

Services

Individual solutions for complex challenges

Our activities are focused on the development of innovative processes and the optimization of existing processes. We support you in the scope of research, development and engineering - from basic research to the design of process engineering equipment and the development of complete processes.

- Design and construction of process plant equipment
 - High-temperature heat exchanger
 - Evaporator / condensers
 - Reactors / adsorbers
 - Post-combustion chambers
- Catalyst testing
 - Screening of catalyst materials
 - Performance and aging tests
 - Kinetic analysis
- Modeling & Simulation
 - Process modelling
 - Simulation of apparatus
- Process and technology development - from idea to semi-technical plants
- Thermal engineering
- Load management gas
- Feasibility and potential studies

Benefit from our experience
in gas processing!

Contact / Directions

DBI - Gastecnologisches Institut gGmbH Freiberg

Department gas processing
Halsbrücker Straße 34
D-09599 Freiberg / Germany

Your contact person



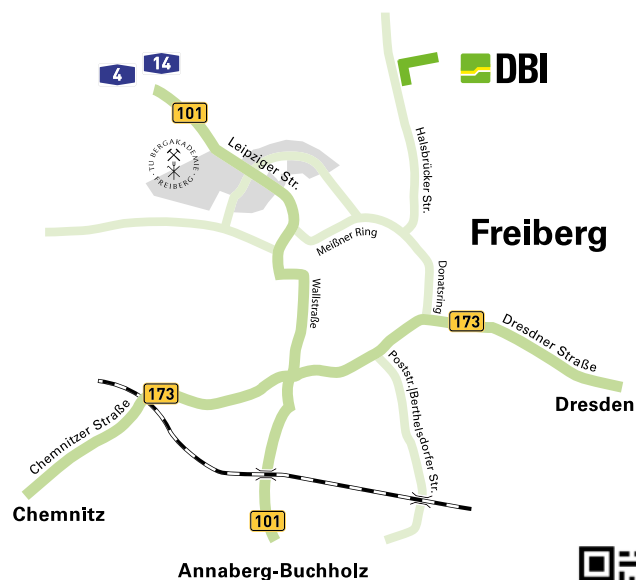
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pictures: fotolia.com – alex.pin, DVGW – Roland Horn



status: april 2019

GAS PROCESSING

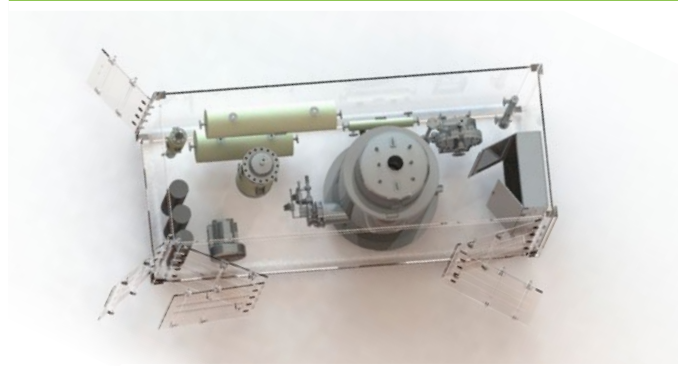
Efficient by innovative technology



Fields of research

The use of renewable gases as well as the integration of regenerative energies offer great ecological and economic potential, provided the applied methods take the application-specific boundary conditions into account. Our research and development therefore is focused on innovative technologies that tap new raw materials and applications or make a significant contribution to increase the efficiency of existing processes. These include:

- Development of reformer systems for decentralised hydrogen production
- On-site production of technical gases (CO, H₂)
- Hydrogen utilization (heat and power)
- Power-to-X technologies
- Usage of biogas as raw material for chemicals, fuels and pharmaceutical products
- Catalytic gas treatment
- Hydrogen recovery



Container-integrated steam reformer, output: 100 m³/h hydrogen

Motivation

The progressive climate change necessitates a particularly efficient use of fossil resources and the integration of regenerative energy sources and biogenic materials into industrial value chains. The associated technological, economic and social challenges are enormous. Through application-oriented research and development, we support our clients on their way to a sustainable future. A holistic approach is taken to guarantee a well-engineered technical solution with outstanding product features, without losing sight of the ecological footprint, operating and investment costs as well as social acceptance.



Small-scale pilot plant for synthesis of methanol / dimethyl

Equipment

Test rigs

- High-pressure syntheses
 - Isothermal tubular reactor 1
($p_{max} = 100 \text{ bar}$, $T_{max} = 500 \text{ °C}$, max. catalyst volume 10 ml)
 - Isothermal tubular reactor 2
($p_{max} = 65 \text{ bar}$, $T_{max} = 350 \text{ °C}$, max. catalyst volume 1 litre)
 - Trickle bed reactor
($p_{max} = 100 \text{ bar}$, $T_{max} = 300 \text{ °C}$, max. catalyst volume 5 litre)
- High-temperature processes
 - Tar reforming / Desulfurization
($p_{max} = 10 \text{ bar}$, $T_{max} = 900 \text{ °C}$, max. catalyst volume 0.5 litre)
 - Syngas production / Low-pressure syntheses
($p_{max} = 15 \text{ bar}$, $T_{max} = 950 \text{ °C}$, max. catalyst volume 0.1 litre)
 - Tray reactor
($p_{max} = 3 \text{ bar}$, $T_{max} = 900 \text{ °C}$, max. catalyst volume 12 litre)
- Burner test rig (H₂, low calorific gases, residues)
- Reformer test rig (syngas production / H₂ for fuel cells, P_{el} max. 30 kW)

Analytics

- GC-MS/FPD/FID/TCD (e.g. C₁–C₈ carbohydrates, CO_x, sulphur compounds)
- Optical/chemical sensors/ thermal conductivity detector (methane, CO_x, H₂, O₂, water)
- Infrared-spectrometer (FTIR) (carbohydrates, CO_x, water, Methanol, dimethyl ether, formaldehyde, NO_x)
- Flame ionisation detector (carbohydrates)