



# **10<sup>th</sup> International Conference on Thermal Equipment, Renewable Energy and Rural Development**

**TE-RE-RD 2021**

**ORGANIZERS:**

**University "POLITEHNICA" of Bucharest**  
Faculty of Mechanical Engineering and Mechatronics  
Faculty of Biotechnical Systems Engineering

**National Institute Of Research – Development For Machines And  
Installations Designed To Agriculture And Food Industry – INMA**

**Romanian Agricultural Mechanical Engineers Society – SIMAR**

Bucharest – Romania  
10 June - 11 June 2021

# Conference Programme

**Thursday, June 10**

10.00-11.00

**REGISTRATION OF PARTICIPANTS - Microsoft TEAMS (invitation to authors)**

**OPENING CEREMONY**

11.00-12.00

**Welcome speeches:**

**Lucian MIHAESCU, Chairman TE-RE-RD 2021**

**Gigel PARASCHIV, Secretary of State, Ministry of Education**

**Mihnea COSTOIU, Rector, U.P.B.**

**Tudor PRISECARU, President of the Senate, U.P.B.**

**Mariana Florentina ȘTEFĂNESCU, Dean F.M.E.M. , U.P.B.**

**Sorin Ștefan BIRIȘ, Dean F.B.S.E. , U.P.B.**

**Valentin VLĂDUȚ, CEO I.N.M.A.**

**PLENARY SESSION**

12.00-13.30

<b>Presentation No.</b>	<b>Title</b>	<b>Authors</b>	<b>Start hour</b>
1	Experimental researches on poultry manure combustion in co-combustion with biomass	Gheorghe Lăzăroiu, Lucian Mihăescu, Gabriel Paul Negreanu, Ionel Pișă, Elena Pop, Rodica Manuela Grigoriu, Dana-Alexandra Ciupageanu	12.00
2	Cost analysis at different energy sources for heating of an air-supported dome for indoor tennis	Ventsislav Gavrilov, Nina Penkova, Penka Zlateva and Boian Mladenov	12.30
3	Strength analysis and modal analysis for the load-bearing structure of the equipment for opening and compartmentalizing watering furrows, using 1D	Petru Cardei, Raluca Sfiru, Marius Oprescu, Vergil Muraru, Cornelia Muraru	13.00

**09.30-10.00**  
**Registration of participants**

**Thermal Equipment**

10.00-12.00

**Chairmen:**

*Iliya Iliev and Razvan Carlanescu*

**Thermal Equipment Room**

Presentation No.	Title	Authors	Start hour
1	Researches on increasing the dissolved oxygen concentration in stationary waters	Marilena Monica Boltinescu (Roza), Nicolae Vlad Sima, Dorina Nicoleta Albu, Mihaela Petroşel (Bănică) and Mihaela Constantin	10:00
2	Numerical investigation on combustion and NOx emissions of a CH <sub>4</sub> / kerosene afterburner	Andreea Cristina Mangra and Ene Barbu	10:20
3	Numerical modelling of heat convection processes in the ducts of two-stage heat exchanger	Zhivko Kolev, Seher Kadirova	10.40
4	Improving the lifetime of an electro-compressor for autoclave with optimized buffer tank	Iulian Vlăducă, Claudia Irina Borzea, Carmen Gheorghita Petre, Romeo Dorin Hriţcu, Raluca Lucia Maier, Vicenţiu Liviu Ringheanu, and Ramona Manuela Stanciuc	11.00
5	Using CFD to improve the performance of a heat exchanger from a gasifier	Edmond Maican, Liliana Dumitrescu, Ioan Pavel, Cătălin Dumitrescu, Iuliana Găgeanu and Andrei Pătruţ	11.20

**Renewable Energy**

10.00-12.00

**Chairmen:**

*Mihai Gabriel Matache and Iuliana Gageanu*

**Renewable Energy Room**

Presentation No.	Title	Authors	Start hour
1	Revaluation of bamboo as biomass	Nicoleta Alexandra Vanghele, Andreea Matache, Dumitru Bogdan Mihalache and Mariana Mădălina Stanciu	10:00
2	Valorization on the energy potential of Pistia stratiotes in sustainable agriculture-review	Andreea Matache; Petre Ancuta-Alexandra; Nicoleta Vanghele; Stanciu Mariana Madalina; Mihalache Bogdan Dumitru and Matache Mihai	10:20
3	Investigation of the thermodynamic and thermal properties of clary sage (Salvia sclarea L.) essential oil and its main components	Stanislava Tasheva, Vanya Gandova, Vanya Prodanova-Stefanova, Krasimira Marinova, Milen Dimov, Krasimira Dobрева, Albena Stoyanova	10.40
4	Investigation of the thermodynamic and physicochemical properties of lavender oil (Lavandula angustifolia Mill.)-ethanol-water system	Vanya Gandova, Stanislava Tasheva, Vanya Prodanova-Stefanova, Krasimira Dobрева, Ivayla Dincheva, Albena Stoyanova	11.00
5	Performance of cylindrical solar still with hemispherical cover: CFD simulation study	Qahtan A Abed, Dhafer M Hachim, and Wisam A Abd Al-Wahid	11.20

