



CERTIFICATE of ACHIEVEMENT

This acknowledges that

Ivan Ponomarenko

has participated in and successfully completed

***2nd International Winter School (in online form)
on CLEAN ENERGY & FUNCTIONAL MATERIALS (CenMAT)
Intelligent distributed generation***

***from 20 February 2023 to 24 February 2023 by the
Institute of Fluid-Flow Machinery Polish Academy of Sciences, Gdańsk, Poland***

08 Mar 2023

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date

Dyrektor

Trójmiejskiej Szkoły Doktorskiej PAN

.....
dr hab. inż. Magdalena Mieloszyk

profesor IMP PAN

signature of the organiser



Description of the learning outcomes:

Knowledge

The participant is able to develop better understanding of the following course:

- ✓ Thermal Energy Storage
- ✓ ORC systems and their application
- ✓ Pyrolysis oil combustion in gas turbines
- ✓ Modern technologies for combined heat and power production
- ✓ Thermoelectric materials and energy harvesting
- ✓ Measurements of fluid flow parameters and experimental data handling
- ✓ Basics of centrifugal compressor aerodynamic design for applications in distributed power generation
- ✓ Turbine flows
- ✓ Turbines for power generation
- ✓ Application of residues and by products from waste-to-energy processes – technical, agronomic and environmental aspects
- ✓ ORC cogeneration systems
- ✓ Injector and ejector

Skills

The participant:

- ✓ widens horizon and becomes more familiar in bigger scope of related study fields
- ✓ is motivated to plan career as early stage researcher
- ✓ prepares and designs effectively PhD researches
- ✓ is encouraged to prepare the research grant proposal to conduct research project plan
- ✓ is ready to select the suitable research scholarship program which is well-aligned with research goals and objectives
- ✓ searches for possibilities to undertake and solve research problems by linking some of course subjects learned during the School
- ✓ is able to get familiar with Polish history, geography and culture

Social competence

The participant:

- ✓ is eager to conduct further discussions in regard to research field/project
- ✓ is oriented towards networking and maintaining a solid cooperation in research activities
- ✓ is open to research collaboration with other students from different institutions
- ✓ cares to continue in exchanging ideas and transferring knowledge in scientific events
- ✓ promotes and/or disseminates information about Poland, particularly Gdansk