

Gas Processing Technology

From idea to plant

Services

- Techno-economic process analyses
- Process development and optimisation
- Chemical reaction studies
- Process and reactor simulation
- Basic and detail engineering
- Thermal design of reactors/heat exchangers

Our R&D topics

- H₂- & CO- generation /rWGS, reforming processes (SR, ATR, POX)
- Power-to-X-processes
- Utilisation of biogas (BtX)
- CO₂ use (CCU)
- Synthesis of liquid energy carriers (PtL)



Independent company group of  DVGW

DBI
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➤ www.dbi-gruppe.de

➤ www.dbi-gruppe.de/gasverfahrenstechnik



Gas Processing Technology

Reaction Design and Experiments

Chemical reaction studies & Lab

- Carrying out catalyst tests on plants on a laboratory or semi-technical scale
- Catalyst in powder or in technical shape such as pellets or honeycombs
- Extensive equipment:
 - Reaction control isothermal, adiabatic or polytropic
 - Temperatures up to 900 °C
 - Process pressures up to 100 bar
 - Variable gas compositions possible (e.g. C_xH_y , CO, CO₂, H₂, steam, N₂, O₂, sulphurous gases)
- Catalyst screening
- Kinetic studies
- Adjustment of set-up possible according to customer requirements

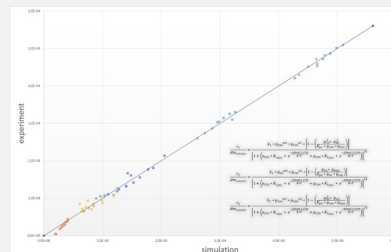
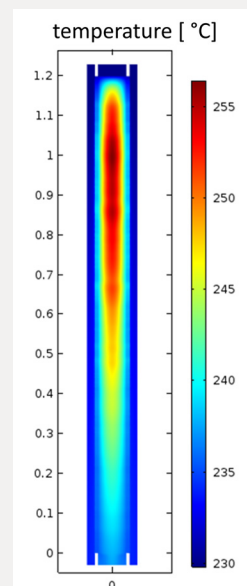
Laboratory plants and various catalyst materials



Reactor modelling

- Development of kinetic models and parameter estimation based on experimental data
- Simulation of catalytical reactions
- Optimisation
 - Process and reaction control
 - Thermal design
 - Sensitivity analysis
- Simulation-based scale-up of reactors
- Validation of models, design or reactor concepts by application-oriented investigations

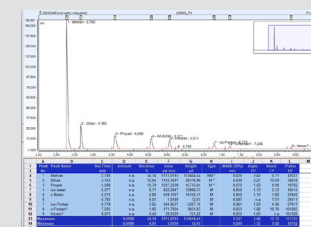
Simulated temperature profile in a reactor (l.) and comparison of kinetic model with experimental data (r.)



Scientific Support / Consulting

- Test of prototypes, assemblies or components
- On-site support of the customer's system
- Experimental monitoring / evaluation
 - Reaction engineering analysis / optimisation
 - Data Mining
 - Error analysis
- Statistical design of experiments, quality and process control

Analytical gas process engineering, laboratory equipment



Analytics

- ND-IR, FT-IR (CO, CO₂, IR-active components from < 10 ppm to 50 vol.%)
- GC (FID, TCD, FPD, MS)
- Chemical/optical sensors (online measurement)
- Exhaust gas measuring case