



Silesian  
University  
of Technology  
RESEARCH  
UNIVERSITY  
GIGANTUM



ORGANISING COMMITTEE  
14<sup>th</sup> INTERNATIONAL CONFERENCE ON  
BOILER TECHNOLOGY ICBT. POLAND 2022  
Department of Power Engineering  
and Turbomachinery  
SILESIAN UNIVERSITY OF TECHNOLOGY  
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CO-ORGANIZERS



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## DETAILED PROGRAMME

### 14<sup>th</sup> INTERNATIONAL CONFERENCE ON BOILER TECHNOLOGY

### ICBT. POLAND 2022

**Poland, Szczyrk, Hotel Klimczok, October 25 – 28, 2022**

#### Monday October 24, 2022

- 17<sup>00</sup> - Opening of the Office and Reception of the 14th ICBT
- Arrivals and registration of participants traveling greater distances
- 18<sup>00</sup> - 23<sup>00</sup> - Dinner
- 18<sup>00</sup> - 24<sup>00</sup> - Installation of exhibitions and scientific and technical information

#### Tuesday October 25, 2022

- 8<sup>00</sup> - 10<sup>00</sup> - Registration of participants
- 8<sup>00</sup> - 9<sup>30</sup> - Breakfast

#### 10<sup>00</sup> OPENING CEREMONY OF 14<sup>th</sup> ICBT. POLAND 2022

Room A

- Welcoming speech: Chairman of Programme-Scientific Board  
Chairman of Organising Committee  
Director of the 14<sup>th</sup> ICBT. POLAND 2022
- Address by Vice Rector of the Silesian University of Technology
- Address by the Chairman of the Office for Technical Supervision

Prof. T. CHMIELNIAK, DSc, PhD, Eng.  
Prof. M. PRONOBIOS, DSc, PhD, Eng.  
Assoc. Prof. S. KALISZ, DSc, PhD, Eng.

Prof. J. KOTOWICZ, DSc, PhD, Eng.  
A. ZIÓŁKOWSKI, PhD, Eng.

#### HISTORICAL CEREMONIES

- 50<sup>th</sup> anniversary of the Institute of Power Engineering and Turbomachinery  
from the Silesian University of Technology

Prof. Sławomir DYKAS, DSc, PhD, Eng.  
Prof. A. RUSIN, DSc, PhD, Eng.

#### - Miles Energeticae Awards

- 11<sup>40</sup> – 12<sup>00</sup> - Break (coffee, tea, beverages, cookies)

#### I FORMAL PLENARY SESSION

Room A

Chairman: Prof. Marek PRONOBIOS, DSc, PhD, Eng.

- 12<sup>00</sup> – 12<sup>20</sup> - Tadeusz CHMIELNIAK  
*Technological structures of hydrogen energetics*
- 12<sup>20</sup> – 12<sup>40</sup> - Marek ĆMIEL  
*Rola Urzędu Dozoru Technicznego w zapewnieniu bezpieczeństwa w energetyce*
- 12<sup>40</sup> – 13<sup>00</sup> - Zbigniew BIS  
*Transformacja energetyki. A co w okresie przesiadkowym?*
- 13<sup>00</sup> – 13<sup>20</sup> - Alejandro PLANCHON, Flemming Skovgaard NIELSEN, Carsten SØGAARD, Atul SHARMA  
*Case studies on conversion of fossil fuel fired power plants to biomass for small scale industries and utility power stations*
- 13<sup>30</sup> – 14<sup>30</sup> - Lunch

Tuesday October 25, 2022

## II THEMATIC SESSION

Room A

Chairman:

- 15<sup>00</sup> – 15<sup>20</sup> - Marcin SZEGA  
*Problems of energy balancing of a CFB compact fluidized-bed boiler with flue gas recirculation*
- 15<sup>20</sup> – 15<sup>40</sup> - Łukasz RUTKOWSKI  
*Historical overview of the calculation methods for determining the furnace exit gas temperature*
- 15<sup>40</sup> – 16<sup>00</sup> - Katarzyna WĘGLARZ, Dawid TALER, Jan TALER, Wiesław ZIMA, Mateusz MARCINKOWSKI  
*Mathematical model of cross-counter-current live steam Superheater*
- 16<sup>00</sup> – 16<sup>20</sup> - Halina PAWLAK-KRUCZEK, Jakub MULARSKI, Michał OSTRYCHARCZYK, Michał CZEREP, Marcin BARANOWSKI, Tadeusz MĄCZKA, Krzysztof SADOWSKI, Patryk HULISZ  
*Application of plasma burners for high carbon content ash combustion in a PC boiler - experimental and numerical analysis*
- 16<sup>20</sup> – 16<sup>40</sup> - Tomasz SOBOTA, Dawid TALER, Mariusz GRANDA, Magdalena SZYMKIEWICZ  
*Numerical modelling and experimental testing of an air heater in a power boiler fired with various gas fuels*
- 16<sup>40</sup> – 17<sup>00</sup> - Break (coffee, tea, beverages, cookies)

## III THEMATIC SESSION

Room A

Chairman:

- 17<sup>00</sup> – 17<sup>20</sup> - Jan HANSEN-SCHMIDT  
*Dust start-up burner incl. plasma ignition source*
- 17<sup>20</sup> – 17<sup>40</sup> - Robert WEJKOWSKI, Marek PRONOBIS  
*Intensification of heat transfer in a tube bank combined with removal of ash deposits*
- 17<sup>40</sup> – 18<sup>00</sup> - Paweł MACHAŁ, Leszek REMIORZ, Dariusz BUKOWIEC  
*Comparative analysis of the results of forecasts of electricity supplied to the grid by prosumers*

## 18<sup>00</sup> – 19<sup>00</sup> SCIENTIFIC AND TECHNICAL INFORMATION SESSION. COMPANY PRESENTATION

Room A

Chairman:

- OMC Envag Sp. z o.o.
- Berkes Hispana SLU
- ESA Logistika, Hitachi Transport System
- Nomaten CoE Narodowe Centrum Badań Jądrowych

## 19<sup>30</sup> KNIGHTS' DINNER (outdoors)

Tuesday October 25, 2022

## IV THEMATIC SESSION

Room B

Chairman:

- 15<sup>00</sup> – 15<sup>20</sup> - Piotr MIEMCZYK  
*Possibility of conversion of the water grate boilers from coal fuel to biomass*
- 15<sup>20</sup> – 15<sup>40</sup> - Aleksandra WALEWSKA, Bartłomiej HERNIK  
*Concept design of the WRB-6 water-pipe boiler with a stepped grate and a furnace for burning straw bales in a cigar system*
- 15<sup>40</sup> – 16<sup>00</sup> - Ireneusz SŁOMA, Justyna SROCZYŃSKA  
*Modernizations of stoker-fired water boilers in the aspect of environmental protection*
- 16<sup>00</sup> – 16<sup>20</sup> - Dariusz KARDAŚ, Piotr KLONOWICZ, Sylwia POLESEK-KARCZEWSKA, Grzegorz ŻYWICA  
*Technical aspects of small-scale biomass-fueled gas turbine power unit with a focus on high-temperature air furnace*

- 16<sup>20</sup> – 16<sup>40</sup> - Łukasz RUTKOWSKI  
*Heat calculation of furnace chambers of gas and grate boilers - verification of calculation methods based on measurement data of actual boilers*
- 16<sup>40</sup> – 17<sup>00</sup> - Break (coffee, tea, beverages, cookies)

## V THEMATIC SESSION

Room B

Chairman:

- 17<sup>00</sup> – 17<sup>20</sup> - Paweł RĄCZKA  
*Possibilities to speed-up the start-up of the fuel preparation installation for a PC boiler*
- 17<sup>20</sup> – 17<sup>40</sup> - Sławomir ŚLUSZNIAK  
*Dekarbonizacja ciepłownictwa i energetyki poprzez zastosowanie wielopaliwowego spalania paliw odpadowych*
- 17<sup>40</sup> – 18<sup>00</sup> - Paweł KOZŁUB  
*Service-technology, modernization, upgrades, towards decarbonization*

Wednesday October 26, 2022

- 8<sup>00</sup> - 9<sup>00</sup> - Breakfast

## VI THEMATIC SESSION

Room A

Chairman:

- 9<sup>00</sup> – 9<sup>20</sup> - Marek PRONOBIOS  
*Potential for modernization of PC boilers to adapt them to contemporary ecological challenges*
- 9<sup>20</sup> – 9<sup>40</sup> - Mariusz TWARDAWA, Radosław KLON  
*Experience from the modernization of the 200 MWe unit implemented within the "power units 200+" project*
- 9<sup>40</sup> – 10<sup>00</sup> - Andrzej RUSIN, Wojciech KOSMAN, Martyna TOMALA, Grzegorz NOWAK, Henryk ŁUKOWICZ  
*Optimization of a steam turbine transient operation as a component that increases the flexibility of fossil fueled power generating units*
- 10<sup>00</sup> – 10<sup>20</sup> - Bartłomiej HERNIK, Piotr BRUDZIANA, Radosław KLON, Marek PRONOBIOS  
*Numerical research of the influence of flue gas recirculation to primary air on the formation of nitrogen oxides in the OP 650*
- 10<sup>20</sup> – 10<sup>40</sup> - Łukasz ŚLADEWSKI, Konrad ŚWIRSKI, Mariusz DAMASIEWICZ, Wojciech KRASA  
*The approach of optimization and advanced control of boiler in the 200+ Project*
- 10<sup>40</sup> – 11<sup>00</sup> - Martin BRODECK, Manfred DEUSTER, Krzysztof FILIPOWSKI, Ewa GANCARCZYK  
*Acoustic gas temperature measurement – an advanced online monitoring system for the diagnosis and improvement of the boiler operation and SNCR*
- 11<sup>00</sup> – 11<sup>20</sup> - Break (coffee, tea, beverages, cookies)

## VII THEMATIC SESSION

Room A

Chairman:

- 11<sup>20</sup> – 11<sup>40</sup> - Reshendren NAIDOO, Walter SCHMITZ, Norbert MODLIŃSKI  
*A multiscale computational approach to predicting adverse combustion behaviour on a 200 MWe coal fired boiler*
- 11<sup>40</sup> – 12<sup>00</sup> - Hanna PURZYŃSKA, Janusz DOBRZAŃSKI, Adam ZIELIŃSKI  
*Methodology and the method of assessing the condition and suitability for further use of the critical elements of the pressure part of the 200 MW power boilers*
- 12<sup>00</sup> – 12<sup>20</sup> - Mariusz NOWICKI  
*The analysis of the possibility to increase the biomass share in co-combustion in the OP650 energy boiler*
- 12<sup>20</sup> – 12<sup>40</sup> - Mariola KOBYLAŃSKA-PAWLISZ, Jerzy MAZUREK  
*Examples of BAT conclusions implementations related to flue gas treatment systems for large combustion plants (LCP) in 2017-2021*
- 12<sup>40</sup> – 13<sup>00</sup> - Natalia PAWELEC, Marek ANDRZEJCZYK, Janusz KOTOWICZ  
*The analysis of the operating parameters of the flue gas cleaning system*
- 13<sup>00</sup> – 13<sup>20</sup> - Piotr PŁAZA, Bernhard SCHOPFER, Abdou SUSO, Jörg MAIER, Thomas BRUNNE  
*Use of advanced engineering approach to predict slagging of central german lignites*
- 13<sup>30</sup> - 14<sup>30</sup> - Lunch

