

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
Gruppe

www.dbi-gruppe.de

Contact

DBI^{GUT}

DBI Gas- und Umwelttechnik GmbH

Department Gas Processing Technology
Karl-Heine-Str. 109/111
D-04229 Leipzig / Germany

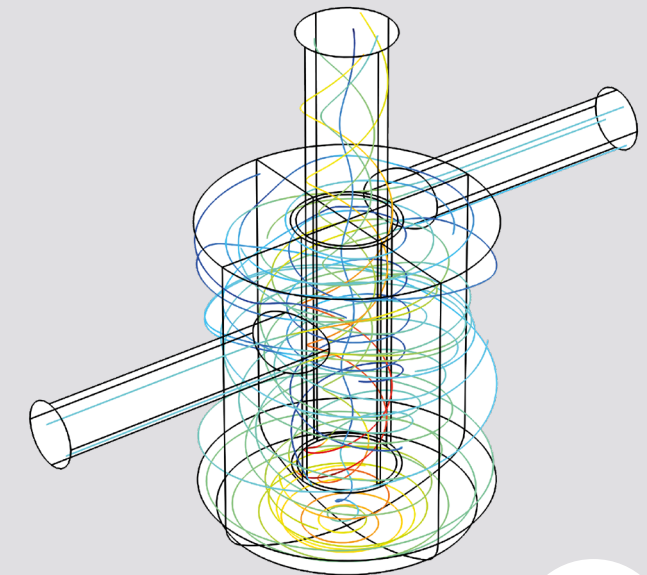


Dipl.-Ing. Michael Kühn
Team leader Process Studies

Halsbrücker Straße 34
D-09599 Freiberg / Germany

Phone: (+49) 3731 4195-326
Fax: (+49) 3731 4195-309
michael.kuehn@dbi-gruppe.de

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- www.dbi-gruppe.de
- www.dbi-gruppe.de/gasverfahrenstechnik



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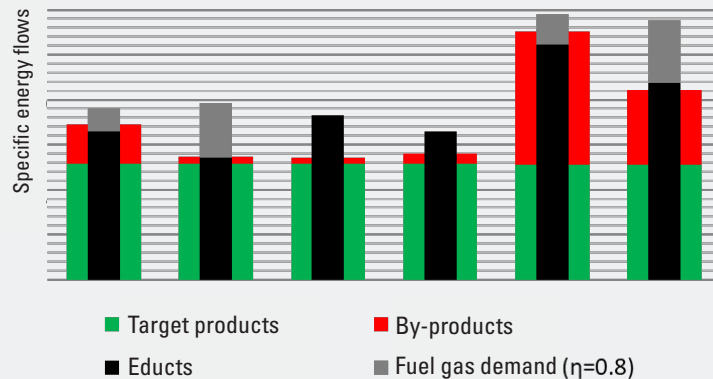
Process Studies and Simulation

Process Studies

Potential and demand studies

- Demand analyses (e.g. hydrogen demand) at sites or in regions
- Analysis of site-specific potentials, e.g. for:
 - H₂-Provision and use
 - Utilisation of biogas (BtX)
 - Use of waste heat and by-products in process plants
 - Application of PtX processes

Comparison of different concepts of a PtX synthesis according to energy flows



Process analysis

- Thermodynamic analyses of reaction systems
- Process simulation
- Evaluation of processes by material and energy balancing
- Analysis of waste heat potentials and optimisation of heat integration
- Assessment of options for the integration or use of by-products
- Determination of design parameters
- Process development and optimisation for new solutions
- Comparative evaluation of possible process routes
- Sensitivity studies
- Estimation of investment costs

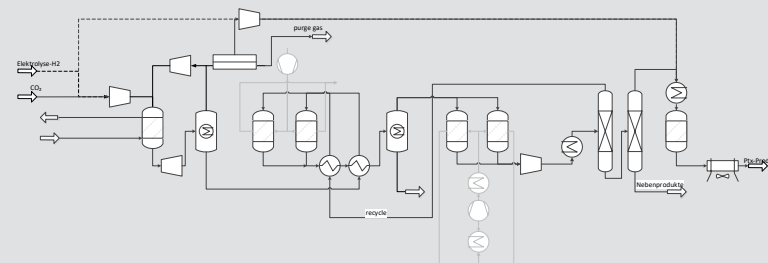
Simulation

- Numerical simulation of process engineering apparatus, e.g.:
 - Reactors
 - Heat exchangers
 - Mixers
- Design and scaling of reactors - from the laboratory to the application
- Optimisation of systems, e.g. reactor design, to improve conversion and thermal management
- Determination of design data
- Analysis of flow and temperature fields, e.g. for mixing and hot-spots
- Analysis of the dynamic effects
- Comparison and evaluation of implementation concepts

Concept and feasibility studies

- Creation and evaluation of process concepts
- Economic analysis
- Feasibility studies

Process diagram of a PtX process as the basis for process simulation



Temperature profile in a cooled PtX reactor and streamlines in a static mixer

