15¹⁵ – 15³⁰ (5 min discussion)</p>	<p style="text-align: center;">Terwase Wuave</p> <p style="text-align: center;"><i>¹Department of Environmental Management Technology, Abubakar Tafawa Balewa University, Bauchi, Nigeria</i> <i>²National Environmental Standards Regulations and Enforcement Agency (NESREA), Abuja, Nigeria</i></p> <p>Title of presentation: Effect of Leachate on Soil in Jos Metropolis, Plateau State Nigeria</p> <p>Abstract: Effect leachate on soil quality in Jos is expected because the disposal sites continues to be the major route of infiltration as it affects quality of the area. Six selected disposal sites soil and normal soil were collected local auger at depth range of 1.5 and 3.0 m with distances of 1.0, 1.5,3.0m. The study aim identifies the effect, using PAST statistical software and excel to analyze the results. Particle size of sand has higher percentage with increase porosity from surface to subsurface (surface range 39.54-73.22, subsurface 40.72-73.50). Moisture contents increase from surface to subsurface. Specific gravity decreases from surface to subsurface (surface range 2.58-2.65, subsurface 2.15-2.44). Shear strength result shows increase to subsurface (surface range 15.65-17.43, subsurface 16.34- 18.30). Compressibility test result shows slight increase from surface to subsurface. Permeability result show increase from surface to subsurface. Physical characteristics of pH indicate values that are alkaline in nature (surface range 7.2-9.4</p>



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	<p>subsurface 6.2-8.5). TDS decrease from surface to subsurface (range 143-640, 187-584). EC increase slightly from surface to subsurface (surface range 164-919, subsurface 184-915). Anions result shows chloride have higher concentration at surface (surface range 100-380, subsurface 96-360) while sulphate also have higher concentration on surface than subsurface (surface range 192-270, subsurface 178-225). Cation results shows sodium ion concentration on the surface increase to subsurface (surface range 250-2600, subsurface 265-2705). Potassium concentration also increase on the surface to the subsurface (surface range 172-243, subsurface 186-253) while magnesium ion also increases from surface to subsurface (surface range 3.0-4.4, subsurface 3.7-4.8) and calcium ion shows normal range from surface to subsurface (surface range 10000-12000, subsurface 10000-130000). The heavy metals concentration in the dumpsites soil shows higher values (Ba, Ce, La, Rb, Cr, Th and Fe) in both surface and subsurface above normal soil.</p>
<p>Paper 9361 15³⁰ – 15⁴⁵ (5 min discussion)</p>	<p style="text-align: center;">Ziyodulla Yusupov¹, Elaheh Yaghoubi¹, Elnaz Yaghoubi¹ <i>¹Karabuk University, Faculty of Engineering, Department of Electronics and Electrical Engineering, Karabuk, Türkiye</i></p> <p>Title of presentation: Modeling and simulation of decentralized Microgrid based on renewable energy and electric vehicle charging station</p> <p>Abstract: Significant global problems include the exponentially rising need for energy, the scarcity of fossil fuels, and environmental pollution. The integration of distributed energy resources (DER) into electric power systems (EPS) and the use of electric vehicles (EVs) due to low pollution have increased in recent decades. The operating reliability and efficiency of the power systems are affected when DERs and energy storage devices are integrated into a distribution network. In a different scenario, a vital step toward low-carbon mobility is the electrification of automobiles. It will be necessary to coordinate the combination of centralized and decentralized control of EPS at the EV grid infrastructure in order to integrate the widespread adoption of electric vehicles into EPS. In this paper, a networked microgrid (MG) with decentralized control of renewable energy and an EV charging station is designed and modelled for the case study of Karabuk University campus. PV panels and batteries are used in this work to generate electricity for decentralized MG networks. Moreover, the EV charging station selection mechanism has been determined by the Genetic Algorithm (GA) theory based on the car's technical requirements and EV user preference. The proposed method has the potential to reduce power losses, reduce transmission and distribution congestion, redirect power flow, modify short-circuit fault levels, and improve EV ecosystem integration in EPS on the KBU campus.</p>
<p>Paper ID 3682 15⁴⁵ – 16⁰⁰ (5 min discussion)</p>	<p style="text-align: center;">M Ş Balcı^{1*}, A Dalcı¹ <i>¹Bandırma Onyedi Eylül University, Electrical-Electronics Engineering, 10200, Bandırma, Balıkesir, Türkiye</i></p> <p>Title of presentation: Analysis of an Electromagnetic Energy Harvester by FEM</p> <p>Abstract: Energy is one of the major issues facing nations today. Electrical energy use rises in tandem with population growth and technological advancement. Increasing energy consumption makes it difficult to ensure energy supply security. With the increasing energy demand, the importance of energy transmission lines is also increasing. Regarding the sustainability of energy, monitoring and inspection of transmission lines are crucial issues. Energy harvesting is the collection of small amounts of energy available in the environment, such as wind energy, solar energy, magnetic field. In this study, a magnetic harvester was designed to be used in the monitoring of power transmission lines in difficult-to-reach areas. The line current of the toroidal magnetic energy harvester was determined as variable. In the analyzes made with the finite element method, the performance of the harvester was examined</p>



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	according to the change in line current.
16 ⁰⁰ – 16 ¹⁵ (5 min discussion)	Artur Tomaszek <i>Cracow University of Technology – Poland</i> Title of presentation: Sustainable energy - the future of urbanisation
16 ¹⁵ – 16 ³⁰ (5 min discussion)	Anna Stachowicz <i>Cracow University of Technology – Poland</i> Title of presentation: Agritecture - the art, science and business of integrating agriculture into the built environment
16 ³⁰ – 16 ⁴⁵ (5 min discussion)	Jakub Knappek <i>Cracow University of Technology – Poland</i> Title of presentation: TELOSA Sustainable City- sustainable future"
16 ⁴⁵ – 17 ⁰⁰ (5 min discussion)	Milosz Kozlecki <i>Cracow University of Technology – Poland</i> Title of presentation: Energy-Saving Technologies - How to save more?
17 ⁰⁰ – 17 ¹⁵ (5 min discussion)	Weronika Klimek <i>Cracow University of Technology – Poland</i> Title of presentation: Sustainable urban drainage system
17 ¹⁵ – 17 ³⁰ (5 min discussion)	Zuzanna Matuszna <i>Cracow University of Technology – Poland</i> Title of presentation: BIM as support for sustainable design
17 ³⁰ – 17 ⁴⁵ (5 min discussion)	Agnieszka Leptuch <i>Cracow University of Technology – Poland</i> Title of presentation: Between climat change and sustainable development
17 ⁴⁵ – 18 ⁰⁰ (5 min discussion)	Anna Kordaszewska <i>Cracow University of Technology – Poland</i> Title of presentation: Eco- friendly travelling- sustainable lifestyle
18 ⁰⁰ – 18 ¹⁵ (5 min discussion)	Kamila Stypińska <i>Cracow University of Technology – Poland</i> Title of presentation: Eco- friendly travelling- sustainable lifestyle
18 ¹⁵ – 18 ³⁰ (5 min discussion)	Anna Wcisło <i>Cracow University of Technology – Poland</i> Title of presentation: Sustainable family housing
18 ³⁰ – 18 ⁴⁵	Antonina Grabowska



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(5 min discussion)	<p><i>Cracow University of Technology – Poland</i></p> <p>Title of presentation: Banished but sustainable materials</p>
<p>18⁴⁵ – 19⁰⁰ (5 min discussion)</p>	<p>Julian Konopka <i>Cracow University of Technology – Poland</i></p> <p>Title of presentation: Application of Fluid Dynamic Simulation Software in design of passive architecture</p>
<p>19⁰⁰ – 19¹⁵ (5 min discussion)</p>	<p>Milosz Sadowski <i>Cracow University of Technology – Poland</i></p> <p>Title of presentation: Permeable surfaces in the city</p>
<p>19¹⁵ – 19³⁰ (5 min discussion)</p>	<p>Kamila Mizera <i>Cracow University of Technology – Poland</i></p> <p>Title of presentation: GREEN roofs as a part of sustainable architecture</p>

CLOSING CEREMONY:

Announcement of Best Presentations and Best Papers

Closing Speeches: Rector of TIAME NRU - Prof. Dr. Bakhadir Mirzaev, and Professor of TIAME NRU & ICECAE 2022 Scientific Chairman – Prof. Dr. Obid Tursunov

END OF CONFERENCE ICECAE 2022



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ICECAE 2022 POSTER PRESENTATIONS

All posters will be displayed on the ICECAE 2022 website

POSTERS	
Paper ID 1454	<p style="text-align: center;">D Kazakova^{1*}, I Abbazov¹, S Gafurova¹, and K Baratova¹ <i>¹Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: A research on productivity of newly created cotton varieties and evaluation of cotton fiber quality indicators Abstract: This article analyzes the productivity of early maturing and new cotton varieties grown in the country. The study was conducted on early ripening and cotton varieties grown in Jizzakh region. At that time, the highest yield was 37.1% in Bukhara-102 variety, and the lowest yield was 30.0% in Sultan variety. Yields in early maturing new varieties averaged 28.9%. The yield of Porloq-4 was 40.9%, and that of C-6779 was 23.0%. Yields of early maturing varieties averaged 33.3%. Porloq-4 and Bukhara-102 varieties have high indicators of early ripening and yield. Physico-mechanical performance of these cotton varieties was analyzed on the basis of HVI (High Volume Instrument) results. From the results we can see that the specific breaking strength of early maturing and new varieties Porloq-4 and Bukhara-102 in cotton fiber was 37.2%, the upper length was 35.5 mm. Then the specific tensile strength of Porloq-4 cotton fiber is 1.8% lower than the average tensile strength, and the upper average length is 5.1 mm higher. The specific tensile strength of Bukhara-102 fiber is 1.9% higher than the average tensile strength, the average length is 5.3 mm less. The short fiber index averaged 7.5% and the elongation at break was 7.9% on average. The short fiber index of the Porloq-4 variety is 3% lower than the average short fiber index, and the elongation index at break is 1.6% higher than the average. We can see that the index of short fibers of Bukhara-102 fiber is 3% higher than the average, and the elongation at break is 1.5% lower than the average.</p>
Paper ID 8438	<p style="text-align: center;">Z Utashov¹, A Usmonkulov¹, R Djamolov^{1*}, and F Egamberdiyev¹ <i>Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Study on the effect of cotton fiber temperature on cleaning effects Abstract: This article presents the results of research on increasing the cleaning efficiency of cotton by heating. As a result, the cleaning efficiency decreased with increasing equipment productivity. However, in the IV-industrial variety with high moisture content of cotton, the temperature of the cotton fiber was 30 when the working productivity increased to 6000 kg/h. Cleaning efficiency at 32⁰S was found to have reached 45.3%, indicating that the air temperature was 110 which corresponds to 130⁰S.</p>
Paper ID 2084	<p style="text-align: center;">J Abdunazarov¹, I Shukurov¹, A Nishonov¹ and S Shaumarov² <i>¹Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i> <i>²Tashkent State Transport University, 100067, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Analysis of existing problems of ensuring traffic safety in major cities of Uzbekistan Abstract: This article is devoted to the analysis of road traffic accidents and road safety in large cities of the Republic of Uzbekistan such as Bukhara, Fergana and Samarkand. And also, statistical data of road traffic accidents are processed throughout the republic. Such factors as transport risk, social risk and severity of the consequences of a road traffic accident have been identified. In conclusion, the author's opinion on the factors affecting</p>