## VIII THEMATIC SESSION

Room A

Chairman:

- 15<sup>00</sup> – 15<sup>20</sup> - Zbigniew BULIŃSKI, Ireneusz SZCZYGIEŁ, Bartłomiej RUTCZYK, Tomasz KRYSIŃSKI, Paweł DOBBER, Błażej PRZYBYŁA, Kamil FREIER, Janusz PRZYBYŁA  
*Experimental and computational investigation of heat exchangers equipped with different supports*
- 15<sup>20</sup> – 15<sup>40</sup> - Wojciech NOWAK, Tadeusz UHL, Łukasz AMBROZIŃSKI, Mariusz GIERGIEL, Tadeusz STEPINSKI, Tomasz SZCZEKPOWICZ, Tomasz CHMIELNIAK  
*Erosion diagnostics in fluidized bed boilers*
- 15<sup>40</sup> – 16<sup>00</sup> - Stanisław ŁOPATA, Paweł OCŁOŃ  
*Flow-thermal-strength analysis of the working conditions of the heat exchanger with finned elliptical tubes*
- 16<sup>00</sup> – 16<sup>20</sup> - Mateusz MARCINKOWSKI, Dawid TALER, Jan TALER, Katarzyna WĘGLARZ  
*Nusselt numbers and friction factor determination of air-side finned heat exchangers - individual correlations for each row*
- 16<sup>20</sup> – 16<sup>40</sup> - Krzysztof ROSENBERGER, Krzysztof SOLANKO  
*Grate boiler technology for difficult biomass for southeast Asian market*
- 16<sup>40</sup> – 17<sup>00</sup> - Break (coffee, tea, beverages, cookies)
- 20<sup>00</sup> - **FORMAL MEETING OF CONFERENCE PARTICIPANTS**

Wednesday October 26, 2022

8<sup>00</sup> - 9<sup>00</sup> - Breakfast

## IX THEMATIC SESSION

Room B

Chairman:

- 9<sup>00</sup> – 9<sup>20</sup> - Adam ZIELIŃSKI, Hanna PURZYŃSKA  
*Service life of austenitic steels*
- 9<sup>20</sup> – 9<sup>40</sup> - Bohdan WĘGLOWSKI  
*Stress analysis of critical pressure components during shutdown of a power boiler*
- 9<sup>40</sup> – 10<sup>00</sup> - Norbert MODLIŃSKI, Tomasz JANDA  
*Mathematical procedure for predicting tube metal temperature in the radiant superheaters of a tangentially and front fired utility boilers*
- 10<sup>00</sup> – 10<sup>20</sup> - Roman GÓRECKI, Bartłomiej SIEDMIOGRODZKI  
*Online wear monitoring of pressure equipment*
- 10<sup>20</sup> – 10<sup>40</sup> - Łukasz FELKOWSKI, Bolesław BĄK  
*Steam boiler hanger rods tension distribution and its impact on boiler operation*
- 10<sup>40</sup> – 11<sup>00</sup> - Tomasz TURZYŃSKI, Dariusz KARDAŚ, Sylwia POLESEK-KARCZEWSKA, Izabela WARDACH-ŚWIĘCICKA, Łukasz HEDA, Jakub SZYMBORSKI, Paulina HERCEL  
*Design and tests of a high temperature air furnace for an externally fired gas turbine*
- 11<sup>00</sup> – 11<sup>20</sup> - Break (coffee, tea, beverages, cookies)

## X THEMATIC SESSION

Room B

Chairman:

