

Project name: Innovative management of COAL BY-PROducts leading also to CO₂ emissions reduction

Project partners

Coordinator: Centre for Research and Technology Hellas



EKETA
ΕΘΝΙΚΟ ΚΕΝΤΡΟ ΕΡΕΥΝΑΣ & ΤΕΧΝΟΛΟΓΙΚΗΣ ΑΝΑΠΤΥΞΗΣ

Consortium members: UCT Prague, Faculty of Environmental Technology



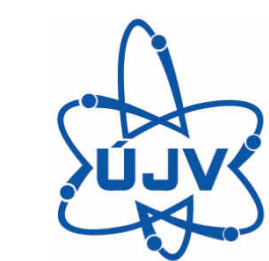
**UNIVERSITY OF
CHEMISTRY AND TECHNOLOGY
PRAGUE**

Technische Universität Bergakademie Freiberg



**TECHNISCHE UNIVERSITÄT
BERGAKADEMIE FREIBERG**
The University of Resources. Since 1765.

Nuclear Research Institute



Brown Coal Research Institute



Central Mining Institute



Project budget

Project duration :	36 months	Total budget for all participants:	€ 1,789,858.30
Project start:	July 1, 2017	Absolute value of financial support :	€ 1,073,915.16
		Relative value of financial support:	60 %
		The amount of funding for UCT:	€ 177,571.00
		UCT involvement:	€ 118,381.00

UCT Team M. Staf, K. Ciahotný, V. Tekáč, B. Miklová, V. Vrbová, K. Friessová, P. Machač, T. Hlinčík, S. Randáková, D. Černohorský, L. Jílková

Project aims

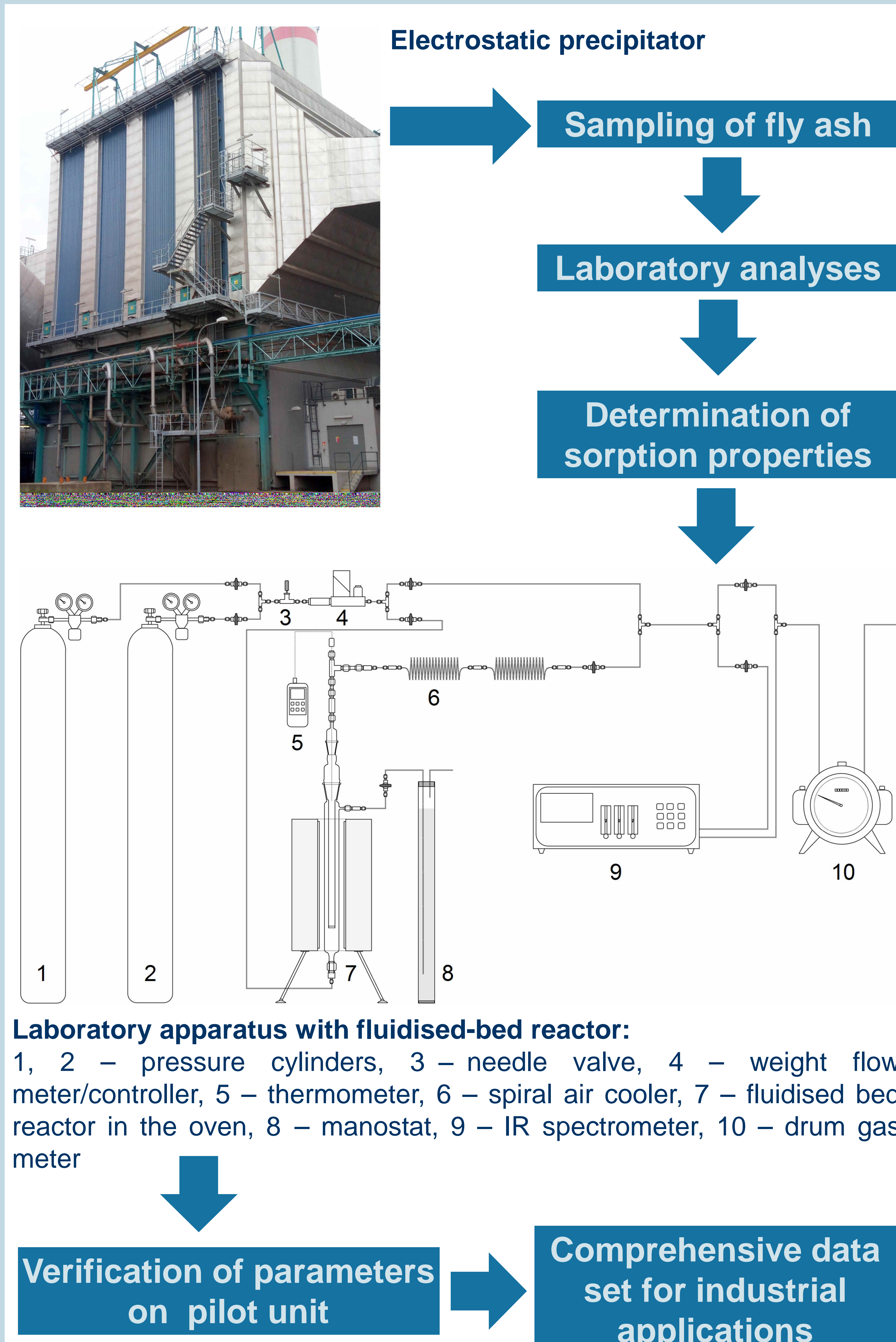
- Among fly ashes, generated by power and/or heating plants and then trapped by ESP or baghouses, finding those, which will be suitable for CO₂ adsorption.
- Verification of the fly ashes properties using the following set of laboratory methods.
- Defining the operational and technical parameters for selected group of the best materials. The parameters, which are crucial for the subsequent industrial deployment of the method, will be determined via measurement on the pilot unit, installed at existing power plant.
- Preferred application is in the area of post-combustion CO₂ capture.

Main research activities

- Ca. 30 samples of fly ashes from the Czech Republic are provided in cooperation with VÚHU and UJV.
- The sample base will be extended by samples from Greece, Germany and Poland.
- The sample base includes fly ashes from pulverised coal burners as well as fluidised bed combustors incinerating black coal, lignite and biomass.
- The whole sample base is subjected to testing sorption capacity for CO₂.
- Two laboratory high-temperature apparatuses are used: with fluidized-bed and fixed-bed reactor.
- Additional samples characterisation is provided using:
 - elemental analysis and XRF spectroscopy,
 - TG analysis,
 - evaluation of BET surface and pore size distribution,
 - capacity measurement using Quantachrome ASiQ.
- Results from above listed methods will be used for follow-up tests on the pilot plant at Prunéřov II power plant.

Measured properties

- Sorption capacity and reaction kinetics,
- temperature range, within which the materials provide the best capacity and kinetics,
- dependency of sorption capacity on CO₂ partial pressure and on the total pressure in the adsorber,
- dependency of sample chemical composition and sorption capacity,
- possibility of sorption capacity improvement via chemical activation,
- influence of other physico-chemical parameters on the capacity (SO₂, flue gas humidity, heating rate etc.)



The project web site: <http://www.coalbypro.eu>