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	road safety in the republic is presented.
Paper ID 4469	<p>Z Novitskiy^{1*}, A Hamzayev¹, N Bakirov², G Kurbanov², and G Atadjanova¹</p> <p>¹Research Institute of Forestry, 111104 Tashkent, Uzbekistan ²State Forestry Committee of the Republic of Uzbekistan, 100164 Tashkent, Uzbekistan</p> <p>Title of presentation: Cultivation of the Saksaul (<i>Haloxylon aphyllum</i> Minkw.) seedlings in the plant nurseries of the Aral Sea region</p> <p>Abstract: The drained bottom of the Aral Sea is a planetary problem, as millions of tons of harmful salts, dust and sand are removed from it, which settle on plants and have damaged ecosystems and biodiversity of the Aral Sea region. Methods and technologies have been developed for forest reclamation of the drained bottom, but for their practical implementation, seeds for sowing and planting material for planting are needed, which will fix the drained bottom and prevent the removal of salt, dust, and sand. The air will be cleaner also decrease sickness. But to fix the drained bottom, it is necessary to have standard planting material, which is not enough in the nurseries of this region. Growing seedlings according to the old technology without using innovative methods does not allow obtaining standard planting material in the required quantity. In our experiment, we practiced a universal liquid organic mineral fertilizer produced in Slovakia "Rokohumin". Treatment of seedlings at the nursery of Takhtakupyrskiy forestry with rokohumin allowed increasing the total yield of seedlings of <i>Haloxylon aphyllum</i> (Minkw.) at the end of the growing season by 27%, <i>Ceratoideslatens</i> J.F. (Gmel) by 16.4%, <i>Salsola orientalis</i> S.G.Gmel. by 16.2% and <i>Salsola arbuskula</i> Pall. by 11.4%. At the same time, the yield of standard seedlings increased in <i>Haloxylon aphyllum</i> (Minkw.) by 12.7%, <i>Ceratoideslatens</i> J.F. (Gmel) by 14.2%, <i>Salsola orientalis</i> S.G.Gmel. by 17.6% and <i>Salsola arbuskula</i> Pall. by 9.0%.</p>
Paper ID 8800	<p>K.Ismayilov¹, K.Karimova², A.Azimov², O'Raxmatov²</p> <p>¹Samarkand State Architectural and Civil Engineering Institute, 140100, Samarkand, Uzbekistan ²Jizzakh Polytechnic Institute, I.Karimov st.130100, Jizzakh, Uzbekistan</p> <p>Title of presentation: Comparative analysis of noise levels available on simple and rubber granule asphalt-concrete coating roads</p> <p>Abstract: In this article, a scientific study was conducted and studied on the effect of road surface on traffic noise level. The experiment was conducted on two different paved roads and the noise levels were based on international standards. The results of research conducted on asphalt-concrete paved roads with the addition of rubber granules found that the noise levels on high-quality bitumen-paved asphalt concrete paved roads differ from the noise sources. By giving several recommendations for the organization of noise protection have been developed.</p>
Paper ID 7607	<p>R D Khamrakulov^{1*}, N Kh Mirzakobilov¹, and A R Zhabborov¹ <i>Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Prediction of structures strength considering the nonlinearity of deformation on the basis of dispersively reinforced concrete</p> <p>Abstract: This article discusses the study of the strength of ordinary and dispersed reinforced concrete, taking into account the nonlinearity of deformation and the analysis of the mechanisms for the manifestation of interaction in cracks, in order to take into account the nonlinear properties of reinforced concrete in practical calculations, in addition to creating more complex programs, it becomes necessary to pay attention to a more accurate assessment of the fundamental fundamental properties of reinforced concrete.</p>
	<p>Baxodir Sagatov¹ <i>Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Study on reinforced concrete elements of buildings and structures with cracks, reinforced with composite polymer materials</p>



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<p>Paper ID 2076</p>	<p>Abstract: With the rapid development of modern construction practice around the world, serious problems arise in the application and subsequent operation of reinforced concrete structures. Today, the problem of reconstruction and restoration of buildings and structures requires an urgent solution. The deterioration of the environmental situation threatens the reliability of buildings and structures, a sharp deterioration in their condition is observed in almost all countries and climatic zones. In our case, the trend towards wear is developing due to the imperfection of regulatory documents and the need for proper maintenance of objects. The development of the construction industry and the use of innovative composite polymer materials in construction and the strengthening of existing buildings and structures with modern methods are relevant. Often very rare, expensive, historically significant structures require reliable operation, and their dismantling or replacement is more expensive than repair, or even impossible. Reinforcement of building structures using composite polymer materials (CPM) is by far the most “cautious” measure for their restoration and improvement of performance. In our research, the main attention is paid to the technology of external reinforcement of reinforced concrete beams using CFRP to increase their load-bearing capacity at shear. To reduce material consumption when strengthening the structure, it is more efficient to use CFRP in the form of strips, however, this practice has not been practically studied. Previous researchers have concentrated their attention mainly on external reinforcement, generally ignoring the effect of internal reinforcement. However, it is known that internal and external reinforcement complement each other and the destruction during shearing of reinforced concrete elements is mainly influenced by such factors as steel clamps, longitudinal reinforcement and the ratio of the shear span to the working height of the section. Therefore, in our studies, special attention was paid to considering the influence of these factors on the overall bearing capacity of beams. In addition, the work studied the ability to transfer shear stresses through cracks in reinforced concrete beams reinforced with external reinforcement from CFRP compared to the same unreinforced ones.</p>
<p>Paper ID 8456</p>	<p style="text-align: center;">T Abduhakimov^{1*}, D Sherkuziev¹ and X Aripov¹</p> <p style="text-align: center;"><i>¹ Department of Chemical Technology, Faculty of Chemistry Technology, Namangan Institute of Engineering and Technology, Kasansay str. 7, 160115 Namangan, Uzbekistan</i></p> <p>Title of presentation: Obtaining of complex hydrogel fertilizers with moisture-retaining NPK based on local raw materials</p> <p>Abstract: This article presents the results of research on the production of fertilizers using water-saving hydrogel on the basis of local raw materials. The reaction of ParPAN raw materials with inorganic and organic acids and in the presence of formalin has been studied. According to the results of research, a new type of hydrogel was synthesized. The degree of swelling of the hydrogel has been found to be related to the amount of formalin and other additives. The composition of the hydrogel composition with mineral fertilizer was developed, its basic physico-chemical characteristics and swelling kinetics were studied. The use of hydrogels as a means of keeping moisture and feed components in arid and low-water agricultural regions of the Republic of Uzbekistan is recommended.</p>
<p>Paper ID 6018</p>	<p style="text-align: center;">A.D. Rakhmatov^{1*}, and J Shamshiev²</p> <p style="text-align: center;"><i>¹Department of Power Supply and Renewable Energy Sources, National Research University TIAME, Tashkent 100000, Uzbekistan</i></p> <p style="text-align: center;"><i>²Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Study on the main parameters of an air ionizer for fruit storage</p> <p>Abstract: This article reveals the results of studying various technological schemes of ionization of the fruit storage. The key factors influencing the quality of product processing are determined. The main requirements for ionizers for fruit storages and the mechanism of the ionized air blowing on the stored product are considered, and the operating modes of ionization of the ionizer for fruit storages are established.</p>
	<p style="text-align: center;">A Rakhmatov¹ and Kh Aripov²</p> <p style="text-align: center;"><i>¹Department of Power Supply and Renewable energy sources, TIAME-National Research</i></p>



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<p>Paper ID 9293</p>	<p style="text-align: center;"><i>University, Tashkent 100000, Uzbekistan</i> <i>²Namangan Institute of Engineering and Technology, Namangan 160115, Uzbekistan</i></p> <p>Title of presentation: Study on energy balance calculation of the electric network Abstract: In this article, we developed the power balance of the power grid in the Sulkandariyo region and analyzed the main parameters of the grid in the context of the power grid enterprise in the region. Regional consumer load charts and substation 10, 35, 110 kV loads were investigated. Given the energy balance situation, recommendations for installing new generation capacity in this area have been proposed.</p>
<p>Paper ID 0962</p>	<p style="text-align: center;">Z Novitskiy^{1*}, A Khamzaev¹, N Bakirov², and G Atadjanova¹ <i>¹Research Institute of Forestry, Darkhan village, 111104 Tashkent district, Uzbekistan</i> <i>²State Forestry Committee of the Republic of Uzbekistan, 2 Universitetskaya str., 100164 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on desert agrophytocenoses on the drained bottom of the Aral Sea Abstract: The drained bottom of the Aral Sea covers an area of about 6 million hectares, of which 3.2 million hectares are located on the territory of the Republic of Uzbekistan. In addition to the removal of salt, dust and sand from the drained bottom, which cause enormous damage to the environment, there is a forest-usable area of 1.5 million hectares on the drained bottom. ha on which it is possible to create desert shrub agrophytocenoses. The aim of the work was to develop the most effective methods for creating desert agrophytocenoses on forest-suitable types of bottom sediments of the drained bottom of the Aral Sea and the selection of desert forage plants to increase the productivity of the pastures created. Studies have shown that with the use of focal, pasture-protective and reclamation-forage methods, as well as forage plants such as chogon, teresken, boyalych, keireuk, it is possible to create pastures with a feed capacity of up to 500 feed units per 1 hectare. This will increase the number of grazed animals by 20-30%. The scope of application of the results resulting from this work is forest-suitable types of bottom sediments of the drained bottom of the Aral Sea. The drained bottom of the Aral Sea is a reserve of fodder for animals in the near future, which will give a new impetus to the development of animal husbandry in the Aral Sea, and at the same time forage plants, fixing the soils of the drained bottom of the Aral Sea, will significantly improve the ecological situation in the Region.</p>
<p>Paper ID 1797</p>	<p style="text-align: center;">A J Bairov^{1*}, Sh A Juraev¹, N Y Abdurakhmonov¹, and Kh TNuriddinova¹ <i>¹Research Institute of Soil Science and Agrochemistry, 100179 Tashkent, Uzbekistan</i></p> <p>Title of presentation: The content of phosphorus forms in calcareous irrigated serozems of the Tashkent region of Uzbekistan Abstract: In most cases, the irrigated soils of Uzbekistan provide low forms of phosphorus assimilated by plants due to their high fixation. Therefore, the bioavailability of P is one of the main factors limiting the yield of crops. The study aimed to identify the transformation of phosphorus in irrigated gray soils under the influence of the type of land use, age of development, and climate (location above sea level). For this purpose, the content of inorganic and organic pools of P was studied according to the Hedley method. The highest Pt values were noted in the soil of the Parkent region, where the amount of precipitation significantly exceeds that in other studied areas, as well as in the winterwheat-repeatedcrops-cotton (WW-RC-C) land use type with long-term use of high P fertilizer rates. In the studied soils, the share of Pi was 89-91%, while the share of Po was 9-11% of Pt. In the accumulation of labile P, in contrast to the accumulation of Pt, the greater availability of atmospheric precipitation and the WW-V type of land use, where the content of labile P. was significantly higher than in other studied soils. The obtained results indicate the need for individual consideration of the control of phosphorus nutrition of plants on soils used in various types of land use, their geographical location (altitude above sea level), and the age of development for agriculture, depending on the phosphate</p>