**Rural Development**

10.00-12.00

**Chairmen:***Valentin Vlăduț and Nicoleta Ungureanu***Rural Development Room**

Presentation No.	Title	Authors	Start hour
1	Desorption capacity of raw energy bars with fruits of <i>Zizyphus jujuba</i> Mill. - Bulgaria	Albena Durakova, Adelina Vasileva, Tzvetana Gogova, Milena Temelkova and Romyana Krasteva	10:00
2	Sorption characteristics of ready-made mixtures containing oatflakes, apples, and cinnamon	Albena Durakova, Adelina Vasileva and Kornelia Choroleeva	10:20
3	An experimental investigation of working with ordinary and electromagnetic nozzles	Dimitar Kehayov, Atanas Atanasov and Dan Cujbescu	10.40
4	Integrating Green Tourism and Bioenergy for Sustainable Rural Development: The Example of the Hemp Cluster in Sumy Region in Ukraine	Hanna Shevchenko	11.00
5	Developing efficient practices for producing bioethanol from sweet sorghum, evaluating several varieties of the plant and growing environments	Florin Nenciu, Valentin Vladut, Gabriel Nae, Diana Valentina Popa and Oana Emilia Constantin	11.20
6	Research regarding the common problems of design of the bunkers – A review	Ancuta Petre, Nicoleta Alexandra Vanghele, Andreea Matache; Mariana Madalina Stanciu, Bogdan Dumitru Mihalache and Dragos Nicolae Dumitru	11.40

**Miscellaneous**

10.00-12.00

**Chairmen:***Mariana Panaitescu and Daniela-Elena Gogoșe-Nistoran***Miscellaneous Room**

Presentation No.	Title	Authors	Start hour
1	Designing and dimensioning of a new type of pump that can be used in the field of land reclamation	Mariana Mirela Stoican (Prisecaru) and Nicolae Băran	10:00
2	Research on Exhaust Gas Cleaning System (EGCS) used in shipping industry for reducing SO <sub>x</sub> emissions	Mihail-Vlad Vasilescu, Dumitru Dinu, Mariana Panaitescu and Fanel-Viorel Panaitescu	10:20
3	Models to estimate river temperature. Example for Danube, at Oltenița in the context of climate change and anthropic impact	Daniela-Elena Gogoșe-Nistoran, Cristina Sorana Ionescu and Ioana Opreș	10.40
4	A method to analyse urban heatwaves. Case study - Bucharest City (Romania)	Daniela-Elena Gogoșe-Nistoran, Daniel-Marian Antohe, Ioana Opreș and Cristina Sorana Ionescu	11.00
5	Theoretical and experimental researches on the implementation of smart location	Mariana Panaitescu, Fanel-Viorel Panaitescu, Marius-Valentin Dumitrescu and Valeriu-Nicolaie Panaitescu	11.20

**Thermal Equipment**

12.00-14.00

**Chairmen:***Ionel Pișă and Horatiu Pop***Thermal Equipment Room**

Presentation No.	Title	Authors	Start hour
1	The effects of split direct injection on the operation of a tractor diesel engine fueled by biodiesel B20	Andrei Laurentiu Niculae, Adnan Kadhim Rashid and Radu Chiriac	12:00
2	Experimental COP evaluation of a 65-litre household refrigerator running with R600a	Saleh J. Alqaisy,, Kamel S. Hmood, Mahdi Hatf Kadhum Aboaltabooq, Valentin Apostol, Horatiu Pop, Jamal Al Douri and Viorel Badescu	12:20
3	Review regarding defrosting methods for refrigeration and heat pump systems	Jamal Al Douri, Kamel S. Hmood, Valentin Apostol, Horatiu Pop, Saleh J. Alqaisy, Tudor Prisecaru and Elena Beatrice Ibrea	12.40
4	The Heat Transfer Performance of MWCNT, CuO, and Al <sub>2</sub> O <sub>3</sub> Nanofluids in an Automotive Engine Radiator	Karaar Mahdi Al-Araji, Dhafer Manea Hachim, M A Almoussawi	13.00
5	The comparison of thermal comfort test results in selected traditional and modern buildings	Natalia Krawczyk, Justyna Krakowiak	13.20
6	Analytical model for estimating the production and composition of gas resulted through gasification	Lucian Mihăescu, Ionel Pișă, Iulia Simion and Gabriel Negreanu	13.40

