



Picture: Martin Braun

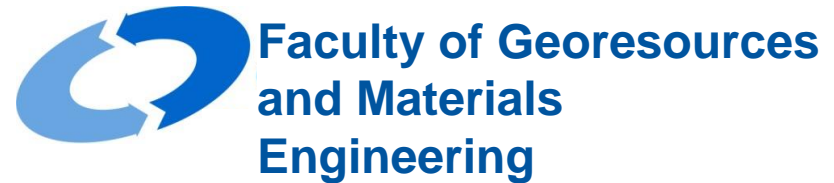
# Introduction to the Department for Industrial Furnaces and Heat Engineering

Christian Schwotzer, M.Sc.  
Prof. Dr.-Ing. Herbert Pfeifer

IraSME & CORNET Partnering Event, Aachen, 31.01.2017

# Department

---



## Head of Department

Univ.-Prof. Dr.-Ing. H. Pfeifer

## Staff

19 scientific staff

9 non-scientific staff

1 trainee

~ 30 students

## Third-party funding

2014 1.2 Mio EUR

2015 1.7 Mio EUR

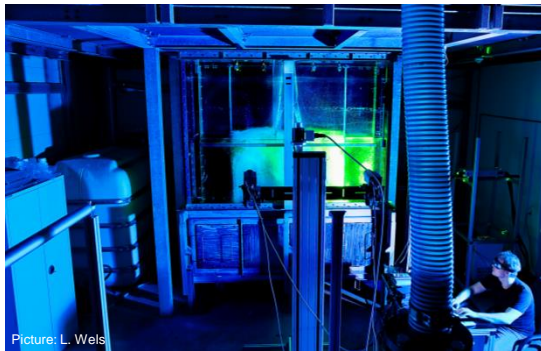
2016 1.7 Mio EUR



# Research Groups



High Temperature Flows in Metallurgical Melts



Industrial Furnace Technology



Energy and Mass Balances





# Technical Centre

---

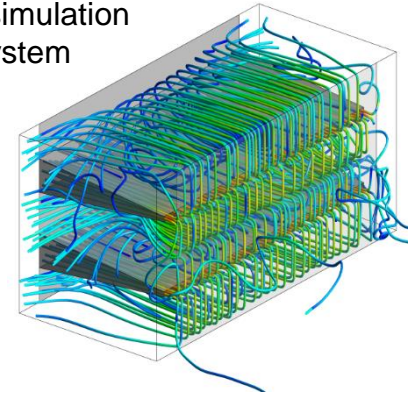
- Floor area: 500 m<sup>2</sup>
- Electrical capacity: 600 kW
- Natural gas capacity: 3 MW



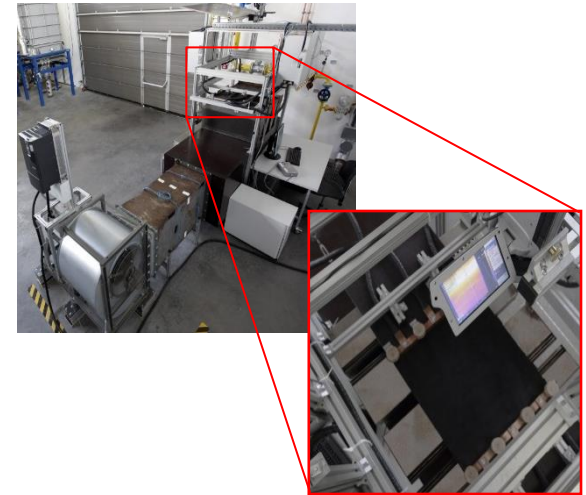
# Services, Consulting and Equipment

- Process analysis and optimisation
- Numerical simulation and process modeling
  - Flow and mixing phenomena in thermoprocessing plants
  - Melting and solidification processes
  - Magnetohydrodynamic fluid flows
  - Combustion and heat transfer
  - Fluid-Structure-Interaction
  - fast online/offline models of thermal processes
- Experimental investigations
- Process gas analysis
  - Gas composition ( $\text{CO}$ ,  $\text{CO}_2$ ,  $\text{H}_2$ ,  $\text{O}_2$ , ...)
  - Air pollutants ( $\text{CO}$ ,  $\text{NO}_x$ ,  $\text{SO}_x$ , ...)
  - Dust measurement according to VDI 2066
  - Volume flow, velocity
  - Temperature (conventional or with suction pyrometer)
  - Humidity

Numerical simulation  
of nozzle system



Experimental investigation  
of heat transfer distribution



# Extract of Research Partners



JOHANNES KEPLER UNIVERSITÄT LINZ | JKU



University of Ljubljana Faculty of electrical engineering



LABORATORY OF AUTONOMOUS MOBILE SYSTEMS



# National and International Research Funding

---

# DFG



Federal Ministry  
of Education  
and Research



Federal Ministry  
for Economic Affairs  
and Energy

# Ziel2.NRW

Regionale Wettbewerbsfähigkeit und Beschäftigung



## Research Fund for Coal & Steel

# Thank you for your attention.

Christian Schwotzer, M.Sc.

Department for Industrial Furnaces and Heat Engineering  
RWTH Aachen University  
Kopernikusstr. 10  
52074 Aachen

[schwotzer@iob.rwth-aachen.de](mailto:schwotzer@iob.rwth-aachen.de)  
[www.iob.rwth-aachen.de](http://www.iob.rwth-aachen.de)