

ALTERNATIVE ENERGY SOURCES, MATERIALS AND TECHNOLOGIES (AESMT'21)

14 - 15 June, 2021, Ruse, Bulgaria

[HOME](#) [Organizing Committee](#) [Main Topics](#) [How to apply](#) [Publication](#) [Instructions to Authors](#) [Accommodation & Location](#) [Program Contact](#)

FINAL PROGRAM

[FinalProgramAESMT'21.pdf](#)

[Poster_session_1'21](#)

[Poster_session_2'21](#)

MONDAY (June 14, 2021):

1. Opening: 9:00 - 9:30 h

2. Plenary session: 9:30 - 13:00 h; (Chair: Aleksandar Georgiev)

9:30 - 10:00 h; *Daniela Dzhonova-Atanasova (Sofia, Bulgaria)*: Investigation of transfer processes in integrated membrane bioreactor.

10:00 - 10:30 h; *Juan Ramón Morante (Barcelona, Spain)*: Decarbonization and electrification for the energy transition of our society.

10:30 - 11:00 h; *André Thess (Stuttgart, Germany)*. Carnot Batteries for large scale electricity storage.

11:00 - 11:30 h; *Soteris Kalogirou (Limassol, Cyprus)*: Renewable Energy Systems: Current Status and Prospects.

11:30 - 12:00 h; *Jingyu Cao (Changsha, China)*: Jingyu Cao, Jinqing Peng, Yimo Luo, Mingke Hu, Qiliang Wang, Gang Pei. Energy, economy and environment

TUESDAY (June 15, 2021):

1. Morning session 1: 9:00 - 11:00 h; Energy Efficiency

9:00 - 9:20 h; *Xing-ni Chen (Hefei, China)*: Xing Xie, Xing-ni Chen, Bin Xu, Gang Pei. Investigation of occupied/unoccupied period on thermal comfort in Guangzhou: Challenges and opportunities of public buildings with high window-wall ratio.

9:20 - 9:40 h; *Mingyuan Shi (Kunming, China)*: M. Y. Shi, L. Ming, Y. Zhang, J. Li, M. Gao, Z. H. Deng, R. Liu, G. S. Lu. Flow field analysis and structure optimization of heat pump drying oven.

9:40 - 10:00 h; *Gansong Lu (Kunming, China)*: G. S. Lu, L. Ming, Y. Zhang, L. Zhao, G. L. Li, C. Z. Hu. Research on Characteristics of Direct Contact Heat Exchange Refrigeration System Under Different Energy Storage.

10:00 - 10:20 h; *Svenja Birkelbach (Istanbul, Turkey)*: Svenja Birkelbach, S. Bilir Mahcicek. Thermal Behaviour Simulation and Analysis of Adaptive Facades.

10:20 - 10:40 h; *S. Zerbib (Ariel, Israel)*: S. Zerbib, G. Golan. Flow measurements using enthalpy sensing.

evaluation of an integrated air conditioning heat recovery system.

12:00 - 12:30 h; Yerzhan Belyayev (Almaty, Kazakhstan): A. Toleukhanov, Ye. Belyayev, T. Amanzholov, A. Seitov, A. Aliuly, Ye. Yerdesh, M. Mohanraj, R. M. Singh. Thermal performance calculation of solar assisted ground source heat pump.

12:30 - 13:00 h; Christos N. Markides (London, United Kingdom): A review of hybrid solar technologies and systems.

3. Poster session 1: 13:00 - 14:30 h;

David Bondartsev (Almaty, Kazakhstan): A. A. Genbach, H. I. Beloev, D. Yu. Bondartsev, N. A. Genbach. Boiling Crisis in the Porous Structures of Power Plants.

David Bondartsev (Almaty, Kazakhstan): A. A. Genbach, H. I. Beloev, D. Yu. Bondartsev, N. A. Genbach. Porous cooling system for power plants.

Svetlana Beryozkina (Egaila, Kuwait): N. Khasanzoda, J. B. Rahimov, J. S. Ahyoev, M. Kh. Safaraliev, I. Zicmane, S. Beryozkina. Optimization of Wind Unit's Operation in Isolated Power Systems Under Smart Grid Concept.

Inga Zicmane (Riga, Latvia): N. Khasanzoda, Sh. M. Sultonov, A. K. Kirgizov, I. Zicmane, S. Beryozkina, M. Kh. Safaraliev. Fuzzy Models for Management and Evaluation of Power Wind Systems on the Basis of Probability Characteristics.