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	state of soils.
Paper ID 8290	<p style="text-align: center;">M Ismatova¹, and M Yuldasheva¹ <i>Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Mathematical processing of the influence of cotton storage conditions on yarn quality indicators Abstract: In this article, the qualitative indicators of yarn obtained from cotton fiber stored in a bundle of small sizes and volume were considered in order to determine its quality by processing the results of a full factorial experiment. Attention was also paid to the time spent on the experiment and the equipment used. Based on this and assuming the presence of a paired influence between the factors, the central compositional rotatable planning of the experiment of the second order was adopted. The experimental study was planned to be carried out in two stages. A full-factorial experimental study was carried out on a small-sized spinning machine "Shirley" JSC "Scientific Center Pakhtasanoat" and yarn T-19.5 tex was produced. To determine the physical and mechanical properties of the threads, modern equipment of the testing laboratory "CentexUz" at TITLI was used. The results of a full-factorial experiment on the production of yarn from cotton fibers in a bundle of small sizes or volume are shown in tables 1-5, based on the results of the experiment, regression coefficients were found and equations were drawn up. According to the results, the threads of the 6th variant in terms of indicators were recognized as the best option.</p>
Paper ID 3528	<p style="text-align: center;">I Abbazov¹, M Khodjiev², A Salimov³, and F Egamberdiyev¹ ¹<i>Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</i> ²<i>Gulistan State University, Gulistan, Uzbekistan</i> ³<i>Tashkent Institute of Textile and Light Industry, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Investigation of air velocity in expanding and contracting pipes for the transport of fibrous materials Abstract: Uzbekistan is implementing comprehensive measures to produce a wide range of high-quality and inexpensive textile and light industry products based on the production and deep processing of cotton fiber, which is the main textile raw material, to prevent waste and increase its competitiveness. This article, to a certain extent, serves to implement the tasks specified in the Decree of the Cabinet of Ministers dated November 25, 2018 No. 53 "On additional measures to organize the activities of cotton and textile industries and clusters" and other regulatory and legal documents related to this activity. The science of cotton transport by pneumatic transport has a long history, and with an air flow speed of more than 28 m/s, cotton is distributed more evenly over the pipe section. In it, the transportation process is carried out mainly in the suspended state of the material. With a decrease in the air flow velocity from 25.0 m/s, an analysis of the literature on the uneven distribution of material over the pipe section was carried out. It has been practically proven that an increase in the expansion angle in expanding or contracting pipes depends on air resistance, and the expansion or contraction angle depends on the speed of air movement at the point of expansion or contraction of the pipe. Therefore, the optimal value of the angle of expansion or contraction of expanding or contracting pipes was determined.</p>
	<p style="text-align: center;">G Temirov¹, U Alimov^{1*}, A Seytnazarov¹, R Tojiev², Sh Namazov¹, and M Honkeldieva³</p> <p>¹<i>Institute of General and Inorganic Chemistry, Academy of Sciences of the Republic of Uzbekistan, st. Mirzo Ulugbek 77a, 100170 Tashkent, Uzbekistan</i> ²<i>Fergana Polytechnic Institute, st. Fergana 86, 150107 Fergana, Uzbekistan</i> ³<i>Tashkent State Agrarian University, st. University 2, Kibray district, 100140 Tashkent, Uzbekistan</i></p>



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<p>Paper ID 0799</p>	<p>Title of presentation: Study of phosphogypsum conversion from Kyzylykum phosphorites with soda ash solution</p> <p>Abstract: Enterprises producing phosphate fertilizers encounter a very serious problem associated with phosphogypsum piled up in huge amounts. To date, about 7 billion tons of phosphogypsum have been piled up all over the world with an average release of 180 million tons, and its utilization remains challenge. The process of phosphogypsum conversion of Kyzylykum phosphorite from JSC "Ammophos-Maxam" with soda ash of UE "Kungradsky soda plant" was studied in the work. The study was carried out in a wide range of concentration (10-20%) and stoichiometric norm (100-110%) of Na_2CO_3 at a temperature of 80°C and a time of 30 minutes. It was revealed that an increase in the concentration and stoichiometric norm of Na_2CO_3 leads to an increase in the degree of conversion of phosphogypsum into CaCO_3 and Na_2SO_4 up to 97.07%. The following is optimal: the concentration of Na_2CO_3 is 20% and the stoichiometric norm is 105%, at which the degree of conversion is ~96%. As a result, the target product Na_2SO_4 was obtained with a purity of 94% and calcium carbonate - 96.25%. This solution allows producers of phosphate fertilizers to recycle phosphogypsum into products with high demand.</p>
<p>Paper ID 7504</p>	<p style="text-align: center;">I Abbazov^{1*}, A Usmankulov¹, and B Sharopov¹ <i>¹Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Investigation of local resistance and air velocity in narrowing pipes for the transport of fibrous materials</p> <p>Abstract: In the world, one of the main tasks is to improve the quality of cotton and products from it, the introduction of energy and resource-saving technologies and technical means at enterprises, which make it possible to reduce their cost. In the priorities of the Decree of the President of the Republic of Uzbekistan dated January 28, 2022 No. PF-60 "New Development Strategy of the Republic of Uzbekistan for 2022-2026", the third priority area called "Advanced development of the national economy and ensuring high growth rates" clarifies the inclusion of a number of tasks in the state program. Air pipes are used in most stages of the primary cotton processing process. In this direction, a scientific base is being created to improve the efficiency of the process of transporting fibrous materials by air, special attention is paid to improving product quality and reducing costs through the creation of automated pneumatic transport systems, and the widespread introduction of modern pneumatic equipment and technology into production is accelerating. Although many studies have been done on the loss of fibrous products during the air transport of cotton and cotton products, some fibrous material is released into the atmosphere. To prevent this, it is necessary to determine the aerodynamic resistances that form in the areas of the changed surface of pneumatic transport pipes, and develop recommendations for their reduction. In this article, based on the results of theoretical and practical studies, local resistances are determined in the zones of narrowing of air pipelines of pneumatic transport, and the change in air speed is presented in graphical form.</p>
<p>Paper ID 9622</p>	<p style="text-align: center;">A Usmankulov¹, A Salomov^{1*}, I Abbazov¹, and F Egamberdiev¹ <i>¹Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Creation of improved UXK equipment for cleaning cotton from large impurities</p> <p>Abstract: This article establishes a number of requirements for cotton fiber processing enterprises to improve production efficiency and rational use of resources and maintain high rates of natural quality of cotton fiber during processing. In addition, as a result of the research, it was found that changing the impact pressure of the scraper brush, creating a new shape of the scraper device, changing the relative position of the grate and the scraper brush, placing an additional scraper device after the scraper brush, so as not to be part of the dirty mixture that separates the piece of cotton, were found some positive results. The proposed design of the cotton cleaning section of the UXK purifier, due to the above</p>



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	<p>features, makes it possible to increase the cleaning effect compared to the existing purifier, since in the proposed version, the process of cleaning cotton from large impurities is carried out twice in each section of the USC, which cleans cotton from large impurities. The proposed technical solution was taken as a basis and a plan was developed for preparing its structural diagrams and working drawings, manufacturing a laboratory stand for the cleaning section, conducting laboratory experiments with it, substantiating the main parameters of the working bodies according to the proposed scheme, and introducing the proposal into production.</p>
<p>Paper ID 0581</p>	<p style="text-align: center;">B Mamutov <i>Research Institute of Forestry, 111104 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Evaluation the effect of different doses of mineral fertilizers on the height growth of forest seedlings: A case study of Chatkal ridge Abstract: This article describes the effects of different mineral fertilizer doses on the growth and development of seedlings of four forest-forming species grown with a closed root system on the western and southern slopes of the Chatkal ridge. The results show that different fertilizer doses have various effects on different types of seedlings. The effect of fertilizers on improving the growth of forest crops in the first year was not fully manifested, since growth buds were laid a year before fertilization against a natural background of growth conditions. Plants that had received more nutrients the year before grew the year ahead after fertilization, and a beneficial effect became apparent. The rate of fertilizer N90P90 K60 was more effective on pine growth on the western slope, while N120P180K60 showed high results on the southern. Oak on both slopes was better affected by a lower dose of fertilizer, hawthorn on both slopes by higher doses, and both doses had roughly the same effect on an apple tree. Therefore, for the apple trees, it can be recommended, as for oak, the depositing of a smaller dose due to the lower cost.</p>
<p>Paper ID 8748</p>	<p style="text-align: center;">R A Gulmurodov <i>Tashkent State Agrarian University, 2 University street, 100140 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the effect of wheat yellow rust disease on grain yield Abstract: Wheat provides food for 40 percent of the world's population. As of July 2022, 770.3 million tons of wheat grains were grown in the countries of the world. In recent years, as a result of climate change, rainfall in some countries is low or in some countries it is high, as a result of which various diseases appear, affecting wheat harvest as well as all agricultural crops. Wheat is affected by several fungal diseases and causes damage to the crop, among these diseases yellow rust kills a large part of the wheat crop. The article presents information on the effect of yellow rust disease on the crop and the effect of several fungicides against it.</p>
<p>Paper ID 6369</p>	<p style="text-align: center;">F Egamberdiev, K Jumaniyazov, I Abbazov, and H Yodgorova <i>¹Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</i></p> <p>Title of presentation: Theoretical study of the effect of improving cleaning efficiency and fiber quality from a double-drum fiber cleaner Abstract: This paper studies the effect of the arrangement of saw cylinders in a double-drum fiber cleaner in a checkerboard pattern on the cleaning efficiency and fiber quality. That is, as a result of the experimental work on the manufacture of a double-drum fiber cleaner, the distance between the saw axes in the saw cylinder of the cleaner is 7 mm, and the saw axes in the second saw cylinder are in line with the saw axis in the first saw cylinder, so the fiber cleaned from the first saw cylinder completely blocked by saws in the second cylinder. It has been studied that the fibers not processed by the second saw cylinder are added to the total purified fiber in the transit state after the first saw cylinder, which causes a decrease in the quality of the resulting fiber. The arrangement of the axes of the saws in the first saw cylinder and in the second saw cylinder in one line is based on the fact that the process of cutting and combing the fiber in the second saw cylinder is reduced and the cleaning efficiency of the cleaner is reduced. In order to drastically reduce</p>