**Renewable Energy**

12.00-14.00

**Chairmen:***Mircea Scripcariu and Elena Pop***Renewable Energy Room**

Presentation No.	Title	Authors	Start hour
1	Energy efficiency in the building materials industry. Case study: Brick manufacturing in Romania	Cristian Gheorghiu, Mircea Scripcariu, Miruna Gheorghiu and Alexandra Gabriela Dobrica	12:00
2	Improving energy performance of a Cement Manufacturing factory by using Waste Heat Recovery Systems, Estimated vs. Actual achievements	Mircea Scripcariu, Cristian Gheorghiu, Miruna Gheorghiu, Alexandra Gabriela Dobrica	12:20
3	Archimedean screw as fish-friendly turbines for harnessing hydropower potential	Cristian Purece and Lilica Corlan	12.40
4	A study of the transient processes in the physical model of the electric power systems with predominant part of the renewable energy sources	Ivaylo Nedelchev, Hristo Zhivomirov and Yoncho Kamenov	13.00
5	A theoretical study on the mass input and output and energy of the biomedical waste incinerator	Sari Jaber, Alaa Aldin Aljawad, Tudor Prisecaru, Elena Pop, Ionel Pișă, Horatiu Pop	13.20
6	The environmental situation of the ash medical waste in Baghdad city, Iraq	Sari Jaber, Alaa Aldin Aljawad, Tudor Prisecaru, Elena Pop, Ionel Pișă and Horațiu Pop	13.40

**Rural Development**

12.00-14.00

**Chairmen:***Sorin-Stefan Biris and Iulian Voicea***Rural Development Room**

<b>Presentation No.</b>	<b>Title</b>	<b>Authors</b>	<b>Start hour</b>
1	Identifying new criteria for assessing the impact on the ecosystem generated by the establishment of Jerusalem artichoke crops on difficult and floodable soils	Florin Nenciu, Gabriel Nae, Gabriela Milian, Iulian Dumitru, Matei Gheorghe and Simona Isticioaia	12:00
2	Biological water treatment in a recirculating aquaculture system	Laza Evelin, Ioan Ladislau Caba, Olan Mihai and Valentin Vladut	12:20
3	Technology for biohumus production, an alternative to conventional fertilizers for bio agriculture	Laza Evelin, Oana Cristea and Nicoleta Ungureanu	12.40
4	Kinematics of the seedling plant with vertical distributor and buckets	Paul Mitrache, Radu Ciuperca and Ioan Saracin	13.00
5	Analysis of the resistance frame of the equipment for opening and compartmentalizing watering furrows, using 3D finite elements	Petru Cardei, Marius Oprescu, Nicolae Constantin, Sorin Biriş and Sebastian Muraru	13.20
6	Selective, weighted morphological research, by dividing the equipment for biocompost production by submorphologies	Olan Mihai, Anișoara Păun, Paul Găgeanu, Nicoleta Ungureanu, George Bunduchi and Alexandru Zaica	13.40

**Miscellaneous**

12.00-14.00

**Chairmen:***Carmen Anca Safta and Gheorghe Voicu***Miscellaneous Room**

<b>Presentation No.</b>	<b>Title</b>	<b>Authors</b>	<b>Start hour</b>
1	Dimensional characteristics of grist intermediate products obtained in the first two technological passages in the reduction phase of an industrial milling plant	Gabriel-Alexandru Constantin, Gheorghe Voicu, Elena-Madalina Stefan, Mariana Gabriela Munteanu, Gabriel Musuroi and Iulian Voicea	12:00
2	Installation of submarine cables and pipes in shallow waters and connecting them to the shore by the method of horizontal directional drilling	Valeriu-Florian Vasilescu and Dumitru Dinu	12:20
3	Technologies used for food preservation using microwaves	Elena Sorică, Cristian Marian Sorică, Mario Cristea and Iulia Andreea Grigore	12.40
4	Aspects regarding the use of ultrasounds in the food industry	Cristian Marian Sorică, Marian Vintilă, Laurentiu Vlăduțoiu, Elena Sorică, Iulia Andreea Grigore and Mario Cristea	13.00
5	Pneumatic Actuator Controlled by Proportional Valve. Experimental results	Valentin Nicolae Cococi, Constantin Călinoiu, and Carmen-Anca Safta	13.20

