



1 Gasifier test rig

THERMOCHEMICAL GASIFICATION

AN EFFICIENT CONVERSION PROCESS FOR FUTURE ENERGY SYSTEMS

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Thermochemical gasification offers the possibility to transfer the chemical energy contained in a solid fuel into gaseous energy carriers. Besides the generation of heat and power the producer gas from gasification can be used to supply further high-grade energy carriers.

Thermochemical gasification therefore offers a wide range of options for highly efficient energy usage, a wide range of different raw materials in addition to a high CO₂ reduction potential.

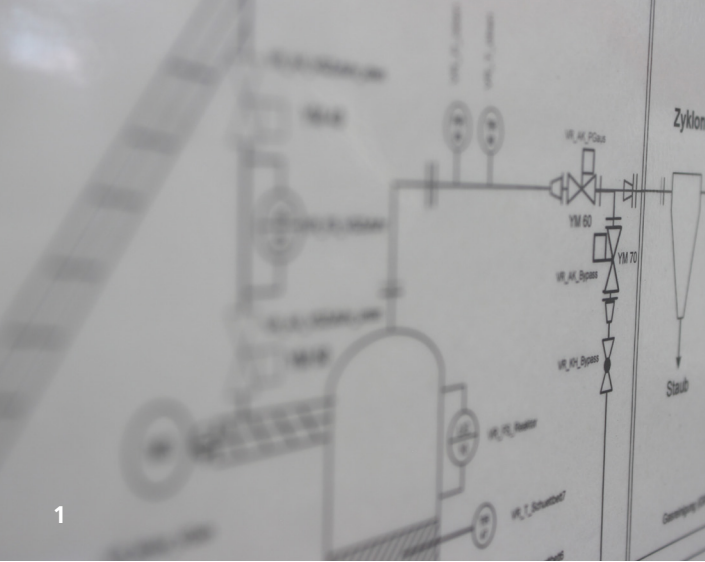
The practical process and plant development at Fraunhofer UMSICHT is done from pilot scale up to demonstration scale in close cooperation with partners from industry and academia, enabling further scientific support, also of existing plants.

Keywords

- Biomass conversion
- Technologies for gas generation, treatment and usage
- Heat supply
- Cogeneration
- Product and process development

Sectors

- Energy supply
- Public services and municipalities
- Plant engineering and construction
- Environmental engineering



1

1 P+ID concept

2 Tar sampling according to DIN CEN/TS 15439:2006-08

Our service

- Studies and consultancy in the field of thermochemical gasification
 - Economic feasibility
 - System integration and operational strategy
 - Analysis of technology, energy efficiency and marketability
- Modelling and dimensioning of plants for thermochemical gasification
- Process development, design and dimensioning of plant components
- Systems analysis and optimization
- Technical and scientific support
 - Consultancy on the selection of plant components and measurement instrumentation
 - Consultancy on safety concepts for gasification plants
 - Assessment of required on site measurements
 - Mass and energy balances, calculation of plant key figures

Facilities and infrastructure

Gasifier test rig for fixed bed reactors

- Gasifying agents: air or air/steam mixture incl. optional preheating
- Continuous feed and ash removal
- Continuous data sampling and online gas monitoring

Analytical methods

- Particle and tar sampling (according to DIN CEN/TS 15439:2006-08 and via SPA)
- H₂ (WLD), CO, CO₂, CH₄ (IR gas analysis)
- Water content
- Ash content
- Particle-size distribution
- Calorific value
- Bulk density

Miscellaneous measurement instrumentation

- Calibrators for pressure and temperature sensors
- Portable, non-invasive flow measurements of liquids for heat quantity measurements for (industrial) heating and refrigerating plants

Your benefit

Fraunhofer UMSICHT has expertise in the field of thermochemical gasification and producer gas analysis. We will accompany you from the initial idea through the conception and design, until full plant operation. For this purpose a comprehensive range of services for the practical process and plant development at varying scales using modelling software, laboratory and pilot test rigs, as well as further consultancy packages are available.