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	<p>the transit state of the part of the fiber peeled from the first saw cylinder, in order to ensure its transfer to the second saw cylinder, as well as for efficient cutting and carding of the fiber in the second saw cylinder, the distance between the axes of the saws in the second saw cylinder is 2-4 mm compared with the distance between the axes of the saws in the first saw cylinder was changed to mm and studied.</p>
Paper ID 5091	<p>O Nazarova¹, O Khujaev¹, and G Jumanazarov² ¹Research Institute of Forestry, Tashkent, Uzbekistan ²Department of Agricultural Phytopathology and Agrobiotechnology, Tashkent State Agrarian University, Tashkent, Uzbekistan</p> <p>Title of presentation: Septoria (Septoria pistaciae Desm.) pathogen infecting pistachio nuts in Uzbekistan and its biological characteristics Abstract: This article introduces the results of research on the harmful effects of septoria, a fungal plant pathogen infecting pistachio, on pistachio fruit weight and yield. In recent years, there has been an increase in the negative effects of various diseases on the pistachio crop. Therefore, maintaining their yield and developing modern disease control measures remains one of our main goals. The measures to combat this disease and the effectiveness of the most suitable chemical preparations are presented below.</p>
Paper ID 3101	<p>R Alieva¹, and N Olimova^{2*} ²Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan ¹Samarkand Architectural and Construction Institute, Samarkand, Uzbekistan</p> <p>Title of presentation: Improving the efficiency of dust collectors and modernization of the aspiration system in cotton cleaning plants Abstract: On the basis of MPC of substances in the atmospheric air the values of maximum permissible emissions (MPE) are established, which ensure compliance with hygienic standards in practice. One of the ways to reduce emissions of dust and other pollutants into the atmosphere is the introduction of modern or two-stage equipment for cleaning pollutants. The results of the analysis show that the efficiency of dust extraction at the surveyed enterprises has decreased. It is possible to improve the efficiency of existing dry mechanical dust collectors, i.e., to install additional filters or to install modern electronic filters.</p>
Paper ID 7193	<p>D Kodirov^{1*}, Kh Muratov¹, A Davirov¹, J Normuminov², B Mamadjanov³, A Shukuraliyev³, I Berdiyorova⁴, and S Tukhtamishov⁵ ¹National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers", 100000 Tashkent, Uzbekistan ²Tashkent State Technical University, 100095 Tashkent, Uzbekistan ³Andijan Machine-building Institute, 170100 Andijan, Uzbekistan ⁴Jizzakh Polytechnic Institute, 130100 Jizzakh, Uzbekistan ⁵Gulistan State University, 120100 Gulistan, Uzbekistan</p> <p>Title of presentation: Study on the effective use of solar and hydro energy for powering agriculture and water management Abstract: This article highlights the combined use of solar and hydropower based on a rational combination of traditional and renewable energy sources for powering agriculture and water management. At the same time, a combined integrated power supply system was formed. Provided, the energy is required from renewable sources, it fully provides the consumer, and the excess energy is transferred to the centralized network (N"), if the energy received from the network is less than the energy entering the network, the recommended system is efficient (N''').</p>
Paper ID 5622	<p>A Mukhammadiev¹, A T Sanbetova^{2*}, N Toshpulatov², A Babayev², and M Abdukadirova¹ ¹Institute of Energy Problems, Academy of Science of the Republic of Uzbekistan, Tashkent, Uzbekistan</p>



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	<p>²<i>Institute of Genetics and Experimental Biology of Plants, Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study of the effect of using electrical stimulation on the increase of potato yield</p> <p>Abstract: Several studies have shown that electric stimulation improves germination, root growth, and disease resistance. Nonetheless, there is a scarcity of research on the effect of electric treatment on plant growth characteristics and quality. We investigated the effect of electric fields on three potato varieties (Santé, Quvonch-1650M, and Bahro-30), and also to confirm the results, seeds of the same variety were planted with and without electrical stimulation in the second experiment. Seed tubers were electrically stimulated during this study using hand-held equipment equipped with two ultraviolet emitters and an antenna (low-frequency radio impulse bio-stimulation). Studies have shown that pre-planting electrical stimulation of plants accelerates emergence of shoots of plants for 3-4 days depending on a grade. In addition, use of electrical stimulation had a positive effect on the growth of the plant. All studied varieties were taller by 4-5 cm and multi-stemmed, and 12-20 flowers were formed on one stem, which is 2-2.5 times more than in the control. In the second study stimulated each bush (one seed) gave an average of 813 grams, while 398 grams was observed in the control group. Conducted visual counts and serological analyzes showed that electrical stimulation of plants contributes not only to the reduction of infestation plants with viral diseases, but also the manifestation of symptoms of damage. The Kuvonch-1656M, in the studied variant, were affected by diseases 12%, while in the control variant this figure was 16%. Hidden virus infection of plants was 26% and 31%, respectively.</p>
<p>Paper ID 6931</p>	<p>A Babayev¹, U Tasheva¹, I Allenova¹, and A T Sanbetova¹ <i>¹National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers", 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Application of ozone electrodispersion technology for disinfection of water</p> <p>Abstract: This article provides definitions of the positive and negative effects of the use of chlorine and ozone in water disinfection and presents the methodology and results of experimental studies of the parameters of water treatment with ozone, the electrodispersion method, as well as the electrode system "potential plane with corona needles - grounded plane". The parameters of water treatment modes were determined by the method of three variants of aerosol charge, negative, positive and bipolar. The parameters of water treatment with ozone determined on the basis of these studies were verified on the basis of experimental studies of the process of ozone effects on aerosol particles in the contact chamber. The methodology and analysis of the results of these studies are given. Based on these studies, the best ratios of the parameters of water flow, air velocity and electrical voltage were determined. The best disinfection result was determined by the charge polarities of the water aerosol.</p>
<p>Paper ID 4646</p>	<p>Akram Mirzabaev^{1,2}, Abdusaid Isakov^{1,3}, Asqar Mirzaev⁴, Oybek Buranov⁵, and Jorabek Sulaymanov² <i>¹"Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University, Tashkent, Uzbekistan</i> <i>²Tashkent State Technical University, Tashkent, Uzbekistan</i> <i>³Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</i> <i>⁴Tashkent Institute of Architecture and Civil Engineering, Tashkent, Uzbekistan</i> <i>⁵Center for the implementation of foreign investment projects in the water sector of Uzbekistan, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Experience of using solar energy in water lifting systems: A case study of Uzbekistan</p>



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	<p>Abstract: This article discusses modern schemes of using solar energy in the systems of the Ministry of Water Management. The analysis of electricity generation by photovoltaic water-lifting stations by months has been carried out and the effectiveness of their use as a reliable source of power supply to pumps has been proved. The payback period of solar water lifting systems is calculated. Calculations show that the payback period for solar water-lifting systems, considering only the cost of saved natural gas and carbon dioxide emissions is no more than 6 years. It should be noted that the life of the PVP is more than 20 years. Tax breaks on property and land use, provided for by the legislation of the Republic of Uzbekistan, further shorten the payback period.</p>
<p>Paper ID 9089</p>	<p>R J Baratov¹, Ya E Chulliyev¹, Thomas Bon², and M Abdullayev¹ ¹<i>Electrical Engineering and Mechatronics Department, “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers (TIAME)” National Research University, 39, Kari Niyaziy Street, Building V, 4th floor, Tashkent, 100000 Uzbekistan</i> ²<i>Agricultural and Biosystems Engineering Department, North Dakota State University, 1221 Albrecht Blvd, Fargo ND 58102, USA</i></p> <p>Title of presentation: Smart system for cavitation cause measurement and control in irrigation pump Abstract: The objective of this study is to develop an effective smart system for cavitation cause measurement and control in pump units. An analysis of the known sources of measurement and control of the cavitation shows that the known methods are based on the measurement of the effects of causing cavitation such as vibration, temperature and pressure changes in the pipeline. The proposed smart cavitation cause measurement and control system is based on converting water- air ratio to the electrical signal by means of capacitance sensor that has very low value. The electrical scheme of low capacitance measurement by means of modern microcontrollers, block diagram and algorithm of smart system for cavitation cause measurement were developed. The complete smart system for cavitation cause measurement and control by means of modern microcontrollers was implemented in hardware and conducted experiments. The theoretically and experimentally obtained capacitance and the water - air ratio relationship is presented. Based on experimental studies, the relative error of the measurement system was determined and its graph is submitted.</p>
<p>Paper ID 2720</p>	<p>M Ibragimov¹, A S Berdishev¹, and I E Tadjibekova³ ^{1,2}<i>“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, Tashkent 100000, Uzbekistan</i> ³<i>Tashkent State Agrarian University, 2 University, Tashkent 100140, Uzbekistan</i></p> <p>Title of presentation: Study on two-step ozone treatment of liquid effluents from livestock farms Abstract: Wastewater ozonation, for epidemic animal diseases, is an effective method. The disadvantage of this method is relatively high percentage of unreacted ozone (10-40%). This paper proposes a combined method of mixing ozone with liquid effluents: first - barbotage, and at the second stage - injection or mechanical emulsification. It was found that the two-stage treatment increases the mixing efficiency (respectively disinfection) to 88 - 90 %.</p>
<p>Paper ID 1509</p>	<p>A Davirov^{1*}, D Kodirov¹, R Tukhtaeva², I Ibragimov³ and N Uroкова² ¹<i>National Research University “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers”, 100000 Tashkent, Uzbekistan</i> ²<i>Karshi State University, 180119 Karshi, Uzbekistan</i> ³<i>Karshi Engineering Economic Institute, 180100 Karshi, Uzbekistan</i></p> <p>Title of presentation: Development and testing of a laboratory model of a two-turbine small hydroelectric power plant Abstract: This article considers the main methods of regulating water consumption and power of micro hydroelectric power plants. New technical solutions for screw jet turbines</p>