- 11<sup>20</sup> – 11<sup>40</sup> - Mateusz TYMOSZUK, Janusz POSPOLITA, Artur MERCHANT  
*Optimization of limestone comminution process in a roller-bowl mill*
- 11<sup>40</sup> – 12<sup>00</sup> - Łukasz ZALEWSKI, Mateusz TYMOSZUK, Bartłomiej HERNIK  
*Flow research of the nozzle ring implemented in the selected coal mill at industrial scale – introduction to the CFD research*
- 12<sup>00</sup> – 12<sup>20</sup> - Jarosław HERCOG, Mirosław MALINOWSKI, Paweł SAŁEK, Czesław ANDRYJOWICZ, Andrzej DUKAT, Tomasz BORUTA, Maciej GRABOWSKI  
*On-line fan mill wear control system - as a tool to reduce manufacturing costs*
- 12<sup>20</sup> – 12<sup>40</sup> - Zdzisław BIELECKI, Jarosław DZIUBA, Dariusz CHOIŃSKI, Michał BIELECKI

**Formulation of system for catalyst insertion to boilers coal dust pipes**

- 12<sup>40</sup> – 13<sup>00</sup> - Dariusz CHOŃSKI, Andrzej MALCHER, Krzysztof DOBOSZ, Zdzisław BIELECKI, Jarosław DZIUBA  
*The control application of multi-phase flow units for catalyst dosing in Siekierki power and heating plant*
- 12<sup>40</sup> – 13<sup>00</sup> - Jerzy GOŁĄBEK, Jarosław SMYŁA  
*Electrostatics of pulverized coal particles flowing in the mixture with air*
- 13<sup>30</sup> - 14<sup>30</sup> - Lunch

**Thursday October 27, 2022**

8<sup>00</sup> - 9<sup>30</sup> - Breakfast

**XI THEMATIC SESSION**

**Room A**

Chairman:

- 9<sup>40</sup> – 10<sup>00</sup> - Robert VRANCKEN, Peter HULSHOF, Sebastian SCHIRBER, Karol JASIŃSKI, Yvo PUTTER, Kiana AFZALI  
*Optimization of a district heating network using a live digital twin – case study*
- 10<sup>00</sup> – 10<sup>20</sup> - Francesco MICCIO, Paola BRACHI, Giovanna RUOPPOLO, Massimo URCIUOLO  
*Mitigation of fouling and agglomeration in biomass fuelled boilers by means of calcium and kaolin additivation*
- 10<sup>20</sup> – 10<sup>40</sup> - Joanna WNOROWSKA, Piotr SAKIEWICZ, Krzysztof PIOTROWSKI, Mateusz LIS, Sylwester KALISZ, Mateusz TYMOSZUK, Jörg MAIER, Piotr PŁAZA  
*High-temperature reactions and phase transformations of nanostructural aluminosilicate fuel additives with potassium chloride in biomass combustion*
- 10<sup>40</sup> – 11<sup>00</sup> - Izabella MAJ, Sylwester KALISZ, Szymon CIUKAJ  
*Energy recovery and nutrients recycling from animal-origin waste*
- 11<sup>00</sup> – 11<sup>20</sup> - Krzysztof GŁÓD, Przemysław PAWŁOWSKI, Krzysztof SUPERNOK, Rafał FRYZA, Benjamin NOGA  
*Torrefaction as a way to increase waste energy potential*
- 11<sup>20</sup> – 11<sup>40</sup> - Break (coffee, tea, beverages, cookies)

**XII THEMATIC SESSION**

**Room A**

Chairman:

- 11<sup>40</sup> – 12<sup>00</sup> - Lukas PILAR, Karel BOROVEC  
*The research of alternative sorbents for mercury capture in flue gas after fossil and alternative fuels combustion*
- 12<sup>00</sup> – 12<sup>20</sup> - Joanna WNOROWSKA, Piotr SAKIEWICZ, Krzysztof PIOTROWSKI, Sylwester KALISZ  
*Heavy metals immobilization towards elimination of environmental barriers in re-using of ASR-derived ashes according to Circular Economy standards*
- 12<sup>20</sup> – 12<sup>40</sup> - Piotr SAKIEWICZ, Szczepan CIEŚLAK, Krzysztof PIOTROWSKI, Joanna WNOROWSKA, Sylwester KALISZ  
*Technological aspects of the qualified alternative fuel production from bulky waste - especially upholstered furniture*
- 12<sup>40</sup> – 13<sup>00</sup> - Tomasz HARDY, Krystian KROCHMALNY, Mateusz WNUKOWSKI, Michał CZEREPA, Marcin RUSIN  
*Thermal utilisation of wind turbine blades*
- 13<sup>00</sup> – 13<sup>20</sup> - Agata MLONKA-MĘDRALA, Wojciech KALAWA, Marcin SOWA, Aneta MAGDZIARZ, Karol SZTEKLER, Łukasz MIKA, Wojciech NOWAK  
*Zeolites derived from fly ash as potential adsorbents in sorption cooling devices*
- 13<sup>30</sup> - 14<sup>30</sup> - Lunch

**XIII THEMATIC SESSION**

**Room A**

Chairman:

- 15<sup>00</sup> – 15<sup>20</sup> - Jarosław HERCOG, Aleksandra KIEDRZYŃSKA, Mirosław MALINOWSKI, Paweł SAŁEK, Marzena GURGUL, Aleksandra MIKULSKA, Dariusz LENKIEWICZ, Paweł KOWALCZYK, Aleksy BARTOSZEWCZ, Jacek OGŁY, Jarosław LEDWOCH  
*Development of a method for precise determination of catalyst activity and digital-twin for prediction of deNOx catalyst deactivation*

15 <sup>20</sup> – 15 <sup>40</sup>	- Robert LEWTAK, Beata GLOT, Bartosz ŚWIĄTKOWSKI, Paweł KUDŁA <i>Experimental tests and numerical simulations to even out the flue gas and fly ash distribution in the flue channels of the BB-1345 boiler in the Pątnów II power plant</i>
15 <sup>40</sup> – 16 <sup>00</sup>	- Łukasz ZAJĄC <i>Dynamic and flexible operation of gas-fired boiler with a single-stage steam spray desuperheater</i>
16 <sup>00</sup> – 16 <sup>20</sup>	- Robert ZARZYCKI, Rafał KOBYŁECKI <i>Protection against erosion in CFB combustors by refractory modification - numerical analysis and practical implementation</i>
16 <sup>20</sup> – 16 <sup>40</sup>	- Break (coffee, tea, beverages, cookies)
16 <sup>40</sup> – 18 <sup>30</sup>	- SCIENTIFIC AND TECHNICAL INFORMATION SESSION. COMPANY PRESENTATION <u>Room A</u>
	Chairman:
	▪ GESTRA Polonia Sp. z o.o.
	▪ ARI – Armaturen Albert Richter GmbH & Co. KG
	▪ ECO TECHNOLOGIA Sp. z o.o.
	▪ IP&S Sp. z o.o.
	▪ ADK System Damian Kacmal Spółka Komandytowa
	▪ EBRO TRADE Sp. z o.o.
	▪ SAACKE Polska Sp. z o.o.
19 <sup>00</sup>	- Dinner

