

Applied combustion research using experimental and simulation methods at Gas- und Wärme-Institut Essen e.V. (GWI)

Gas- und Wärme-Institut Essen e.V.

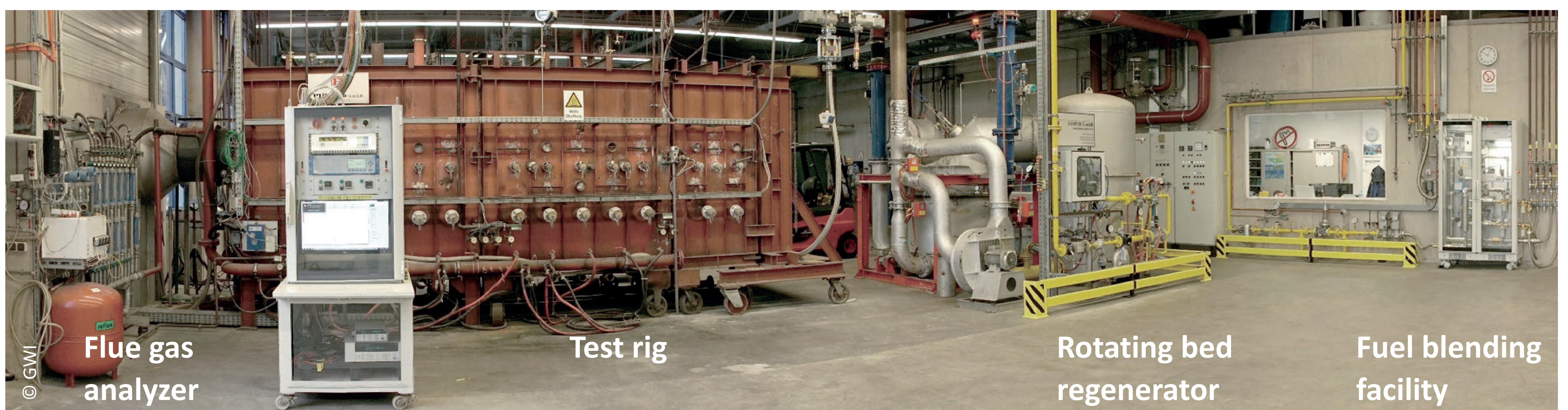


www.gwi-essen.de

For more than 85 years, Gas- und Wärme-Institut Essen e.V. (GWI) has been carrying out applied research into the utilization of gaseous fuels, starting with town and industrial process gases, e. g. blast furnace or coke oven gas, then focusing on natural gas and today, on renewable gases such as hydrogen, ammonia or biogas. As an independent and neutral research organization, GWI is at the interface between academic combustion research

and its application across all sectors, ranging from small-scale residential and commercial appliances to multi-MW applications in thermal processing industries and power generation. Combining state-of-the-art experimental and simulation methods, the challenges of a quickly changing energy landscape are being addressed.

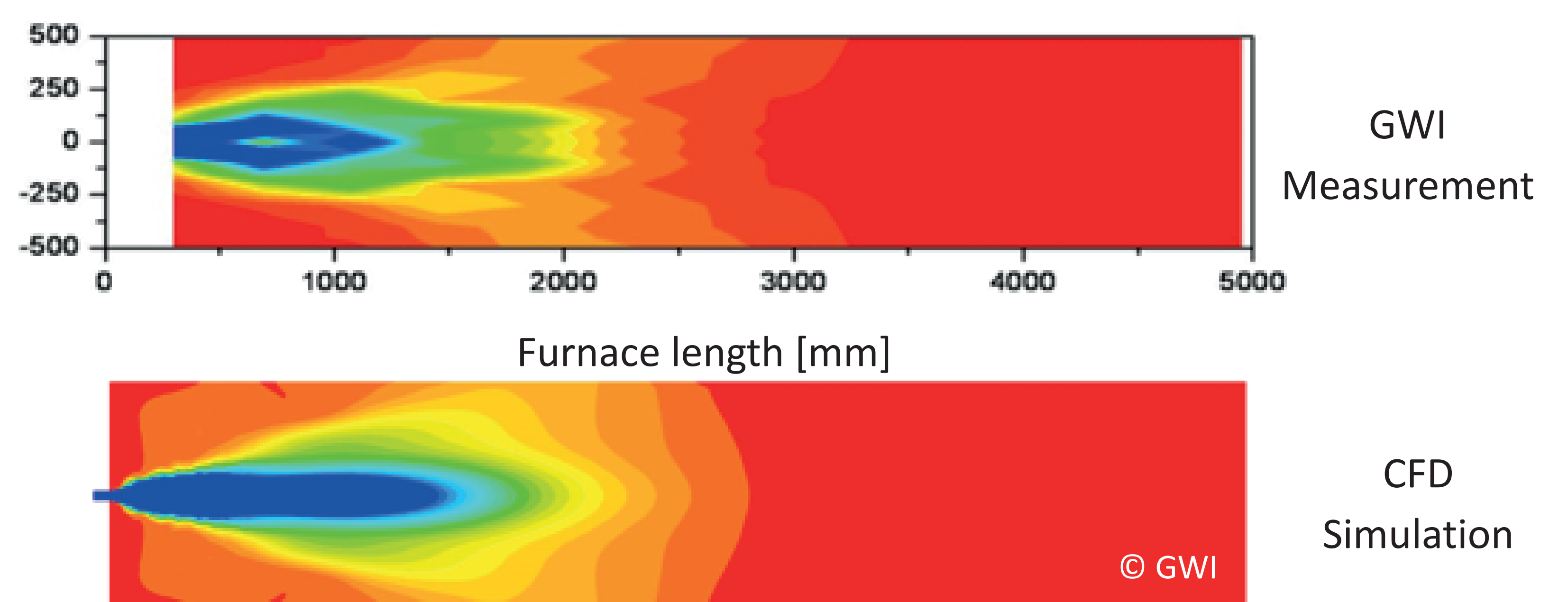
GWI is a preferred research partner of IFRF.



