

# Energy Waste Recovery and Gas Treatment (ENREGAT)



## Services of ENREGAT infrastructure available in following five major areas:

### Pyrolysis up to pilot scale including complex analysis of pyrolysis products

Material and energy balance, optimization of pyrolysis process (torrefication, slow and fast pyrolysis, microwave and catalytic pyrolysis) in terms of utilization of individual output products, consulting in the scale-up.

Complex analysis of processed waste and gaseous, liquids and solid pyrolysis products.



### Anaerobic digestion and process development up to a pilot scale

Preparation of raw materials (crushing, hydrolysis, acidification).

Complex analysis of biowaste, digestate and biogas.

Physical modelling of anaerobic (co)digestion and adaptation of process conditions (loading, retention time, mixing), evaluation of the impact of additives (trace elements, microorganisms, buffers, enzymes).

### Analytical services

Determination of thermochemical parameters (moisture, volatile matter, fixed carbon and ash contents, elemental composition, total calorific value).

Comprehensive characterization of materials for catalysis, photocatalysis and adsorption (chemical and texture, redox, phase composition, acido-basic and electron properties).

Material tests of refractory materials and utilization of slag and ash.

Pre-analytic sample and waste handling/preparations.

Analysis of gases (process gas, emissions, imissions), waste waters and liquids.

### Waste incineration in a pilot scale including complex analysis of flue gases

Combustion tests, assessments of waste combustibility, complex analysis of processed waste.

Assessment of emission load in waste incineration, the energy balance of the combustion process.

### Catalytic and photocatalytic gas cleaning - catalysts preparation and testing

Testing of laboratory and commercially prepared catalysts and photocatalyst (powder, tablets, monoliths, foams) for SCR NO<sub>x</sub>, N<sub>2</sub>O decomposition, VOC oxidation, NH<sub>3</sub> oxidation, and CO oxidation to determine activity, selectivity and stability/deactivation, fast screening using photocurrent with Kelvin probe.

Determination of the adsorption capacity of a wide range of gases and vapours.

Preparation of mixed oxides, semiconductors and active coal sorbents tailored for air protection.



Since 2019, the ENREGAT (LM2018098) has been included in the Czech Roadmap of Large Infrastructures for Research, Development and Innovation endorsed by the Czech government and financially supported by the Ministry of Education, Youth and Sports of the Czech Republic.

Access to the Research infrastructure Energy Waste Recovery and Gas Treatment (ENREGAT) is free of charge for students and researchers. For further information about the call and for technical details regarding the use of particular infrastructure please see [enregat.vsb.cz](http://enregat.vsb.cz) and contact the responsible person:

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