

Day 1: October 18, 2021, Monday

9⁰⁰-9³⁰ Opening Ceremony

Welcome messages and greetings to participants of CAMPE-2021:

*General Conference Chair - Andrii **Kostikov**, A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine*

*Holm **Altenbach**, Otto-von-Guericke Magdeburg University, Magdeburg, Germany*

*Alexander **Cheng**, University of Mississippi, Brevard, USA*

*Xiao-Wei **Gao**, Dalian University of Technology, Dalian, China*

*Mykhaylo **Lototsky**, Tshwane University of Technology, South Africa*

*Viktor **Popov**, Ascend Technologies Ltd, Wessex House, Hampshire, UK*

9³⁰-11¹⁰ Session 1 Ecology

Chair: Andrii Kostikov, A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine

9³⁰-9⁵⁰ *Victor Solovey and Andrii Rusanov. Integrated Energy Technologies when Using Natural Gas in Utility Heat Power Engineering*

A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine

9⁵⁰-10¹⁰ *Alexander Litvinenko, Evgenii Shtefan and Bohdan Pashchenko. Environmental safety of heat and power enterprises*

National University of Food Technologies, Ukraine

Igor Sikorsky Kyiv Polytechnic Institute, Ukraine

10¹⁰-10³⁰ *Oleksii Goryk, Stanislav Koval'chuk, Oleksandr Brykun and Sergii Aksonov. Assessment of quality criteria of shot blasting cleaning of the inner surfaces of chemically resistant containers*

Poltava State Agrarian University, Ukraine

10³⁰-10⁵⁰ *Leonard Vasiliev, Alexander Zhuravlyov, Leonid Grakovich, Mikhail Rabetsky and Valery Aliakhnovich.* Systems of Providing Thermal Modes of Electric Vehicles Batteries

Luikov Heat and Mass Transfer Institute of the NAS of Belarus, Belarus

10⁵⁰-11¹⁰ *Ruksana Begam Shaik and Loveswararao Burthi.* Implementation of ANF-RBC control in EVs

Koneru Lakshmaiah University, India

11¹⁰-11⁴⁰ Coffee-break

11⁴⁰-13⁰⁰ Session 2 Fluid Mechanics

*Chair: Svitlana Alyokhina, A. Pidhornyi Institute of Mechanical Engineering
Problems of the NAS of Ukraine*

11⁴⁰-12⁰⁰ *Neelam Choundhary, Denys Kriutchenko, Elena Strelnikova and Olga Usatova.* Influence of Compressibility in Fluid - Structure Interaction Problems for Fluid-Filled Reservoirs

Bennet University, India

A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine

12⁰⁰-12²⁰ *Vitaly Gnesin*, *Yuri Bykov, Lyubov Kolodyazhnaya, Viacheslav Donchenko and Oleksii Petrov.* Modeling of aeroelastic instability of fan blades

12²⁰-12⁴⁰ *Oleg Khoryev, Pavlo Korotaiev, Yevgen Agibalov, Yuri Bykov and Kyrylo Maksymenko-Sheiko.* Experimental studies of pump-turbine flow part models at heads of 80-120 m

A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine

SE Ivchenko-Progress, Ukraine

12⁴⁰-13⁰⁰ *Aleksandr Shubenko, Mikola Babak, Oleksandr Senetskyi, Volodymyr Sarapin and Yana Forkun.* Turboexpander unit use for efficiency increase of gas compressor station

A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine

O.M. Beketov National University of Urban Economy in Kharkiv, Ukraine
MIRAI INTEX s.r.o., Czechia

13⁰⁰-14⁰⁰ Lunch

14⁰⁰-15⁴⁰ Session 3 Energy Saving Technologies

*Chair: Svitlana Alyokhina, A. Pidhornyi Institute of Mechanical Engineering
Problems of the NAS of Ukraine*

14⁰⁰-14²⁰ *Yaroslav Ivanytskyi, Oksana Hembara, Olha Chepil, Mykola Hvozdyuk and Myhailo Hrynenko. Disbonding of austenitic stainless steel cladding following high-temperature hydrogen service in hydro processing applications*
Karpenko Physico-Mechanical Institute of the NAS of Ukraine, Ukraine
University of Science and Technology, Poland

14²⁰-14⁴⁰ *Oleg Kravchenko, Vitalii Homan, Iryna Suvorova and Igor Baranov. Using pneumo-hydrovortex nozzles for effective combustion of liquid boiler fuels*
A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine

14⁴⁰-15⁰⁰ *Dmytro Redchyts, Svitlana Moiseienko, Yevhenii Shkvar, Uliana Tuchyna and Andrii Zinchenko. Aerodynamics of Vertical-Axis Wind Turbines with Darrieus and Savonius Rotors*
Institute of Transport Systems and Technologies of the NAS of Ukraine, Ukraine
Kherson National Technical University, Ukraine
Zhejiang Normal University, China