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	<p>adapted to low pressures and water flow rates are proposed. The Archimede's screw turbine is a cost-effective and environmentally friendly microhydropower technology that operates at high efficiency at low pressure and medium flow rates. In this case, the change in power depends on the following parameters: the number of blades, water flow, the angle of inclination of the blades and the height of the pressure. Preliminary calculations carried out by the authors show that the power of a microhydroelectric power station depends on individual factors of the area. With an increase in the speed of the water flow, the speed of the water wheel also increases, and in turn, the electric power of the microhydroelectric power station increases.</p>
<p>Paper ID 2571</p>	<p style="text-align: center;">MV Sagatov¹, Kh M Komilova^{2*}, A M Dadaboev³, and Yu Akkulova³ ¹<i>Tashkent State Technical University, 100095 Tashkent, Uzbekistan</i> ²<i>«Tashkent Institute of Irrigation and Agricultural Mechanization Engineers» National Research University, 100000 Tashkent, Uzbekistan</i> ³<i>Yangier branch of the Tashkent Institute of Chemical Technology, Yangier, Uzbekistan</i></p> <p>Title of presentation: Software-algorithmic System for Locating and Processing Acoustic Emission</p> <p>Abstract: Research on the problems of creating effective control and diagnostic systems allows us to single out the following areas: development of the theory and methods for diagnosing and predicting the strength and reliability of structures, theoretical and experimental studies of fracture processes and the corresponding changes in characteristics and parameters, i.e. carriers of information about the processes occurring in the material during destruction; creation of information-measuring systems designed to register and analyze the information necessary to resolve the issue of the state of the structure; development of software for measuring equipment, including not only the main programs for generating and processing incoming information, but auxiliary subroutines that provide information compression, increase the reliability of measurement results, defect recognition, decision making. The article is devoted to the methods of acoustic-emission control of metal structures and the development of a computerized system for its implementation. The basics of organizing a software-algorithmic system for locating and processing acoustic emission signals are considered, including: methods for discretizing models of sensors and acoustic emission signals, which make it possible to obtain computational schemes such as a digital filter that provide effective algorithmic implementation; description of fragments of an experimental software-algorithmic system for processing acoustic emission signals, illustrating the principle of constructing software tools in an arbitrarily chosen computing area, the structure of the software organization of computational processes for locating an acoustic emission signal, which ensure the construction of the corresponding subsystem of a computer complex for acoustic-emission control, both in single-antenna and in a multi-antenna version.</p>
<p>Paper ID 4905</p>	<p style="text-align: center;">F Kh Mukhtarov <i>Tashkent State Technical University, 100095 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Analysis of ionic equilibria by water treatment stage and calculation of monitored parameters</p> <p>Abstract: The mathematical model of the unit of the water treatment scheme is based on the mathematical model of improvements in the consistency metrics by step of treatment and is the basis for the technical measurement of this element. The suggested step-by-stage estimation of the water quality indicators for the assembled water treatment unit system helps the final quality of the treated water to be calculated and the mathematical model of the quality indicators adjustment by treatment phase was developed in relation to the water used in the TPP water treatment. For circuit elements, the change in the input and output quality indicators occurs depending on the type of processing, which is conveniently represented by equivalent circuits. For circuit elements, input and output quality variation occurs depending on the type of processing, which is conveniently represented by equivalent circuits. Thus, an equivalent scheme for the change in quality indicators by</p>



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	<p>treatment stage can be represented by the example of a one-stage chemical desalination scheme for natural water. It should be noted that the calculated concentration fractions of carbon dioxide dissociation forms and known carbonate hardness, for example, can be used to determine the concentrations themselves.</p>
<p>Paper ID 1487</p>	<p style="text-align: center;">O Z Toirov^{1,2*}, and S S Khalikov³</p> <p style="text-align: center;">¹<i>Department of Electrical Machines, Tashkent State Technical University, 100095 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">²<i>Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</i></p> <p style="text-align: center;">³<i>Department of Electromechanics and Electrotechnology, Tashkent State Technical University, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Algorithm and Software Implementation of the Diagnostic System for the Technical Condition of Powerful Units</p> <p>Abstract: This article discusses the software implementation of the diagnostic system for auxiliary equipment of power plants (on the example of smoke exhausters). The developed program of diagnostics of auxiliary equipment of electric power plants is given on the example of condition diagnostics designed for early detection and localization of certain defects and providing recommendations for their elimination in smoke pumps, which should ensure the issuance of appropriate protocols and, upon request, protocols of the current state of smoke pumps, quality assessment of repairs and special tests, as well as graphs of retrospective parameter values for the time period selected by the user, where the users of the task - there are heads and deputy heads of workshops, senior foremen, repair engineers, as well as specialists of the planning and technical department. The problem is considered, which was solved within the framework of the software and hardware complex of the automated process control system) of the 800 MW power unit No.1 of Talimarjan TPP and is intended for operational specialists, where the task operates under the Windows operating system and the program is written in the C++ programming language Builder 6 for the development of application tasks with client -server architecture. And also the composition of the program and the program menu are given: "Task Launch", "Daily statements", "Input data", "Output forms", "Diagnostics" and "Special tests" allow you to implement the required task function at the moment. In addition, the article presents elements and components, processes and conditions of a pumping plant, pumping station and pumping station cascade, potentially dangerous and processes and conditions potentially dangerous for a pumping plant, pumping station and pumping station cascade.</p>
<p>Paper ID 9650</p>	<p style="text-align: center;">A Djalilov^{1*}, E Sobirov¹, O Nazarov¹, S Urolov², and I Gayipov³</p> <p style="text-align: center;">¹<i>Department of Electrical Engineering and Mechatronics, "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University, 100000 Tashkent, Uzbekistan</i></p> <p style="text-align: center;">²<i>Faculty of Electronics and Automation, Tashkent State Technical University, Tashkent, Uzbekistan</i></p> <p style="text-align: center;">³<i>Department of Electrical Engineering and Metrology, Karakalpak State University Named After Berdakh, 230115 Nukus, Uzbekistan</i></p> <p>Title of presentation: Study on automatic water level detection process using ultrasonic sensor</p> <p>Abstract: Currently, we live in a world where all fields are developing very rapidly. In particular, the field of water management is developing day by day, and the water supply system is being intelligent automated. Nevertheless, mechanical means and human labor are used to monitor the water level in many water management facilities of our region. This situation causes many problems in the automatic management of the system. In this article, we will consider the process of automating the measurement and control of water level, that is, an automated system that helps to know when the water in the tank is full or empty. In the automation of this system, an ultrasonic sensor that meets the requirements of the time was used. The working principle of ultrasonic sensors is based on the</p>



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	<p>movement of ultrasonic waves over time. The analysis of the results of this experiment showed that the water level measurement and control system did not make more than 1.5% error in different values of the water level. This situation showed that the developed system can be effectively used in all water level control facilities.</p>
<p>Paper ID 351</p>	<p>A Denmukhammadiev^{1*}, A Mukhammadiev², F Kucharov¹, and A Pardaev¹ ¹<i>“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, 100000, Tashkent, Uzbekistan</i> ²<i>Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Electrophysical processes in an electroterminator (with an intelligent system) with sliding contacts in the power circuit Abstract: This article presents data on the properties of sliding contacts during the rotation of the axis of a device for pre-sowing treatment of crop seeds, considers the issues of automation of intermittent power supply and measurement of electrical conductivity and temperature parameters of seed material in the process of electrotechnology. At the same time, the contact resistance of the power circuit, normalized moistening of sowing seeds, depending on the type of plants, was taken as the basis of the physical model. Smart system takes into account soil parameters (type, density, moisture content). In the initial period of seed treatment, moisture penetrates into the seed from the outside. therefore, the time of humidification and electrical treatment are the main factors. Depending on the seed variety, it will be possible to change the operating parameters of the electrical treatment of crop seeds. The work also carried out a review of the literature and mathematical calculations.</p>
<p>Paper ID 5337</p>	<p>R F Yunusov¹, A B Imomnazarov², N E Sattarov¹, D A Akbarov¹, and A A Abduganiev¹ ¹<i>“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, 100000 Tashkent, Uzbekistan</i> ²<i>Karshi Engineering and Economic Institute, 180100 Karshi, Uzbekistan</i></p> <p>Title of presentation: Simulation of linear asynchronous electric drive of slow-speed mechanisms of agricultural complex Abstract: The agro-industrial complex includes a system of enterprises - the production of means of production for agricultural enterprises and various industries, as well as the sphere of processing, transportation and marketing of raw materials and finished products. The development of rational electric drives corresponding to the drive characteristics of production machines solves the problem of energy and resource saving. The methods are determined by the tasks to be solved in the study of an asynchronous electric drive motor.</p>
<p>Paper ID 5970</p>	<p>J Izzatillaev^{1*}, S Axmatova², N Usmonov², and R Diyorov³ ¹<i>Department of Power Supply and Renewable Energy Sources, “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, 100000 Tashkent, Uzbekistan</i> ²<i>Tashkent State Technical University, 100095 Tashkent, Uzbekistan</i> ³<i>Tajik Technical University, 734042 Dushanbe, Tajikistan</i></p> <p>Title of presentation: Study on an air conditioning system with the use of natural cooling Abstract: Issues of microclimate mitigation in Uzbekistan during the summer period require urgent resolution. It should be noted that currently there are very few researches, as well as practical recommendations related to the formation of a favorable microclimatic environment in cities with a hot climate. The simplest and most economical way of cooling, in dry and hot climates, is the evaporative cooling of a dry air stream. One of the possible ways to increase the efficiency of the system is the use of night evaporative cooling of water, followed by its accumulation for daytime cooling in heat-insulated batteries. The conducted experiments testify that rather simple and cheap natural sources of cold can be used along with machine cold sources for air conditioning of residential</p>