**Renewable Energy**

14.00-16.00

**Chairmen:***Angel Terziev and Gabriel Negreanu***Renewable Energy Room**

<b>Presentation No.</b>	<b>Title</b>	<b>Authors</b>	<b>Start hour</b>
1	Renewable energy as an integral part of the Bulgarian energy mix	Todorka Stankova, Daniela Toneva	14:00
2	Improving the efficiency of crystalline silicon solar cell through regulating their temperature using thin films of polyvinyl alcohol	Ali Kadhim Naser, Dhafer Manea.Hachim and Qahtan A Abed	14:20
3	Defining of criteria for flue gas decarbonization efficiency in methanation reactors with membrane technology	Gheorghe Lăzăroiu, Lucian Mihăescu, Dana-Alexandra Ciupăgeanu, Rodica-Manuela Grigoriu, DanaAndreya Bondrea	14.40
4	Evaluation of the influence of the windbreak trees on the change of wind shear in weakly complex terrains	Angel Terziev, Yancho Panteleev, Iliya Iliev and Hristo Beloev	15.00
5	Study of regime parameters of the fermenter in the production of biogas from animal liquid waste materials	Penka Zlateva, Angel Terziev, and Krastin Yordanov	15.20

**Rural Development**

14.00-16.00

**Chairmen:***Mihai Matache and Edmond Maican***Rural Development Room**

<b>Presentation No.</b>	<b>Title</b>	<b>Authors</b>	<b>Start hour</b>
1	Pollutants resulting from intensive poultry farming activities and their impact on the environment	Roxana Mitroi, Oana Stoian, Cristina Ileana Covaliu and Dragoș Manea	14:00
2	Experimental research on obtaining pelletized feed recipes with applicability in semi-intensive aquaculture systems	Iulian Florin Voicea, Corina Ioana Moga, Sorin Biriș, Gabriel Constantin, Sorin Boruz and Mihai Matache	14:20
3	Photodegradable organic pollutants from wastewater	Oana Stoian, Cristina Ileana Covaliu, Gigel Paraschiv, Mihai Nita-Lazar and Ioana-Corina Moga	14.40
4	Estimation of the stress state of agricultural harrows with vertical axis rotor, using mathematical models with finite elements	Valentin Cornel Iordache and Ion Saracin	15.00
5	Considerations on the importance of the main chemical properties of the soil in agrochemical studies	Sebastian Muraru, Vergil Muraru Paula Condruz, Cornelia Muraru, and Sfiru Raluca	15.20
6	Experimental research for obtaining functional ingredients from Jerusalem artichoke and hemp seeds	Iuliana Gageanu, Cătălin Persu, Gabriel Gheorghe, Diana Popa and Liliana Dumitrescu	15.40

**Miscellaneous**

14.00-16.00

**Chairmen:***Ionut Cristian Scurtu and Cristian-Gabriel Alionte***Miscellaneous Room**

<b>Presentation No.</b>	<b>Title</b>	<b>Authors</b>	<b>Start hour</b>
1	Electronic system for control of temperature of exhaust gases and pressure in turbochargers of diesel automobile engines	Seher Kadirova, Stiliyan Okishelov, Zhivko Kolev	14:00
2	Developing a comprehensive GIS tool to evaluate representative parameters regarding life comfort	Cristian-Gabriel Alionte, Dana Rizescu and Ciprian Ion Rizescu	14:20
3	Considerations regarding the anti-icing system for the ship propulsion plant with gas turbine	George Iulian Balan, Octavian Narcis Volintiru, Ionut Cristian Scurtu, Florin Ioniță, Mirela Letitia Vasile and Claudia Borzea	14.40
4	Numerical and analytical study of seismic response of structural systems with new formulation using energy and impact methods	Mehdi Babaei, Somayeh Mollaei, Amin Moslemi Petrudi, Maysam Jalilkhani and Ionut Cristian Scurtu	15.00

**Rural Development**

16.00-18.00

**Chairmen:***Iulian Dutu and Iuliana Gageanu***Rural Development Room**

<b>Presentation No.</b>	<b>Title</b>	<b>Authors</b>	<b>Start hour</b>
1	Determination of qualitative working indices of harrows with elastic fangs	Dan Cujbescu, Matei Gheorghe, Dimitar Kehayov and Atanas Atanasov	16:00
2	Experimental research of equipment for burying in the ground the drip irrigation lines	Dragos Manea, Eugen Marin, Gabriel Gheorghe, Cătălin Persu and Roxana Mitroi	16:20
3	Studies and research on the tribological behavior of the braking systems of vehicles. Review	Andreea-Catalina Cristescu, Ilie Filip, George Ipate, Gheorghe Voicu and Vasilica Stefan	16.40
4	Advanced method of managing soil conservation works in Smart Farms	Eugen Marin, Marinela Mateescu and Carmen Bălțatu	16.00
5	Storage of grains and technical plants through active ventilation for the purpose of maintaining the quality of stored products	Anișoara Păun, Gheorghe Stroescu, Alexandru Zaica, Samir Yasbeck Khozamy, Ana Zaica, Vasilica Ștefan, Carmen Bălțatu and Oana Cristea	16.20
6	Precision sowing of vegetable seeds using electrically operated distribution devices	Adriana Muscalu, Cătălina Tudora, Laurențiu Vlăduțoiu, Constantin Vlad and Angela Dorogan	16:40