Sherkhon Sultonov (Dushanbe, Tajikistan): V. Z. Manusov, A. K. Kirgizov, M. Kh. Safaraliev, I. Zicmane, S. Beryozkina, Sh. M. Sultonov. Stochastic model of forecasting electric power generation of a solar photoelectric panel.

Danijela Nikolic (Kragujevac, Serbia): D. Nikolic, A. Radojevic, J. Skerlic, A. Miskovic, R. Tamašauskas, J. Šadauskiene. Influence of different parameters of solar systems on building exergy optimization.

Bo Cao (Beijing, China): Weijie Cui, Bo Cao, Yixue Chen. Source Term Estimation of Nuclear Accident Based on BP Neural Network and Deep Neural Network.

10:40 - 11:00 h; Nada Milutinovic (Beograd, Serbia): N. S. Milutinovic, N. R. Rudonja, M. D. Gojak, G. S. Živkovic. Thermodynamic analysis of a hybrid ORC power plant – Serbian case.

2. Short break: 11:00 - 11:30 h;

3. Morning session 2: 11:30 - 13:30 h; Low-Carbon Technologies, Wind Energy, Biotechnologies

11:30 - 11:50 h; Tianxiang Hu (Hefei, China): Tianxiang Hu, Trevor Hocksun Kwan, Gang Pei. An All-day Cooling System that Combines Solar Absorption Chiller and Radiative Cooling.

11:50 - 12:10 h; Chengfeng Xu (Hefei, China): Chengfeng Xu, Xianze Ao, Bin Zhao, Gang Pei. A novel selective emissivity spectrum for radiative sky cooling.

12:10 - 12:30 h; Peteris Lesnicenoks Dolgun (Riga, Latvia): A. Mezulis, P. Lesnicenoks, J. Kleperis, I. Dimanta. Prospects of building an efficient refueling infrastructure for alternative fuels in Latvia.

12:30 - 12:50 h; Biao Li (Harbin, China): B. Li, V. S. Olawoore, Y. Liu, Y. F. Guo, Y. Shuai, W. H. Cai. Numerical Investigation of Synthetic Jet Actuator Assisted Flow Control Over a 5MW Horizontal Axis Wind Turbine.

12:50 - 13:10 h; Pandora Gkeka-Serpetsidaki (Chania, Greece): P. T. Gkeka-Serpetsidaki, S. Papadopoulos, T. Tsoutsos. Assessment of visual impact of offshore wind farms.

13:10 - 13:30 h; Ance Plavniece (Riga, Latvia): Ance Plavniece, Aleksandrs Volperts, Galina Dobele, Aivars Zhurinsh, Ivar Kruusenberg, Katlin Kaare, Kaspars Kaprans, Ingars Lukosevics, Janis Kleperis. Activated Biochar Pre and Post N-doping for energy applications.

4. Poster session 2: 13:30 - 15:00 h;

Xiaoqiao Huang (Kunming, China): Xiaoqiao Huang, Yonghang Tai, Junsheng Shi. Prediction of hourly photovoltaic power based on conditional generative adversarial network and Bi-LSTM.

Iliia Iliev (Ruse, Bulgaria): I. K. Iliev, H.I.Beloev, A. K. Terziev, A. G. Georgiev. Innovative waste

Traian Severin (Suceava, Romania): C. Duluceanu, T. L. Severin, D. A. Cerlinca, L. Irimescu. Dual-phase steels with low manganese content. Structures and mechanical properties.

Petar Gerginov (Sofia, Bulgaria): P. Gerginov, N. Stoyanov, S. Valtchev, A. Benderev. Heat potential of the Upper Jurassic-Lower Cretaceous aquifer in Central Northern Bulgaria: conditions and prospective use.

Bistra Kunovska (Sofia, Bulgaria): N. Chobanova, B. Kunovska, D. Djunakova, J. Djounova, A. Angelova, Z. Stojanovska, K. Ivanova. The problem with indoor radon and solution in the use of geothermal water.

Tao Zhang (Shanghai, China): Tao Zhang, Zhiwei Yan, Jingyong Cai. Structural Optimization of a Low-Temperature Heat Pump Sludge Drying System.

Bianfeng Yang (Kunming, China): Bianfeng Yang, Xu Ji, Cong Wang. Experimental study on two-stage evaporative cooling air conditioning system with inner cooling desiccant bed.

Cong Wang (Kunming, China): Cong Wang, Xu Ji, Bianfeng Yang, Jiangyang Han, Delong Yang. Characteristics of carbon based composite desiccant and application for solid dehumidification systems.