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	buildings in Uzbekistan.
Paper ID 3030	<p>N Eshpulatov^{1*}, T Khalmuradov², F Rakhimov³, S Abdurayimov⁴, A Khurramov⁴, I Mullajonov⁴ and R Komilov⁴</p> <p>¹“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, Kory Niyoziy str., 39, 100000, Tashkent, Uzbekistan ²Tashkent State Agrarian University, University str., 2, Tashkent region, Uzbekistan ³Navoi State Mining and Technological University, 27 Galaba Str., Navoiy region, Uzbekistan ⁴Chirchik higher tank command engineering school, Amir Temur str., 15, 111718, Tashkent region, Uzbekistan</p> <p>Title of presentation: The influence of the impact of electrical impulses on the juice outputting of the pulp Abstract: In this article was applied a comprehensive research method which made it possible to quite fully investigate the mechanism of the effect of electrical impulses on the protoplasm of cells and determine the optimal parameters of such effect on plant raw materials, ensuring high efficiency of their use to increase the juice yield. The complex research method made it possible to obtain the necessary data for the implementation of the electrical method for intensifying the process of extracting juice from plant materials. Due to the fact that the issues related to the use of electrical impulses for the processing of plant materials have been little studied and there is no sufficiently clear understanding of the mechanism of such an effect on living cells, we made an attempt to investigate the mechanism of this process. A technique has been developed for studying the dynamics of the action of electric current on plant tissue cells. We expressed the yield of juice from raw materials as a percentage of the weight of the pulp, which was processed and pressed. Thus, a comparison of the results of individual experiments showed an absolute increase in juice yield as a percentage.</p>
Paper ID 2617	<p>N Eshpulatov^{1*}, T Khalmuradov², F Rakhimov³, S Abdurayimov⁴, A Khurramov⁴, I Mullajonov⁴ and R Komilov⁴</p> <p>¹“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, Kory Niyoziy str., 39, 100000, Tashkent, Uzbekistan ²Tashkent State Agrarian University, University str., 2, Tashkent region, Uzbekistan ³Navoi State Mining and Technological University, 27 Galaba Str., Navoiy region, Uzbekistan ⁴Chirchik higher tank command engineering school, Amir Temur str., 15, 111718, Tashkent region, Uzbekistan</p> <p>Title of presentation: Influence of the parameters of the impact of electrical impulses on the yield of juice from the pulp Abstract: This article presents the results of experimental studies to determine the effect of electrical impulse processing parameters on the output of juice from the pulp. It is based on the effect of pulse energy and voltage on apple juice. The influence of an electrical impulse on the production of juice before pressing fruit pulps has been studied. It is based on the optimal parameters of the grinding rate of the raw material, which affects the efficiency of processing with electric pulses. An additional large amount of juice was detected after the pulp was treated with electrical impulses. Based on the voltage dependence of the juice obtained from the raw material and the direct interaction of the field with the electrically charged system of the cell protoplasm.</p>
Paper ID 3706	<p>Abduvali Turdiboyev¹, Nurlan Aytbaev¹, Mukhamedgali Mamutov², Abbos Tursunov³, Tojiddin Toshev⁴ and Nurali Kurbonov⁴</p> <p>¹National Research University, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, 100000 Tashkent, Uzbekistan. ²Karakalpak State University named after Berdakh, 230112 Nukus, Republic of Karakalpagistan ³Tashkent State Agricultural University. 100020 Tashkent, Uzbekistan.</p>



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	<p>⁴ <i>Department of Electrical Engineering, Karshi Engineering and Economics Institute, 180100 Karshi, Uzbekistan</i></p> <p>Title of presentation: Water disinfection method and technique for increase of water nutrient content for plants applying electrohydraulic effect</p> <p>Abstract: This article describes the application of electrohydraulic effect to decontaminate wastewater and increase nutrient content in water for agricultural crops. It is characterized by the formation of chemical processes in water and electrohydraulic effect carried out using ultrasound and ultraviolet radiation. The nutrient content in water has increased from 1.1 mg/l to 2.23 mg/l, i.e. it has gone up by 102.7% after the preliminary water treatment by means of the electrohydraulic effect, while neutralization of coliform bacteria in the treated water has decreased from 3474 (RLU) to 610 (RLU), i.e. it has dropped to 82.55 over control. The increase of nutrient chemicals in water and coliform bacteria neutralization (Escherichia coli) depend on the treatment time, discharge voltage, capacitor capacity, discharge interval and the number of pulses if treated with electrohydraulic effect conducted by means of ultrasound and ultraviolet radiation causing a chemical reaction of electrohydraulic shock in water. The discharge voltage for increase is 9-15 kV, disinfection time - 100-120 minutes depending on the voltage of treatment. It is advisable to have the capacitor capacity of 0.8 μF and discharge interval of 10-12 mm.</p>
<p>Paper ID 6174</p>	<p>M Ibragimov¹, D Akbarov¹, M Fayziyev², R Beytullaeva², K Nimatov² and Kh S Safarov²</p> <p>¹ <i>Department Electrical Technology and Using of Electrical Equipment, "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University, 100000 Tashkent, Uzbekistan</i></p> <p>² <i>Department of Electrical Engineering, Karshi Engineering and Economics Institute, 180100 Karshi, Uzbekistan.</i></p> <p>Title of presentation: Analysis of the methods of diagnosing asynchronous motors according to vibration indicators</p> <p>Abstract: Currently, AC motors are in great demand among most modern manufacturing enterprises. Professional experience shows that they use 80% of all electricity generated in the country, so the stability of their work plays an important role in agriculture and industry. Nowadays, vibration diagnostics is one of the effective tools for solving a wide range of problems of detecting defects in electrical machines, preventing parts from failing, extending their service life and increasing their overhaul periods of operation. Preservation of electrical safety, reliability and durability of the operation of electromechanical equipment of electric drives based on asynchronous motors in the production processes of enterprises in the agricultural industry remains an urgent task of electrical systems.</p>
<p>Paper ID 7260</p>	<p>O Khujaev¹, D Obidjanov², O Tursunov³, N Mukhsimov⁴, O Nazarova⁵, and N Tokhtamurodova⁶</p> <p><i>Research Institute of Forestry, Institute of Agricultural Irrigation and Agrotechnologies, National Research University TIAME, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on protection of forest plants from pests inhabited in the dry part of the Aral Sea</p> <p>Abstract: 34 types of pests were found on haloxylon and other sand-retaining plants planted in the dry area of the Aral Sea. The main dominant species of these pests are large and small haloxylon humpback grasshoppers. When the insecticide Imittrin 20% sus.K. was tested on humpback grasshoppers at 0.05 L/ha distribution pater measurement against 2-3-year-old nymphs of grasshoppers and 0.1 L/ha against 4-5-year-old nymphs: after 3 hours - 89.2-87.4%, 24- 95.1-94.0% after 72 hours - 96.3-95.6% biological efficiency was obtained respectively. This preparation has been recommended to produce at the specified measures and periods.</p>



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<p>Paper ID 325</p>	<p>J Izzatillaev^{1*}, L Alimova², N Usmonov² and D Alijanov³ ¹<i>Department of Power Supply and Renewable Energy Sources, "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University, 100000 Tashkent, Uzbekistan</i> ²<i>Tashkent State Technical University, 100095 Tashkent, Uzbekistan</i> ³<i>Department of Alternative Energy Sources, Andijan Machine Building Institute, 170100 Andijan, Uzbekistan</i></p> <p>Title of presentation: Opportunities and prospects for the use of solar energy for refrigeration of public buildings Abstract: This paper describes the calculation of evaporative-radiant cooling of recycled water in summer air-conditioning systems. A differential equation for the heat balance of water flowing down an inclined plane is derived. As one possible way of increasing the efficiency of air conditioning systems based on cooling water by adiabatic evaporation in the air flow the use of night-time evaporative cooling of the water, followed by daytime cooling in insulated storage tanks. The temperature of the water chilled in this way is 3-4 °C lower than the temperature of the water chilled during the day, and the final water temperature is close to the saturation temperature of the outside air. The equations for calculation of mass transfer coefficients, radiation and heat transfer coefficient of an insulated bottom of an evaporative-radiant water-cooling unit are given. Based on the Mathcad program and the result of the calculation, the dependence of the final water temperature on the initial water temperature is obtained. As a result of the calculation, the specific heat capacity of the evaporative radiant water-cooling unit for the production of free cooling is determined.</p>
<p>Paper ID 6097</p>	<p>M Yakubov¹, A Sulliev¹ ¹<i>Tashkent State Transport University, 1, Adilkhodjaev str., 100167, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Modern methods of evaluation of metrological indicators of channels for measurement and processing of diagnostic values of traction power supply Abstract: This paper considers the matters of estimating errors in measuring and processing diagnostic values of power facilities of power supply of high-speed railways. An information model of the channel for measuring and processing measuring information has been developed, which makes it possible to analyze measurement errors against the background of disturbing external influences, time sampling and coding, signal comparison devices with settings for the lower and upper boundaries of the zone of normal values, as well as obtaining mathematical expectations, standard deviations and other numerical characteristics defining the regression analysis. Permissible error values of the measured parameters are determined for a given confidence level.</p>
<p>Paper ID 5898</p>	<p>N.T.Tashpulatov ¹<i>"Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study of a mobile electric installation for the destruction of permanent rhizous weeds Abstract: This article presents the results of theoretical and experimental studies on the destruction of perennial rhizomatous weeds using the electric method. The biological features, vegetation, growth and development of weeds humai and pygmy beetle as an object of processing have been studied. The layout of the equipment for the installation for electropulse processing, the procedure for implementing the work process and the results of sexual research are described.</p>
<p>Paper ID 5042</p>	<p>Sh M Muzafarov¹, V E Balitsky¹, B K Togaev², A Babayev¹, and O Kilichov¹ ¹<i>"Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University, 100000 Tashkent, Uzbekistan</i> ²<i>Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan,</i></p>