15⁰⁰-15²⁰ *Olga Chernousenko, Vitalii Peshko and Dmitro Rindyuk. The System for Planning Cost-efficient and Resource-saving Operating Modes of TPP*
Igor Sikorsky Kyiv Polytechnic Institute, Ukraine

15²⁰-15⁴⁰ *Sergiy Plankovskyy, Olga Shypul, Yevgen Tsegelnyk, Sergiy Zaklinskyy and Olga Borysova. Numerical Simulations of Mixture Formation to Ensuring the Quality of Thermal Deburring*
O. M. Beketov National University of Urban Economy in Kharkiv, Ukraine
National Aerospace University "Kharkiv Aviation Institute", Ukraine
Progresstech Ukraine LLC, Ukraine

15⁴⁰-16¹⁰ Coffee-break

16¹⁰-17³⁰ Session 4 Energy Saving Technologies

*Chair: Svitlana Alyokhina, A. Pidhornyi Institute of Mechanical Engineering
Problems of the NAS of Ukraine*

16¹⁰-16³⁰ *Svitlana Romaniuk, Tamara Skoblo, Efim Belkin, Igor Garkusha and Anton Taran. Structure and wear-resistance of hardened thin-blade knives with PVD coating*

Kharkiv Petro Vasilenko National Technical University of Agriculture, Ukraine
Institute of Plasma Physics, Ukraine

16³⁰-16⁵⁰ *Tamara Skoblo, Oksana Klochko, Efim Belkin, Oleg Trishevskij and Evgeniya Deryabkina. Modeling of Degradation Processes of Cast Iron Carbide Phase of Mill Rolls at Operation*

Kharkiv Petro Vasilenko National Technical University of Agriculture, Ukraine

16⁵⁰-17¹⁰ *Andrei Kolesnikov, Mykhaylo Lototskyy and Ziphezinhle Simelane. Application of Artificial Neural Network (ANN) for Calculations of Pressure–Concentration–Temperature (PCT) Diagrams in Hydrogen – Metal Hydride Systems*

Tshwane University of Technology, South Africa

17¹⁰-17³⁰ *Lyubomir Ivaskevich, Alexander Balitskii, Iuliia Kvasnitska, Kateryna Kvasnitska and Heorhii Myalnitsa. Thermal Stability, Cyclic Durability and Hydrogen Resistance of Cast Nickel-cobalt Alloys for Gas Turbine Blades*

Karpenko Physico-Mechanical Institute of the NAS of Ukraine, Ukraine
Physico-Technological Institute of Metals and Alloys of the NAS of Ukraine, Ukraine

“Zorya–Mashproekt” Scientific and Production Complex of Gas-Turbine Building, Ukraine

Day 2: October 19, 2021, Tuesday

9³⁰-11¹⁰ Session 5 Energy Saving Technologies. Heat Transfer in Power Engineering

Chair: Svitlana Alyokhina, A. Pidhornyi Institute of Mechanical Engineering

9³⁰-9⁵⁰ *Valerii Kolesnikov, Aleksander Balitskii, Ljubomyr Ivaskevich, Maria Havrylyuk and Karol Franciszek Abramek.* Rotor shafts steels properties changes after long-term operation in hydrogen-containing environment

Karpenko Physico-Mechanical Institute of the NAS of Ukraine, Ukraine
West Pomeranian University of Technology, Poland

9⁵⁰-10¹⁰ *Abderahmane Mechter, Manal Messadi, Karim Kemih, Nadia Machkour and Malek Ghanes.* Flatness-Based Control of a Wind Turbine for Low Wind Speeds with Fuzzy Controller MPPT

Jijel University, Algeria

University HASSAN II, Morocco

Ecole Centrale of Nantes, Laboratory of Digital Sciences of Nantes (LS2N), France

10¹⁰-10³⁰ *Oleksii Maksymov, Maksym Maksymov and Svitlana Alyokhina.* Method of the Abstract Models Usage in Engineering Calculations

Jako Velike Stvari d.o.o. (Very Big Things LLC), Croatia

Odessa Polytechnic State University, Ukraine

A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine

10³⁰-10⁵⁰ *Victoria Tarasova, Andrii Kostikov and Mikhail Kuznetsov.* Thermodynamic Analysis and Optimization of the Cycle of a CHP Plant Power Unit Operating with Ultra-Supercritical Steam Parameters

A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine

10⁵⁰-11¹⁰ *Andrii Rusanov, Roman Rusanov and Marina Chugay.* The flow part of reactive type HPC of T-100 series steam turbine development based on the use of modern computer technologies