Lazaros Aresti (Limassol, Cyprus): L. Aresti, A. Skaliontas, G. Florides, P. Christodoulides. Environmental Impact of a Ground Source Heat Pump system in a Mediterranean residential building – a Preliminary Assessment.

Georg Brunauer (Salzburg, Austria): M. Kramer, M. Leeb, L. Eitzinger-Lange, A. Meindl, G. C. Brunauer. Investigations into the viability of utilizing locally produced green hydrogen for seasonal energy storage for alpine heavy-duty vehicles – Simulation based on Austrian communities.

Olga Vorobyova (Almaty, Kazakhstan): I. Berezovskaya, Sa. Bolegenova, O. Vorobyova, M. Ryspayeva, Sy. Bolegenova, Ye. Shotaeva, Z. Begaly. Numerical study of heat and mass transfer processes in the internal combustion chamber by method of computer simulation.

method for flue gas heat recovery in coal-fired thermal power plants.

Dias Umyshev (Almaty, Kazakhstan): A. M. Dostiyarov, Zh.S. Duissenbek, H. I. Beloiev, I. K. Iliev, D.R. Umyshev. Experimental investigation of combustion process of LPG behind triangle bluff bodies.

M. S. Kucherbayev (Pavlodar, Kazakhstan): H. I. Beloiev, A. S. Nikiforov, I. K. Iliev, E. V. Prihodko, M. S. Kucherbayev. Modeling the thermal operation of a petroleum coke-calcining unit.

Angel Terziev (Sofia, Bulgaria): A. K. Terziev, H. I. Beloiev, I. K. Iliev, G. Pichurov. Study of the influence of the wind belt on the wind shear distribution over the flat terrain.

Aida Tagaibek (Almaty, Kazakhstan): A.S. Askarova, S. A. Bolegenova, A. O. Nugymanova, A. S. Tagaibek. Influence of thermochemical activation of fuel on the combustion process in furnace chambers of thermal power plants.

Lin Fu (Beijing, China): Lin Fu, Tairan Fu, Kai Chen. Synthesis and Thermal properties of Silica Aerogel Composites Reinforced with Various Fibers.

Mingke Hu (Nottingham, UK): Mingke Hu, Bin Zhao, Suhendri, Jingyu Cao, Qiliang Wang, Saffa Riffat, Yuehong Su, Gang Pei. Effect of Vacuum Structure on Radiative Sky Cooling Performance.

Zijing SUN (Shanghai, China): Zijing SUN, Qunzhi ZHU. Simulation and assessment of heating system integrated PV powered heat pump for air-condition and thermal energy storage.

Yan Hu (Shanghai, China): Yan HU, Qunzhi ZHU. Design of electric heating phase change thermal storage device and numerical simulation research on heat transfer characteristics.

Shijie XU (Shanghai, China): Shijie XU, Qunzhi ZHU. Design, verification and feasibility numerical study of a non-tracking concentrator with lens.

Jixuan Feng (Shanghai, China): Jixuan FENG, Qunzhi ZHU. Research on improving the heat dissipation of monocrystalline silicon solar cells based on radiant cooling.

Kenan Saka (Bursa, Turkey): Kenan Saka, Mehmet F. Orhan, Huseyin Kahraman. Analysis of Stack Operating Conditions for a Polymer Electrolyte Membrane (PEM) Fuel Cell.

Zaure Bakyt (Almaty, Kazakhstan): A. S. Askarova, Yu. Maximov, S. A. Bolegenova, S. A. Bolegenova, M. T. Beketayeva, Z. A. Bakyt. The method of improving the environmental situation by modelling of pollutants in combustion systems of the Republic of Kazakhstan.

Peteris Lesnicenoks (Riga, Latvia): P. Lesnicenoks, J. Kleperis, A. Knoks, L. Jekabsons, O. Bogdanova. Electrocatalytic CO₂ conversion to Hydrocarbons – renewables for industry.

Paul Borza (Brashov, Romania): P. N. Borza, M. Machedon, S. Vlase, F. Hamza-Lup. Electric hybrid storage systems and their applications.

Zaiguo Fu (Shanghai, China): Zaiguo Fu, Yang Li, Qunzhi Zhu. Assessment on the applicability of solar-assisted heating system with electric thermal storage in different geographical areas of China.

Jin Lu (Shanghai, China): Zaiguo Fu, Jin Lu, Jiang Liu, Zhuoxiong Zeng, Weiguo Pan. Numerical investigation of the characteristics of hydrogen addition combustion in a counter flow combustor for a micro gas turbine.

