**ENREGAT's research infrastructure has a track record of success. It is available to be used by other interested parties.**

**A total of 56 publications in high impact journals, five dozen articles in proceedings, 23 theses, three functional samples, two patents, one prototype and four products launched in a pilot plant. These are just some of the results to date that the ENREGAT Large Research Infrastructure (LRI) at VSB-Technical University of Ostrava (VSB-TUO) has contributed to. So far, 176 secondary school students, university students, and researchers have benefited from its cooperation. New users are welcome.**

Research infrastructure ENREGAT - Energy Waste Recovery and Gas Treatment, is an open infrastructure at the Institute of Environmental Technology (IET), a part of the University institute CEET. ENREGAT has been offering free services to scientists, researchers, and students from the Czech Republic and abroad within the framework of open access since 2019. There is cooperation with commercial companies on the basis of contractual and collaborative research. The infrastructure focuses on interdisciplinary research into energy and material recovery of waste while minimising negative impacts on the environment.

“*The uniqueness of the ENREGAT infrastructure lies in its ability to carry out basic and applied research on several waste-to-energy technologies from laboratory to pilot plant scale, for a wide range of types of waste. This allows the suitability of the technology for the selected waste type to be subsequently assessed. In addition, our infrastructure allows research into a range of technologies for reducing emissions of various gaseous pollutants such as nitrogen oxides, carbon dioxide, and volatile organic compounds. This can be done through laboratory tests, to pilot-scale verification, using real flue gas from our waste incineration pilot plant,*” said Lucie Obalová, coordinator of the LRI and director of the Institute of Environmental Technology.

ENERGAT offers services in five basic areas. These are waste incineration, thermochemical processes, anaerobic digestion, catalytic and photocatalytic gas cleaning and analytical services. It represents a unique base for the implementation of comprehensive research in the field of material and energy recovery of waste (by means of incineration, pyrolysis and anaerobic processes), and in the field of catalytic, sorption and photocatalytic purification of the gases produced. In addition, ENREGAT also facilitates research in related areas, such as the durability of refractories used in waste incineration, material recovery of slag and fly ash, the potential of pyrolysis products and analytical services.

A result of the cooperation between researchers from the West Pomeranian University of Technology in Szczecin, Poland, and ENREGAT scientists and operators from Ostrava, is a scientific paper published in the prestigious journal Catalysis Today, whose authors investigated the effect of TiO2/rGO calcination on the efficiency of photocatalytic reduction of carbon dioxide. “*On the basis of the results obtained, the international user has submitted another project to use the ENREGAT infrastructure. She is now at our university for a two-month internship and is again using the offered infrastructure,*” said Kamila Kočí, one of the authors of the publication and chair of the international scientific board of the large research infrastructure ENREGAT.

ENREGAT’s infrastructure has also been praised by representatives of private companies that have used the technology and equipment on campus as part of contractual and collaborative research.

“*The use of ENREGAT's large research infrastructure has led to the development of a prototype of a domestic wastewater treatment plant, implemented under contractual research. The prototype is being tested in real conditions in cooperation with the Institute of Environmental Technology, and based on the results, functional modifications are being proposed to increase the efficiency of the process,*” said one of the cooperating partners from the commercial sector - SINEKO Engineering.

ENREGAT is part of the Roadmap of Large Research Infrastructures of the Czech Republic.