A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine

11¹⁰-11⁴⁰ Coffee-break

11⁴⁰-13²⁰ Session 6 Dynamics and Strength of Power Equipment

*Chair: Kyrylo Maksymenko-Sheiko, A. Pidhornyi Institute of Mechanical
Engineering Problems of the NAS of Ukraine*

11⁴⁰-12⁰⁰ *Athanasios Mamalis, Igor Nevliudov and Yurii Romashov. Researching of the Dynamics of Electromechanical Wheeled Robots with Installed Accelerometers*

Project Center of Nanotechnology and Advanced Engineering NCSR "Demokritos", Greece

Kharkiv National University of Radio Electronics, Ukraine

12⁰⁰-12²⁰ *Andrii Kondratiev, Lina Smovziuk, Maryna Shevtsova, Anton Tsaritsynskyi and Tetyana Nabokina. Strength Reduction of Composite Plates with Delamination*

O.M. Beketov National University of Urban Economy in Kharkiv, Ukraine

National Aerospace University "Kharkiv Aviation Institute", Ukraine

12²⁰-12⁴⁰ *Svitlana Moiseienko, Uliana Tuchyna, Dmytro Redchyts, Volodymyr Zaika and Inna Vygodner. Comparative Analysis of Numerical Methods for Solving Linear Equation Systems for Equations of Elliptic Type*

Kherson National Technical University, Ukraine

Institute of Transport Systems and Technologies of the NAS of Ukraine, Ukraine

12⁴⁰-13⁰⁰ *Stanislav Koval'chuk, Oleksii Goryk and Anatolii Antonets. Exact Analytical Solution of the Pure Bending Problem of a Multilayer Wedge-Shaped Console*

Poltava State Agrarian University, Ukraine

13⁰⁰-13²⁰ *Viktor Subotin, Valeria Sobol, Lesya Skuratovska and Serhii Palkov. Elastic Stress-Strain State of the Cast Internal Casing of the K-330-23.5 Turbine for Supercritical Steam Parameters*

Joint-Stock Company «Ukrainian Energy Machines», Ukraine

13²⁰-14⁰⁰ Lunch

14⁰⁰-15⁴⁰ Session 7 Dynamics and Strength of Power Equipment

*Chair: Natalia Smetankina, A. Pidhornyi Institute of Mechanical Engineering
Problems of the NAS of Ukraine*

14⁰⁰-14²⁰ *Lidiya Kurpa and Tetyana Shmatko*. Application of the R-functions method and shell theory of the higher-order to study free vibration of functionally graded shallow shells

National Polytechnic University” KhPI”, Ukraine

14²⁰-14⁴⁰ *Artemii Bernatskyi, Pavlo Goncharov, Mykola Sokolovskyi, Olha Goncharova and Taras Nabok*. Spot Welded Joints of Steels Produced by Electric Arc and Laser Welding in Different Spatial Positions

E. O. Paton Electric Welding Institute of the NAS of Ukraine, Ukraine

14⁴⁰-15⁰⁰ *Oleksandr Dveirin, Anton Tsaritsynskyi, Tetyana Nabokina and Andrii Kondratiev*. Determination of Composite’s Bearing Strength in the Area of Circular Hole of Fastening Element

ANTONOV COMPANY, Ukraine

National Aerospace University “Kharkiv Aviation Institute”, Ukraine

O.M. Beketov National University of Urban Economy in Kharkiv, Ukraine

15⁰⁰-15²⁰ *Ihor Palkov, Mykola Shulzhenko, Kostiantyn Avramov and Ivan Breslavsky*. Elastoplastic thermo-mechanical stressed state of turbine blades locking joints

Joint-Stock Company «Ukrainian Energy Machines», Ukraine

A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine

McGill University, Montreal, Quebec, Canada

15²⁰-15⁴⁰ *Anton Tkachuk and Mykola Tkachuk*. Weighted eigenvalue counts on intervals for spectrum optimization

Karlstad University, Sweden

National Technical University "Kharkiv Polytechnical Insitute", Ukraine

15⁴⁰-16¹⁰ Coffee-break

16¹⁰-17³⁰ Session 8 Dynamics and Strength of Power Equipment

*Chair: Natalia Smetankina, A. Pidhornyi Institute of Mechanical Engineering
Problems of the NAS of Ukraine*

16¹⁰-16³⁰ *Alexey Milenin, Elena Velikoivanenko, Galina Rozyinka and Nina Pivtorak*. Multi-scale finite-element model for numerical prediction of subcritical damage and limit state of fiber-reinforced composites and structures
E.O. Paton Electric Welding Institute of the NAS of Ukraine, Ukraine

16³⁰-16⁵⁰ *Oleksiy Kachan, Dmytro Pavlenko and Sergiy Ulanov*. Relaxation of the Technological Residual Stresses during the Thermal Exposure in Titanium Samples
National University "Zaporizhzhia Polytechnic", Ukraine

