

PROJECTS RELATED TO WASTE HEAT CONVERSION AND INSTALLATION OF HYDROGEN TECHNOLOGY

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Horizon Europe Matchmaking Event
Energy Research

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Łukasiewicz Research Network - Institute for Sustainable Technologies in Radom, Poland



Established in 1986

Category A

Staff: ≈200

56 doctors, 18 associate professors,
4 professors (at Dec 2019)

300 national research
projects

5 strategic research and
investment programmes

30 prototypes a year

≈150 publications
a year

Implementation of ca. 300 innovative products and processes

Over 70 international research projects

Cooperation with international research centres (EU, e.g. Finland, Germany, France, Italy, Denmark; and Mexico, Israel, Chile)



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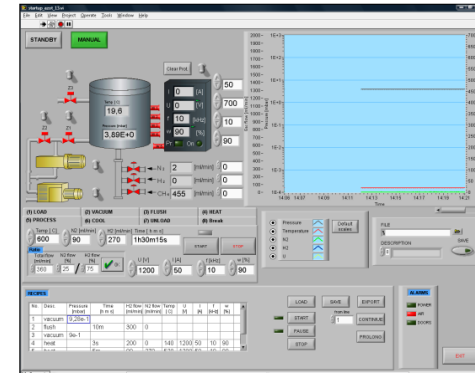
Advanced control systems for innovative research & technological devices



Chemical reactor for microwave hydrothermal synthesis of nanopowders



Device for sintering powders using the PPS pulse method (Pulse Plasma Sintering)



Plasma nitriding device with an active screen



Dedicated spot source power supplies



The electron beam deflection system operates with high power

Project #1 - A prototype system for continuous recovery of waste heat from the industrial installations

The purpose of the project:

- ▶ In order to management of waste heat from industrial installations and lost irretrievably by discharging to the environment the exchange the thermal energy of waste heat into useful electric energy with the use of thermogenerators is proposed.

Description of the project:

- 1) Obtaining the maximum value of the electric current power from the heat flux under the conditions of energy balance in the system.
- 2) Providing high-temperature heat energy to the hot side of the thermogenerator, taking into account the compensation of uneven temperature distribution on the surface of the waste heat source and maintaining the nominal operating temperature of the thermogenerator.
- 3) Conversion of DC output waveforms of thermogenerators into power grid parameters with the possibility of working in on-grid and off-grid systems and ensuring that the operating point is maintained at the maximum power of the thermogenerators.
- 4) Effective heat collection from the cold side of thermogenerators ensuring minimum energy consumption.
- 5) Integration of system elements in the form of a control system that monitors the condition and parameters of the system and enables cooperation with external systems.

Who are we looking for?

- ▶ companies from the heating, metallurgical and electric industries, specialized enterprises, scientific institutions

Project #2 - A system for closing the water cycle and storing hydrogen in a hydrogen power plant

The purpose of the project:

- ▶ The planned, tangible effects of the project are a prototype of a water preparation system for an electrolyzer producing hydrogen in hydrogen installations and a prototype of a laboratory installation for the production, storage, and conversion of hydrogen into electricity.

Description of the project:

- 1) Developing a water preparation system of appropriate quality intended to power the electrolyzer and the hydrogen storage system.
- 2) Developing a multi-stage water purification system.
- 3) The laboratory hydrogen installation will include following systems: receiving hydrogen from the electrolyzer, compressing hydrogen, storing hydrogen, generating electricity with the use of a fuel cell. The parameters of individual systems will be specified, taking into account the scalability of the solutions adopted.
- 4) Possibility of closing water circuits in energy hydrogen installations by using industrial wastewater.

Who are we looking for?

- ▶ specialized enterprises in hydrogen production and storage, scientific institutions

Contact details

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