Qi Li (Kunming, China): Q. Li, Y. G. Zhang, X. Ding, Y. H. Tai. Experimental investigation on the operating parameters of a solar storage tank.

Qi Li (Kunming, China): Q. Li, X. Ding, Y. G. Zhang, T. Liu, W. F. Gao, W. X. Lin. Effect of vertical buoyant jet in a thermally stratified solar water tank.

Xiaoqiao Huang (Kunming, China): Xiaoqiao Huang, Yonghang Tai, Junsheng Shi. Prediction of hourly electricity consumption for a University Campus based on LSTM.

4. Afternoon session 1: 14:30 - 16:30 h;
Solar and Hybrid Thermal Systems

14:30 - 14:50 h; Nadezhda Vasileva (Plovdiv, Bulgaria): A. G. Georgiev, R. K. Popov, N. D. Vassileva. Use of TRNSYS for Numerical Modelling and simulation of hybrid ground-source heat pump system with solar collectors.

Yunlan Li (Jinzhong, China): Sun Yan, Miao Lanlan, Yunlan Li. Comparative study of the extracting polysaccharides from Traditional Chinese Medicine Astragalus Radix in the field of new biological cellulase-assisted enzymes technology.

Zhangwei Feng (Beijing, China): Zhangwei Feng, Chengyun Xin, Tuo Zhou, Jianmei Zhang, Tairan Fu. Investigation of air-side thermal and hydraulic performances of integrally-formed spiral fin-and-tube heat exchangers.

Luis Bayón (Gijón, Spain): C. Bayón-Cueli, A. Barbón, L. Bayón, A. Fernández-Conde. Influence of terrain slope on the performance of single-axis trackers.

Hans Schwarz (Erlangen, Germany): D. Bertermann, N. Jovic, M. Rammler, H. Schwarz, J. Wagner. Mapping of Very Shallow Geothermal Potentials in Rural Areas: a Case Study of Bavaria (Germany).

Yousef N. Dabwan (Hefei, China): Yousef N. Dabwan, Gang Pei. Boosting intercooled gas turbine in hot regions using a novel inlet air cooling system.

Zhandos Baizhuma (Almaty, Kazakhstan): Zh. E. Baizhuma, R. K. Manatbayev, A. K. Yershina, A. G. Georgiev, A. Zhumabayev. Performance evaluation of the ?-shaped Vertical Axis Wind Turbine using commercial software.

Xing Xie (Hefei, China): Xing Xie, Yu-qian Zhao, Fei Xia, Bin Xu*, Yang-liang Wang, Gang Pei. Parametric study on indoor thermal comfort with a radiant wall heating system.

Freidoon Zibaei (Shahrekord, Iran): Freidoon Zibaei. Climate Change Analysis and Global Warming Coping Strategies.

David Bondartsev (Almaty, Kazakhstan): A. A. Genbach, H. I. Beloiev, D. Yu. Bondartsev, A.G. Georgiev. Research of porous cooling system for flame-jet burners.

Yang Qi (Jinzhong, China): Y. Qi, M. J. Zhang, Y. L. Li. Stronger antioxidant and hepatoprotective components generated from Rubiaceae Hedyotis diffusa with biotinidase in the field of new biological energy technology.

5. Afternoon session 1: 15:00 - 17:00 h; Energy Materials Science

14:50 - 15:10 h; Daniel Cotfas (Brasov, Romania): D. T. Cotfas, S. Mahmoudinezhad, P. A. Cotfas. Critical Parameters in Hybrid Photovoltaic-Thermoelectric Systems; A Review.

15:10 - 15:30 h; Gülsah Karaca Dolgun (Mugla, Turkey): B. Kiloglu, G. Karaca Dolgun, O. V. Güler, A. Keçebas, Aleksandar Georgiev. Thermodynamic performance of a heat pump based concentrating parabolic trough photovoltaic thermal system for a micro CHP.

15:30 - 15:50 h; Gülsah Karaca Dolgun (Mugla, Turkey): V. Incili, G. Karaca Dolgun, A. G. Georgiev, A. Keçebas, N. S. Çetin. Performance evaluation of a hybrid micro-CHP integrated PV-Stirling engine for local heating system.

15:50 - 16:10 h; Michele Bottarelli (Ferrara, Italy): Michele Bottarelli, Silvia Cesari, Giuseppe Emmi. Role of phase change materials in backfilling of shallow ground heat exchangers.