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	<p style="text-align: center;"><i>Tashkent, Uzbekistan</i></p> <p>Title of presentation: Analysis of the double-side power supply for electronic-ion technology devices with pulse voltage</p> <p>Abstract: This article provides an analysis of existing high voltage power supply devices for devices of electron-ion technology, in particular devices for cleaning gases from aerosol particles. Advances in this technology are described. The following are the disadvantages of the electric fields of a corona discharge when powered by a constant high voltage. To increase the efficiency of catching aerosol particles, the authors propose to combine self-sustained and non-sustained discharges in one discharge gap. To do this, it is proposed to use unipolar high-voltage pulses with a constant component and pulses with a duty cycle of more than 5. An analysis is made of the possibility of increasing the efficiency of the impact of electric fields when using circuits with two-sided power supply, the analysis of which makes it possible to increase the pulse repetition rate, as well as to regulate the process of the impact of electric fields on processed particles., regulation by the parameter of impulse voltage.</p>
Paper ID 266	<p>Sh M Muzafarov^{1*}, V E Balitsky¹, B K Togaev², A G Babayev¹, and O G Kilichov¹ ¹"Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University, 100000 Tashkent, Uzbekistan ²Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</p> <p>Title of presentation: Investigation of the cleaning the air flow process from aerosol particles in the electric fields of the corona discharge's streamer form</p> <p>Abstract: This article presents the methodology and results of experimental studies of the parameters of the electrode system "Potential plane with corona needles - grounded plane". The parameters of the electrode system were determined for a distance between the electrodes of 0.15 m. The parameters of the electrode system determined on the basis of these studies were verified on the basis of experimental studies of the process of trapping dust particles from an air stream. The methodology and analysis of the results of these studies are given. Based on these studies, the best ratios of the parameters of the electrode system were determined according to the highest degree of purification of the cleaned air. The difference in the distances between the needles in a row located perpendicular to the flow of the cleaned air and between the rows of needles is determined.</p>
Paper ID 8564	<p>V E Balitsky¹, Sh Muzafarov¹, O G Kilichov¹, B K Togaev², Z Z Ruzikulov³ ¹National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers", Tashkent, Uzbekistan ²Institute of Energy Problems of the Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</p> <p>Title of presentation: Study on a creation of highly ionized cold plasma at atmospheric pressure in the air</p> <p>Abstract: This article analyzes the existing ways of creating cold plasma at atmospheric pressure directly into atmospheric air. Research areas listed turns out to be very valuable from a practical point of view, since allows you to create in the plasma gas enough intense ultraviolet radiation, as well as high concentration of physically and biochemically active particles (metastable atoms and molecules, radicals, ozone and other reactive compounds) relatively small specific energy costs. Further in the article, a theoretical comparative analysis of the processes of ozone electrosynthesis in electric sinusoidal and pulsed electric fields is given. The revealed advantage of pulsed electric fields is confirmed by the results of experimental studies.</p>
Paper ID 9346	<p>S Khasanov^{1,2,3*}, R Oymatov² and R Kulmatov⁴ ¹University of Chinese Academy of Sciences, Yuquan Road, 19A, Beijing, 100049, China ²National Research University "TIAME", Kori Niyozzi street, 39, Tashkent, 100000, Uzbekistan</p>



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	<p>³Tashkent State Agrarian University, University street, 2, Tashkent province, 100140, Uzbekistan</p> <p>⁴National University of Uzbekistan named after Mirzo Ulugbek, University street, 4, Tashkent, 100174, Uzbekistan</p> <p>Title of presentation: Canopy temperature: as an indicator of soil salinity (a case study in Syrdarya province, Uzbekistan)</p> <p>Abstract: A shift in the temperature of the canopy may signify stress in the plants. In laboratory and greenhouse trials, using canopy temperature for the measurement salt stress in certain agricultural crops was thoroughly examined; however, its potential application in landscape-level investigations employing remote sensing methods has not yet been investigated at different time series. A satellite thermography for measuring the soil salinity of agricultural areas at the provincial level was the subject of our investigation. The research area was the irrigated, semi-arid, and salt-affected agricultural land appertain to Syrdarya province in Uzbekistan, which was mostly planted with wheat and cotton. The provincial soil salinity map was considered as a ground truth data and the moderate-resolution imaging spectroradiometer satellite (MODIS) data were perceived as an indication for canopy temperature in this study. We investigated the relationships between the soil salinity, the normalized difference vegetation index, and canopy temperature, using analysis of variance. The findings indicated a strong inverse correlation between canopy temperature and soil salinity, although this relationship changed throughout the experimental years. For cotton, the highest correlation was shown in September. In comparison to the other variables looked at, canopy temperature had higher computed F values. Our findings indicate that soil salinity may be detected at the landscape level using satellite thermography in regions where crops are being grown.</p>
<p>Paper ID 9616</p>	<p>P Kalandarov, O Olimov</p> <p>¹National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers", Tashkent, Uzbekistan</p> <p>²Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan</p> <p>Title of presentation: Smart sensor - measuring systems in technologies of automated humidity control</p> <p>Abstract: This article examines intelligent humidity sensors (transducers) as a component of an automated process control system that converts a controlled physical quantity into a measured signal for further processing in an automatic device, as well as mathematical models of intelligent support for bulk material moisture meters. It is demonstrated that one method for increasing the efficiency of the functioning of quality meters for various bulk materials is the development of conceptual foundations and their practical implementation in the construction of express devices capable of measuring grain and grain materials. The interaction of intelligent support measuring tools in technologies for automated moisture control in technological processes and control is investigated. The microwave method is recommended for monitoring the moisture content of grain and grain materials, as well as their metrological characteristics.</p>
<p>Paper ID 8704</p>	<p>K A Usmanova^{1*}, Z T Norkulova¹, and G I Kobilova¹</p> <p>¹Jizzakh Polytechnical Institute, Jizzakh, Uzbekistan</p> <p>Title of presentation: Study on the production of various dried products from apricot varieties</p> <p>Abstract: This article is devoted to obtaining various methods of drying a zoned apricot cultivar in Uzbekistan. Before laying for drying, the sugar content of fresh fruits was 17-21.5%. The output of dried products was 15.3-19%, a relatively high yield is allocated when dried for dried apricots, kaisa (19-22%). A relatively good organoleptic assessment (4.4-4.5points) distinguishes the varieties from the apricot Yubileiny Navoi, Gulyungilyuchak, when dried for dried apricots.</p>
<p>Paper ID 6848</p>	<p>U. Norboyev¹, R. Sulaymonov², and B. Sharopov^{1*}</p>



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	<p>¹Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan ²"Paxtasanoat ilmiy markazi" JSC, Tashkent, Uzbekistan</p> <p>Title of presentation: Trial results for the production of the improved 5LP linter Abstract: A pilot-industrial copy of an improved mixer has been developed to implement an effective process of seed raising. The manufactured pilot copy was installed on the 5LP linter in the cotton spinning workshop of the cotton spinning enterprise SANGZOR TEKSTIL LLC, Dostlik district, Jizzakh region, and the linter was improved, comparative research work was carried out with the 5LP linter with a simple construction mixer in the workshop. The studies were carried out at a distance of 8-12 mm between the saw cylinder and the mixer, selected on the basis of theoretical and practical results. During the experimental period, the quality of seeds obtained from the lint of seeds of the Bukhoro-6 variety of selection I improved by an average of 0.37 (abs)% to 0.85 (abs)%, and the quality of down improved by 0.62 (abs) % to 0.78 (abs.%) . Improving the quality of down one class higher, UzDST 645:2016 "Cotton lint. Technical conditions" type I corresponded to type B "Middle" class. Linter performance averaged 47 kg/h to 35 kg/h of seed and 2.8 kg/h to 3.4 kg/h of fluff compared to the existing 5LP linter. The quality of seeds obtained by linting seeds of the III variety of Bukhara-6 selection in the proposed 5LP linter by an average of 0.46 (abs)% to 0.38 (abs)%, the quality of fluff by 0.37 (abs)% improved by 0.25 (abs) % . Produced down is a class higher, UzDst 645:2016 "Cotton lint. Technical conditions", type II type B was the "Middle" class. It was found that the productivity of the linter is 46-49 kg/h higher for seeds and 3.1-4.0 kg/h for linter than that of the 5LP linter with a simple mixer design. As a result of research work using an improved mixer in a 5LP linter working chamber, installing 6 mm thick rubber on metal sheets in the mixer, while pushing rubber from metal sheets to a distance of 6 mm, so as not to adversely affect the amount of oil extracted from seeds when linting technical seeds, the distance between the rubber sheets and the saw cylinder was determined to be set at 8-10 mm, and when linting seeds, 12 mm should be left so as not to exceed the specified rate.</p>
<p>Paper ID 2022</p>	<p>Kh M Komilova¹, Z B Shakhobiddinova¹, D I Ismoilov² ¹National Research University TIAME, Tashkent, Uzbekistan ²Termiz State University, Termiz, Uzbekistan</p> <p>Title of presentation: Simulation of oscillations of composite pipelines conveying pulsating fluid Abstract: The article considers the problem of vibrations of straight sections of the pipeline based on the theory of beams. A mathematical model of the dynamics of a straight viscoelastic pipe with a pulsating fluid is developed. The speed of a pulsating fluid is assumed to be harmonically fluctuating and has the following form: $V(t) = v_0(1 + \mu_1 \cos \omega t).$ The mathematical model of the problem is simplified using the Bubnov-Galerkin approach to the solution of a set of common integro-differential equations with time as an independent variable. A numerical approach based on the removal of the singularity in the relaxation kernel of the integral operator is used to solve integro-differential equations. A numerical approach for the unknowns was used to get the system of algebraic equations. The Gauss technique is used to resolve a set of algebraic equations. The dynamics of fluid-transporting viscoelastic pipes have difficulties that can be solved computationally.</p>
<p>Paper ID 2716</p>	<p>Khilola Boboeva <i>Research Institute of Horticulture, Viticulture and Winemaking named after Academician Makhmud Mirzaev, 111118 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the quality indicators of apple varieties grown at low level under-grafted M-9 Abstract: This work used the generally accepted modern methods and programs for the variety study of fruit plants developed at the Research Institute of Horticulture, Viticulture and Winemaking named after Academician Makhmud Mirzaev. The aim of the study was</p>