16⁵⁰-17¹⁰ *Tatiana Romanova, Andrii Chugai, Georgiy Yaskov, Igor Litvinchev and Yurii Stoian*. Irregular packing for additive manufacturing
A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine
Nuevo Leon State University, Mexico

17¹⁰-17³⁰ *Francisco Monticeli, Maria Odila Cioffi and Herman Voorwald*. Porosity measurement in CFRP composite through optical microscopy using ImageJ software
São Paulo State University, Brazil

Day 3: October 20, 2021, Wednesday

9³⁰-11¹⁰ Session 9 Dynamics and Strength of Power Equipment

*Chair: Olena Strelnikova, A. Pidhornyi Institute of Mechanical Engineering
Problems of the NAS of Ukraine*

9³⁰-9⁵⁰ *Elena Kobilskaya, Viktor Lyashenko, Tetiana Hryhorova, Olga Demyanchenko and Michail D. Todorov*. Special functions in heat transfer problems
Kremenchuk Mykhailo Ostrohradskyi National University, Ukraine
Azov maritime institute of National university "Odessa maritime academy",
Ukraine
Technical University of Sofia, Bulgaria

9⁵⁰-10¹⁰ *Anatoliy Dzyuba, Petr Dzyuba and Ramiz Aziz ogly Iskenderov.* Experimental research of the influence of the rectangular hole size on the critical force of stability loss of cylindrical shells under transverse bending
Oles Honchar Dnipro National University, Ukraine
Azerbaijan University of Architecture and Construction, Azerbaijan

10¹⁰-10³⁰ *Vasyl Gnitko, Oleksandr Martynenko, Ivan Vierushkin, Yehor Kononenko and Kyrylo Degtyarev.* Coupled Finite and Boundary Element Methods in Fluid-Structure Interaction Problems for Power Machine Units
A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine
University of Stuttgart, Germany

10³⁰-10⁵⁰ *Kyrylo Krasnikov.* Mathematical model of additive mixing during RH process using elliptic cylindrical coordinates
Dniprovskiyi state technical university, Ukraine

10⁵⁰-11¹⁰ *Sergey Ugrimov, Natalia Smetankina, Oleg Kravchenko, Vladimir Yareshchenko and Leopold Kruszka.* A Study of the Dynamic Response of Materials and Multilayer Structures to Shock Loads
A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine
Military University of Technology, Poland

11¹⁰-11⁴⁰ Coffee-break

11⁴⁰-13²⁰ Session 10 Dynamics and Strength of Power Equipment

*Chair: Olena Strelnikova, A. Pidhornyi Institute of Mechanical Engineering
Problems of the NAS of Ukraine*

11⁴⁰-12⁰⁰ *Vitaly Miroshnikov.* Rotation of the layer with the cylindrical pipe around the rigid cylinder
National Aerospace University “Kharkiv Aviation Institute”, Ukraine

12⁰⁰-12²⁰ *Borys Zaitsev, Tetiana Protasova, Natalia Smetankina, Dmytro Klymenko and Dmytro Akimov.* Reduction of Dynamic Stresses and Overloads Using Dampers in the Rocket Fairing Separation System

A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine
Yuzhnoye State Design Office, Ukraine

12²⁰-12⁴⁰ *Pavlo Gontarovskiy, Nataliia Garmash and Iryna Melezhyk*. Numerical Modeling of Dynamic Processes of Elastic-Plastic Deformation of Axisymmetric Structures

A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine

12⁴⁰-13⁰⁰ *Xiao-Wei Gao*. Cross-Lines Method for Solving Heat Conduction Problems

Dalian University of Technology, China

13⁰⁰-13²⁰ *Viktor Subotin, Serhii Palkov and Ihor Palkov*. Improving the Methods for Assessing the Seismic Resistance of Power Plant Equipment in a Three-Dimensional Setting Using FEM

Joint-Stock Company «Ukrainian Energy Machines», Ukraine

13²⁰-14⁰⁰ Lunch

14⁰⁰-14⁴⁰ Session 11 Dynamics and Strength of Power Equipment

Chair: Olena Strelnikova, A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine

14⁰⁰-14²⁰ *Chitaranjan Pany*. Vibration Analysis of Curved Panels and Shell Using Approximate Methods and Determination of Optimum Periodic Angle

Vikram Sarabhai Space Centre, India

14²⁰-14⁴⁰ *Holm Altenbach, Dmytro Breslavsky, Marina Chernobryvko, Alyona Senko and Oksana Tatarinova*. Fast fracture of conic shell under the action of belt explosive charge

Otto-von-Guericke-University Magdeburg, Germany

National Technical University “Kharkiv Polytechnic Institute”, Ukraine

A. Pidhornyi Institute of Mechanical Engineering Problems of the NAS of Ukraine, Ukraine

14⁴⁰-15⁰⁰ Closing Ceremony