16:10 - 16:30 h; Zhaomeng Li (Hull, United Kingdom): Zhaomeng Li, Jie Ji, Jing Li, Xudong Zhao, Zhiying Song, Xin Wen. Experimental study on a novel loop-heat-pipe PV/T system using concentric copper tubes as the condenser.

5. Short break: 16:30 - 17:00;

6. Afternoon session 2: 17:00 - 19:00; Phase Change Materials (PCM) Applications, Solar Photovoltaic Systems, Geothermal Energy Applications.

17:00 - 17:20 h; Xing Xie (Hefei, China): Bin Xu, Xing Xie, Xing-ni Chen. Implicit method for solving building heat transfer model and its application in energy-saving materials.

17:20 - 17:40 h; Silvia Cesari (Ferrara, Italy): Silvia Cesari, Giuseppe Emmi, Michele Bottarelli. An experimental data-driven control strategy for PCM integrated radiant floor systems.

17:40 - 18:00 h; Gady Golan (Ariel, Israel): Gady Golan, Gilad Orr. Recycling of rejected silicon wafers and dies for high grade and efficient solar cells.

15:00 - 15:20 h; Jie Liu (Hefei, China): Jie Liu, Xianze Ao, Kegui Lu, Bin Zhao, Gang Pei. Scalable Polymer-based Film for Continuous Sub-ambient Radiative Cooling.

15:20 - 15:40 h; Bachirou Guene Lougou (Harbin, China): Bachirou Guene Lougou, Yong Shuai, Jiupeng Zhao. (Mn, Mg) oxide redox cycles-based high-temperature thermochemical energy storage.

15:40 - 16:00 h; Azeem Mustafa (Harbin, China): Azeem Mustafa, Yong Shuai, Bachirou Guene Lougou, Samia Razzaq. Modelling the electrochemical conversion of CO₂ to CO in a microfluidic cell.

16:00 - 16:20 h; Bulbul Ongar (Almaty, Kazakhstan): R. A. Umirzakov, Bulbul Ongar, A. G. Georgiev. The choice of drying devices is based on a comprehensive analysis of the properties of wet materials studied as drying objects.

16:20 - 16:40 h; Jhony Flores-Lasluisa (Alicante, Spain): J. X. Flores-Lasluisa, F. Huerta, D. Cazorla-Amorós, E. Morallón. Manganese oxides/LaMnO₃ perovskite materials and their application in the oxygen reduction reaction.

16:40 - 17:00 h; G. Orr (Ariel, Israel): G. Orr, M. Azoulay, G. Golan. Crystalline quality in aluminium single crystals, bulk and surface, characterized by X-Ray diffraction and Rocking-Curve analysis.

6. Short break: 17:00 - 17:30;

7. Afternoon session 2: 17:30 - 18:50 h; Energy Efficiency

17:30 - 17:50 h; Luis Lopez (Valparaiso, Chile): L. Lopez, A. Giusti, E. Gutheil, H. Olguin. A comparison of the total heat release and soot formation rates of ethanol and n-butanol flames in a counterflow configuration.

17:50 - 18:10 h; Mihailo Milanovic (Beograd, Serbia): M. Komatina, M. Milanovic, N. Manic. Thermomechanical aspects of juice industry residues.

18:10 - 18:30 h; Liviu Costiuc (Brashov, Romania): Liviu Costiuc, Iuliana Costiuc. Dynamic modelling of the condenser type heat-exchanger.

18:30 - 18:50 h; M. Ghafourizadeh (Ilam, Iran): M. Ghafourizadeh, N. Nasrolahi. Design and energy

18:00 - 18:20 h; Musa Yilmaz (Batman, Turkey): R. Çelikel, M. Yilmaz, A. Gündogdu. New MPPT Method for PV Power Systems Under Partial Shading Conditions.

optimization for building in Tehran province climate.

18:20 - 18:40 h; Hossein Javadi (Valencia, Spain): Hossein Javadi, Javier Fermín Urchueguía Schölzel, Borja Badenes, Ali Nejad Ghafar, Lenin Guillermo Lemus Zúñiga, Miguel Ángel Mateo Pla, Ojas Arun Chaudhari. Innovative research methodology of borehole heat exchangers incorporating advanced materials for use as thermal energy storage (BTES).

18:40 - 19:00 h; Eloisa Di Sipio (Padova, Italy): A. Galgaro, A. Carrera, E. Di Sipio, G. Dalla Santa, A. Ramos Escudero, J. M. Cuevas, R. Pasquali, B. Sanner, A. Bernardi. European and municipal scale drillability maps: a tool to identify the most suitable methods to install Borehole Heat Exchange (BHE) probes.

For more *Info* contact us

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