GWI HIGH-TEMPERATURE COMBUSTION TEST RIG NO. 1

Key features:

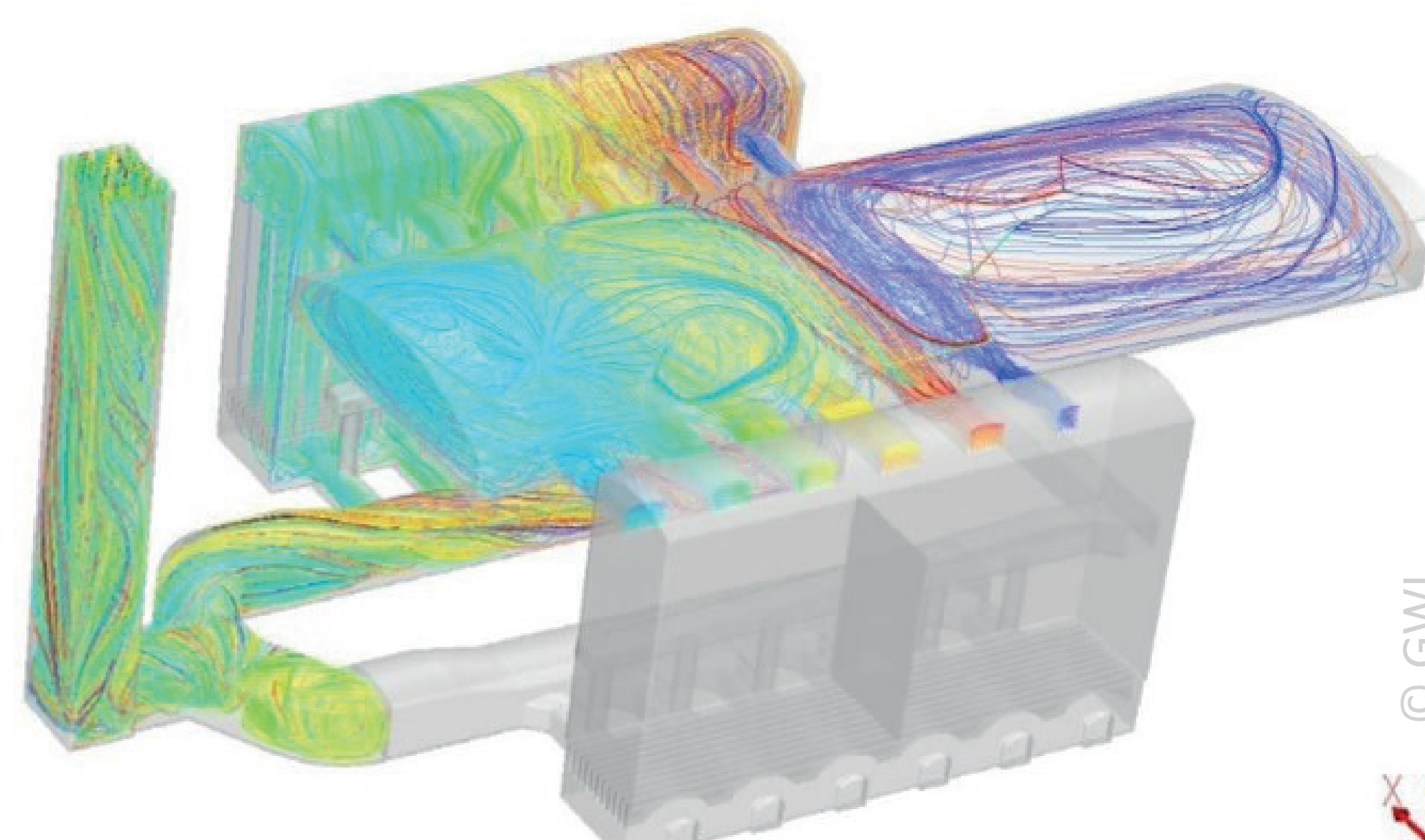
- Maximum firing rate: 1.3 MW
- Maximum wall temp.: 1,600 °C
- Maximum air preheating: 1,250 °C
- Oxy-fuel capable up to 400 kW
- Fuel flexibility (NG, C₃H₈, CO, CO₂, N₂, H₂O)
- H₂ supply up to 1 MW, NH₃ up to 100 kW
- Flexible furnace geometry
- Good accessibility for measurements
- Heat-up time: about 12 h



COMPARISON OF 2D FIELD MEASUREMENT (TOP) AND CFD SIMULATION OF OXY-FUEL COMBUSTION



MOBILE MEASUREMENT EQUIPMENT FOR ON-SITE MEASUREMENTS



CFD SIMULATION OF A FULL-SCALE GLASS MELTING FURNACE

Contact:

Dr. Jörg Leicher

joerg.leicher@gwi-essen.de

Gas- und Wärme-Institut Essen e.V.
Hafenstraße 101 | 45356 Essen
Germany