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	<p>to select the source material of the apple fruit quality introduced in Tashkent region and 35 local varieties of apples, which is valuable for the breeding, and the sources of the target traits based on the analysis of long-term data on the assessment of the biochemical composition of promising varieties of different apples. According to the results, Williams Pride, "Isroil", Kuban crimson, Esaul's memory, and Mutsu varieties differed from other varieties with high quality.</p>
<p>Paper ID 1284</p>	<p style="text-align: center;">Sh Ch Kholto'raev¹, Sh A Karimov³, A Iminov², and M I Kocharova² ¹<i>Research Institute of Forestry, Tashkent, Uzbekistan</i> ²<i>Tashkent State Agrarian University, Tashkent, Uzbekistan</i> ³<i>Research Institute of Cotton Breeding, Seed Production and Agrotechnology, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Influence of cultivation of secondary mung bean, soybean and oat crops on cotton yield and soil structure by different methods of tillage after winter wheat Abstract: This article provides information on the results of scientific research aimed at maintaining and increasing soil fertility in the country and in the world today, as well as ways to increase it, as well as the impact of organic fertilizers on soil fertility. The article presents evidence-based data on the study of the effect of soybean, mung bean and oat sowing in different ways with deep, medium and shallow tillage after harvesting winter wheat in conditions prone to wind erosion with low fertility, on the mechanical composition of light irrigated meadow saz, slightly saline soils for the number of bacteria accumulating nitrogen in the roots of legumes and root crop residues macroaggregates in the soil between the options increased by 0.1-10%, soil porosity by 0.6-1.5, humus content by 0.001-0.004%, total nitrogen by 0.005% , the content of nitrate nitrogen by 0.1-3.6 mg/kg. In the variants with row crops of soybean and mung bean after tillage to a depth of 30 cm after winter wheat, the yield of mung bean grain was 16.5 c/ha, and soybean 18.8 c/ha, where the mung bean yield was higher by 2.1 c/ha , and soybeans by 2.5 c/ha compared with chisel treatment to an average depth of 22-24 cm. tillage to a depth of 14-16 cm using a cultivator. With ordinary sowing, mung bean achieved a profitability of 48.1%, and soybeans 52.7%. When growing cotton next year against the background of row sowing of repeated crops of mung bean and soybeans with a plow to a depth of 30 cm after harvesting winter wheat, the yield from cotton sown after mung bean was 33.4 centners / ha, and after soybeans 34.2 centners / ha and the level of profitability increased by 39.5%.</p>
<p>Paper ID 7724</p>	<p style="text-align: center;">U Kh Khoshimov¹ and S Khushiev² ¹<i>Tashkent state technical University Named after Islam Karimov, University st. 2, Tashkent, 100095, Uzbekistan</i> ²<i>Department of Power Supply and Renewable Energy Sources, "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Method development for determining the energy-efficient mode of air-cooling devices' operation Abstract: When ensuring the normative limit of the heat of the gas transmitted to the main gas pipelines by means of air-cooling devices of the gas transmission compressor station, the modes of parallel operation of the fan motors of the air-cooling device system are considered. At the same time, a comparison was made of methods for adapting air cooling devices to factors affecting energy-efficient operating modes. As a result, based on a mathematical model of the combustion operating mode through a gas-air cooling device, the possibility of regulating the engine speed and increasing the energy efficiency of the system, taking into account seasonal and temperature changes, is shown. The main parameters for saving energy sources are introduced into the technological processes of gas compression and cooling.</p>
<p>Paper ID 5733</p>	<p style="text-align: center;">Sh R Rakhmanov <i>Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, Tashkent,</i></p>



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	<p style="text-align: center;"><i>100000, Uzbekistan</i></p> <p>Title of presentation: Application of developed models and algorithms to problems of control of the chlorella culturing process</p> <p>Abstract: This article considers the implementation of mathematical models and algorithms in the problems of controlling the process of chlorella cultivation. When building a control system, the following tasks are solved: collecting and primary processing of information, predicting the course of technological processes, optimizing regime parameters, managing a technological process, etc. One of the necessary conditions for the optimal conduct of the process of cultivating microorganisms is automatic control of the quality and composition of nutrients at the inlet, as well as control of the output indicators of the process. The frequency of solving control problems is set depending on the technological features, the control object, the mode of introducing the process, and also on the availability of a complex of technical means. As a result of the implementation of the proposed control system, the maximum ratio of the concentration of chlorella from its average value decreased by 23.8%. Thus, the control system for the cultivation of chlorella provides timely forecasting of the course of the technological process and the formation of control actions using a computing device, which contributes to an increase in the productivity of the cultivator by 8-12%.</p>
<p>Paper ID 9109</p>	<p style="text-align: center;">P Kalandarov^{1*}, Zh Kutlimurotov², G Eshchanova¹, A Mustafakulov³</p> <p>¹<i>Scientific-Research National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" Tashkent, Kori Niyoziy str., 39, 100000,</i></p> <p>²<i>Research Institute of Water Resources, Tashkent, Qorasu-4 mavzesi, 11-uy, Uzbekistan,</i></p> <p>²<i>National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" Tashkent, Kori Niyoziy str., 39, 100000, Uzbekistan,</i></p> <p>³<i>Jizzakh Polytechnic Institute, Jizzakh, Uzbekistan, Peoples' Friendship Street, 4, 130100,</i></p> <p>Title of presentation: Automated control system of drip irrigation and mathematical modeling</p> <p>Abstract: In this article, the theoretical and methodological foundations for the use of an automated control system for drip irrigation of crops are considered. The analyzed system is automated through integration, which allows controlling the entire irrigation process through a control device with controllers, shows the main elements of the drip irrigation system that carry out complete controlling and the procedure for moistening the soil and fertilizing, presents a functional diagram of the automated system for regulating soil moisture, as well as pressure in the pipeline, mathematical modeling of water consumption of crops under drip and combined irrigation is considered, the influencing factors that require regulation, which will ensure the management of plant development are shown. The complexity of the simulated system "Plant-moisture-soil-atmosphere-solar radiation" and its subsystems are explained by a large number of interrelated factors of various nature and requires the construction of numerical schemes, computer simulation using various computer programs.</p>
<p>Paper ID 2083</p>	<p style="text-align: center;">A B Mamadjanov^{1,3}, R A Zakhidov², A Rakhmatov³, F Sharipov¹</p> <p>¹<i>Namangan Engineering Construction Institute, Namangan 160605, Uzbekistan</i></p> <p>²<i>Institute of Energy Problems, Academy of Sciences of the Republic of Uzbekistan, Tashkent, Uzbekistan</i></p> <p>³<i>"Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University, 10000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Improving the gravity-vortex micro-hydroelectric power station efficiency by ensuring an acceptable value of the water inlet canal's twist angle</p> <p>Abstract: Micro-water energy is a promising alternative energy source that produces electricity in remote areas, separated from the main electricity grid. In this research work, the method of increasing the efficiency of gravity-vortex micro-hydroelectric power station operating in low-pressure water flows through the twist angle of the inlet channel</p>



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	<p>of the basin is presented. Gravity-vortex micro-hydroelectric power station is a new modern green technology as an alternative or renewable energy source. The advantage of this method of electricity production is that it is possible to produce electricity at a low pressure, i.e. starting from a pressure of 0.7 meters. In order to increase the initial speed of the water entering the cylindrical basin, the flow fields of the water flow inside the basin in the range of 0-90 degrees of the inlet channel twist angle were numerically simulated using the ANSYS Fluent software. As a result of the study, the parameters of the influence of the flow velocity vector on the flow field were studied.</p>
<p>Paper ID 2355</p>	<p>N Martynova^{1*}, V Balabanov¹, I Khudayev², L Zhuravleva¹, and B Norov² ¹<i>Russian State Agricultural University - MSHA named after K.A. Timiryazev, 127550 Moscow, Russian Federation</i> ²<i>“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, 100000 Tashkent, Uzbekistan</i></p> <p>Title of presentation: Determination of the dependence of the humidification circuit parameters during drip irrigation on the properties of irrigation water Abstract: To ensure the optimal water-air balance of the plant, agro-reclamation measures are required, including the organization of irrigation. The advantage of drip irrigation is the most rational consumption of irrigation water. To realize this advantage, it is necessary to calculate the irrigation rate taking into account the dynamics of moisture distribution in the soil. During irrigation, the humidification circuit takes on a semi-elliptical shape. To determine the geometrical parameters of the humidification circuit, one should take into account the physical and mechanical properties of the soil and irrigation water, the mineralization of which varies widely. Having identified the numerical dependences and the nature of the distribution of moisture in the soil and having calculated the parameters of the irrigation circuit, it is necessary to determine the flow rate per dripper and subsequently calculate the irrigation rate, taking into account all of the above factors. The proposed method for calculating the irrigation contour will make it possible to rationally use water for irrigation, minimizing losses due to filtration into deep soil layers. Optimizing the water regime of plants during the growing season will not only save water and energy resources, but also maintain an optimal water and air regime, which will increase the yield and improve the quality of grown products.</p>
<p>Paper ID 1010</p>	<p>A Denmukhammadiev^{1*}, A Pardaev¹, F Kucharov¹, and A Isaev¹ ¹<i>“Tashkent Institute of Irrigation and Agricultural Mechanization Engineers” National Research University, Kory Niyoziy str., 39, 100000, Tashkent, Uzbekistan</i></p> <p>Title of presentation: Study on the process automatization of wetting (moistening) the seeds using a step motor Abstract: Researcher G. Urishev was the first to deal with the issues of mechanization of the process of moistening cotton seeds in the Republic of Uzbekistan. He also developed many devices and mechanisms and proposed methods for conducting experiments on moistening pubescent cotton seeds. However, his works did not address the issues of automation of laboratory facilities. And also G. Urishev used chemicals for seed treatment, which is harmful to humans and the environment. The creation of an environmentally friendly technology for pre-sowing disinfection of cotton seeds is an urgent task for cotton growing. Research in this field of science has led to the use of electrical energy as the most harmless and cheap means. Along with researchers studying electrical technology in the Republic of Uzbekistan, under the guidance of Professor A. Mukhammadiev, research work has been carried out since 1985: to develop a non-chemical technology for growing cotton using a spark discharge current, an alternating electric current of industrial frequency. In this article, the possibilities of automating the process of lifting and lowering a laboratory test mechanism for studying the friction of dry and moist cotton seeds proposed by G. Urishev with the help of a stepper motor were studied in order to automate the process of laboratory experiments. We also obtained equations for finding the resulting force.</p>



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Paper ID 8674	<p style="text-align: center;">A Gapparov¹ and M Isakova¹</p> <p style="text-align: center;"><i>¹Tashkent institute of irrigation and agricultural mechanization engineers, Tashkent city, 39, Qori Niyaziy str., 100000, Republic of Uzbekistan</i></p> <p>Title of presentation: Study on the characteristics of water resources through electrical conductivity: A case study of Uzbekistan</p> <p>Abstract: This article presents an analysis of the characteristics of water based on the electrical conductivity of samples taken from some water sources in the Tashkent region of our republic. By directly measuring the electrical conductivity of water, it is possible to make several conclusions about the presence of inorganic impurities. The conductivity of pure water is extremely low. For example, 18⁰C (at room temperature) is equal to 0.04*10⁻⁶ OM⁻¹ cm⁻¹. The reason for thinking about this is that among the methods used to determine the quality and physical-chemical parameters of water, electrical Conductivity-based methods are extremely sensitive and accurate. Water with high conductivity indicates impurity (rich in various ions).</p>
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15 October 2021 at 10:00 a.m. (Tashkent, Uzbekistan, GMT+5)

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