

Gas- und Wärme-Institut Essen e.V. (GWI)

A Brief Overview

Jörg Leicher, February 2022

Profile: Gas- und Wärme-Institut Essen e. V.

Gas- und Wärme-Institut (GWI) is an institute dedicated to applied research

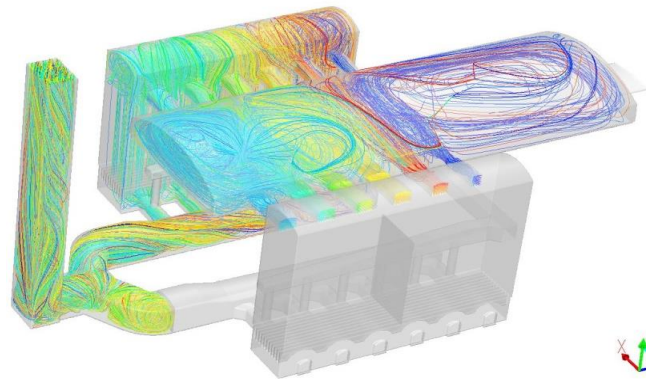
The Energy Institute in Essen

- Founded in **1937** by the German gas industry as a non-profit organization to **bundle R&D activities**
- **Members from different parts of the gas-value-chain:**
 - gas grid operators
 - equipment manufacturers
 - associations
 - municipal utilities
- **100 employees in**
 - research and development
 - testing laboratory
 - training and consulting center
 - administration
 - managing board



GWl's Department for Industrial Combustion Technology: Activities and services

- coordination of and contribution to national and international research projects
- industrial contract research
- burner and process development and optimization
- Experimental combustion investigations using semi-industrial combustion test rigs
- CFD simulation of turbulent reactive flows in industrial applications
- technological consulting and inspection of furnaces
- thermography of industrial furnaces
- Conferences, seminars and trainings on applied combustion
- committee work (DIN/CEN, MARCOGAZ, IFRF, ...)
- GWl is preferred research partner of IFRF and hosted TOTeM 44 (2017)



The role of GWI as an interface between academia and industry

New combustion and energy-related topics have emerged in recent years, e. g.

- The energy transition and its consequences for energy systems, infrastructures and end-users
- „New“ technologies, e. g. oxy-fuel combustion, fuel cells and CHP
- GHG emissions reduction and decarbonization
- Alternative fuels for process heating (hydrogen, NG/H₂ blends, NH₃, biogas, BFG, COG, ...)

But „classic“ combustion topics are still very much part of GWI's activities:

- Applied combustion research
- Pollutant emissions reduction (CO, NO_x, ...)
- Efficiency and flexibility of large-scale combustion equipment and residential appliances
- Process optimization
- ...

Semi-industrial combustion test rigs



High Temperature Test Furnace 1

Max. firing rate:	1.3 MW
Max. furnace wall temp.:	1,600 °C
Max. air preheating:	1,250 °C

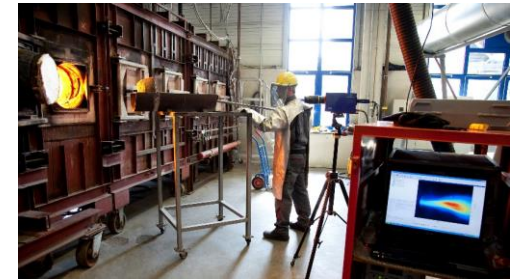
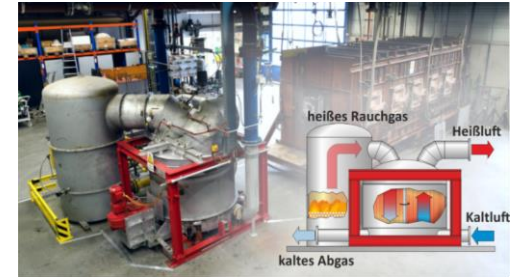
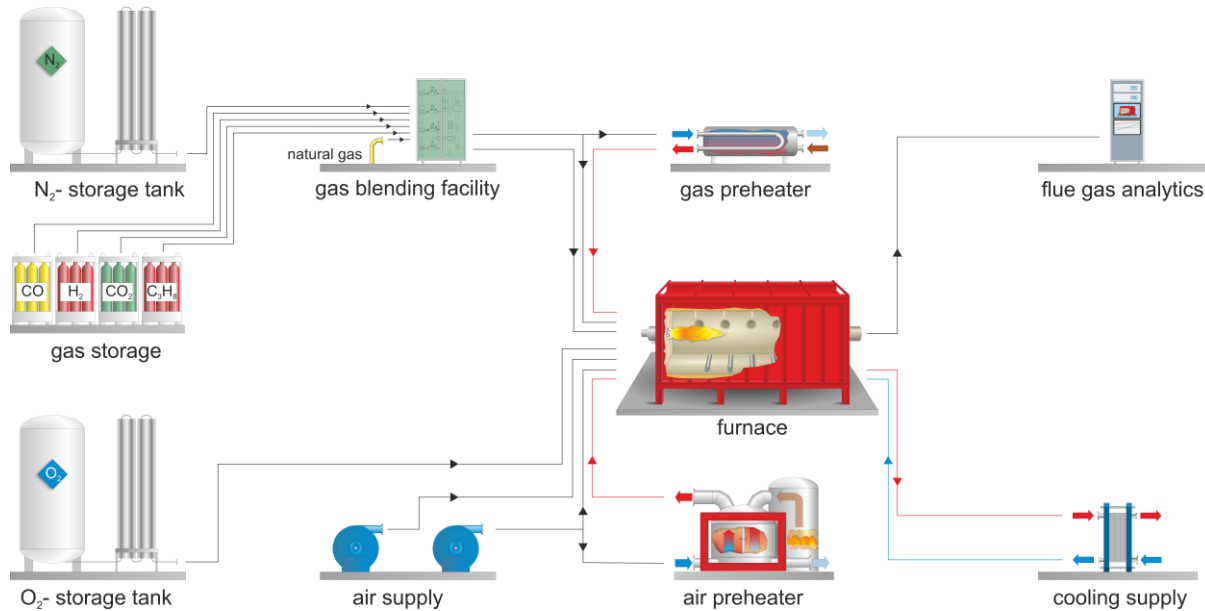
High Temperature Test Furnace 2

Max. firing rate:	300 kW
Max. furnace wall temp.:	1,300 °C
Max. air preheating:	1,000 °C

- Oxy-fuel capability and H₂ supply up to 1 MW
- Fuel gas blending facility to recreate most technically relevant gaseous fuels
- Flexible furnace geometries and highly accessible for measurement equipment

Semi-industrial experimental facilities

Schematic illustration of the test rig infrastructure and High Temperature Test Furnace 1



Your contact at GWI

Dr.-Ing. Jörg Leicher

Gas- und Wärme-Institut Essen e. V.

Hafenstrasse 101

45356 Essen, Germany

Tel.: +49 (0) 201 36 18 278

Mail: joerg.leicher@gwi-essen.de