#### Thursday October 27, 2022

8 <sup>00</sup> - 9 <sup>30</sup>	- Breakfast	
	XIV THEMATIC SESSION	<u>Room B</u>
	Chairman:	
9 <sup>40</sup> – 10 <sup>00</sup>	- Maciej MAJEWSKI <i>Hydrogen quality testing</i>	
10 <sup>00</sup> – 10 <sup>20</sup>	- Kamila SZYKOWSKA, Janusz KOTOWICZ <i>Use of electrolytic hydrogen for the production of alternative fuels</i>	
10 <sup>20</sup> – 10 <sup>40</sup>	- Janusz KOTOWICZ, Mateusz BRZĘCZEK, Aleksandra WALEWSKA <i>Analysis of the process and purpose of renewable ammonia production using green hydrogen - use of ammonia in the energy industry</i>	
10 <sup>40</sup> – 11 <sup>00</sup>	- Katarzyna JANUSZ-SZYMAŃSKA, Grzegorz WICIAK, Leszek REMIORZ, Dominik HULAK <i>Thermal energy storage using solar pond technology</i>	
11 <sup>00</sup> – 11 <sup>20</sup>	- Rafał KOBYŁECKI, Robert ZARZYCKI, Zbigniew BIS <i>Biochar for modern and sustainable energy conversion purposes</i>	
11 <sup>20</sup> – 11 <sup>40</sup>	- Break (coffee, tea, beverages, cookies)	
	XV THEMATIC SESSION	<u>Room B</u>
	Chairman:	
11 <sup>40</sup> – 12 <sup>00</sup>	- Konrad KALINOWSKI <i>Thermovision and thermography in supporting combustion optimization</i>	
12 <sup>00</sup> – 12 <sup>20</sup>	- Marek PRONOBIS, Wacław WOJNAR <i>Reconstruction of a pulverized coal boiler into a boiler fired with a mixture of natural gas and ammonia</i>	
12 <sup>20</sup> – 12 <sup>40</sup>	- Robert WEJKOWSKI, Sylwester KALISZ, Przemysław GARBACZ, Izabella MAJ <i>SCR system and reduction of ammonia slip in grate boilers</i>	
12 <sup>40</sup> – 13 <sup>00</sup>	- Przemysław GARBACZ, Robert WEJKOWSKI, Marek PRONOBIS <i>Numerical analysis of SNCR corrosion risk in the pulverized fuel boiler</i>	
13 <sup>00</sup> – 13 <sup>20</sup>	- Piotr KRAWCZYK, Krzysztof BĄDYDA <i>Experiences from the implementation of SNCR technology on small power boilers</i>	
13 <sup>30</sup> - 14 <sup>30</sup>	- Lunch	

**Friday October 28, 2022**

8<sup>00</sup> - 9<sup>00</sup> - Breakfast

**XVI THEMATIC SESSION**

**Room A**

Chairman: Prof. Marek PRONOBIOS, DSc, PhD, Eng.

9<sup>00</sup> – 9<sup>20</sup> - Marek MAJDAK, Sławomir GRĄDZIEL, Wiesław ZIMA, Artur CEBULA, Monika RERAK, Ewa KOZAK-JAGIEŁA

*Numerical and experimental verification of thermal and flow conditions occurring in waterwall tubes connected by fins*

9<sup>20</sup> – 9<sup>40</sup> - Wiesław ZIMA, Sławomir GRĄDZIEL, Artur CEBULA, Monika RERAK, Ewa KOZAK-JAGIEŁA  
*Simulation of supercritical boiler evaporator operation under conditions of rapid power increase*

9<sup>40</sup> – 10<sup>00</sup> - Krzysztof SOLANKO, Krzysztof ROSENBERGER  
*Operating experience after the retrofit warranty period with biomass boiler 20 BB – Elbląg*

10<sup>00</sup> – 10<sup>20</sup> - Sylwester KALISZ, Robert WEJKOWSKI, Izabella MAJ, Przemysław GARBACZ  
*Full-scale investigation of high-temperature dry desulfurization process by means of sodium bicarbonate*

10<sup>20</sup> – 10<sup>40</sup> -

10<sup>40</sup> – 11<sup>00</sup> - Break (coffee, tea, beverages, cookies)

**11<sup>00</sup> – 12<sup>00</sup> - DISCUSSION PANEL**

**Room A**

*The future of the Polish energy sector in the face of economic and ecological challenges*

Chairman: Prof. Marek PRONOBIOS, DSc, PhD, Eng.  
 Assoc. Prof. S. KALISZ, DSc, PhD, Eng.

13<sup>00</sup> – 14<sup>00</sup> Lunch