

## PARTNER PROFILE

### Technical University of Munich (TUM) - Germany

The Chair of Energy Systems (ES) of the Technical University Munich (TUM) is active in the following research areas:

- High temperature pressurized gasification of coal;
- Oxycoal combustion;
- Corrosion and deposit formation in biomass/waste (co-)combustion;
- Fluidized bed gasification of biomass and upgrading to synthetic natural gas;
- Fluidized bed combustion;
- High efficiency waste incineration;
- Monitoring tools for power plants;
- Fuel analysis.

The ES laboratories are well equipped with experimental facilities for thermal conversion of solid fuels. The following are offered for technical access within the BRISK consortium:

#### **Pressurized High Temperature Entrained Flow Reactor (PiTER)**

The PiTER is a worldwide unique facility designed for operation conditions up to 1800°C, up to 5 MPa and very flexible gas atmospheres. International researchers are invited to take part in the experimental investigation of gasification kinetics under entrained flow conditions. Furthermore, the optical ports installed at the reaction tube will enable the application of optical techniques for the analyses of gas composition and temperature to gasification conditions. The worldwide unique cooling line will improve the knowledge of syngas cooling and behaviour of particles and trace elements. It will be possible to add materials like alkali getters or hot gas cleaning systems to the cooling line and investigate the efficiency and potential of hot gas cleaning.

#### **High Temperature Entrained Flow Reactor (BabiTER)**

The high temperature entrained flow reactor is designed for the investigation of gasification kinetics. Pulverized fuels can be fed in a range of 0.2-1 kg/h and gasified in a well-defined gas atmosphere. The ceramic reaction tube can be heated up to 1600°C. The facility is equipped with optical access ports which allow the monitoring of the gasification reactions in-situ by means of optical measurement techniques. To extract coal/



Figure 1: Pressurized High Temperature Entrained Flow Reactor.

“TUM’s laboratories are well equipped with experimental facilities for thermal conversion of solid fuels.”

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Figure 2: High Temperature Entrained Flow Reactor.

coke/ash from the reaction zone, a sampling probe can be used and the gas composition can be monitored after passing a coke filter.

### Entrained Flow Reactor: (EFR)

The EFR is a drop tube furnace designed for combustion experiments. The external heating can reach temperatures up to 1600°C. The mass flow of the fuel can be adjusted from 0.5 to 2 kg/h. Several cooled and uncooled deposition probes can be inserted into the entrained flow reactor to analyze slagging and fouling tendencies dependent on the fuel composition and combustion conditions. Furthermore, a suction



Figure 3: Entrained Flow Reactor.

See [www.briskeu.com](http://www.briskeu.com)  
for details about how to  
apply for Transnational  
Access to these  
laboratories.

Technische Universität München 

### Contact

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apply to utilise TUM's facilities  
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