K1-MET Overview

Research Areas

K1 MET
metallurgical competence center

Coordinated by

FFG Promoting Innovation.

Partner of UAR INNOVATION NETWORK

SFG NEUES DENKEN. NEUES FÖRDERN.

Tirol Standortagentur

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Research STATE UPPER AUSTRIA

Das Land Steiermark Economic Affairs and Innovation

tirol Unser Land

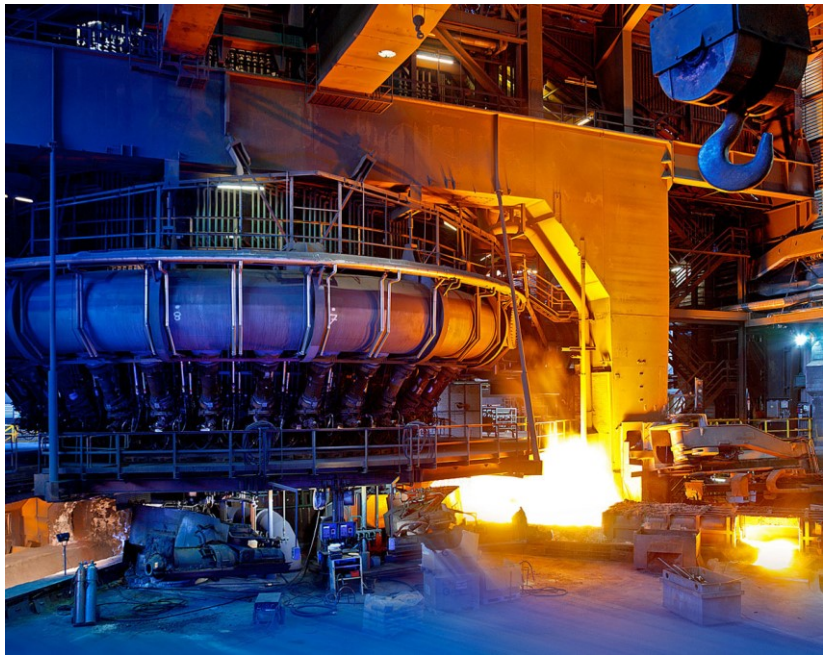
Area 1
Raw Materials and Recycling

metallurgical competence center

- Methods to determine physico-chemical and thermodynamic slag properties
- Sustainable treatment of dusts and slags from ferrous and nonferrous metallurgy
- Concepts to recover valuable materials from residues for a more efficient material cycle closure
- Characterization of raw materials for iron and steel production

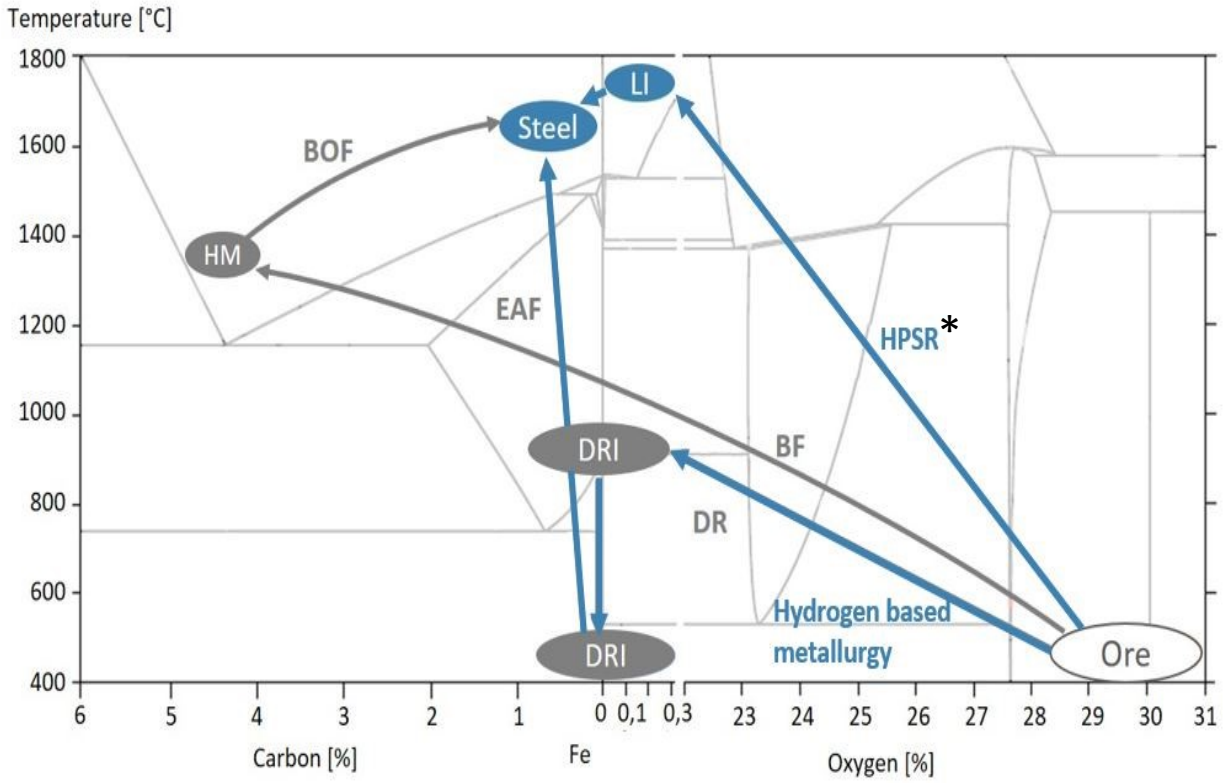
Area 2
Metallurgical Processes

- Alternative reducing agents and increased productivity in copper metallurgy
- Modelling of the LD converter process and link to secondary metallurgy (steel cleanness)
- Thermo mechanic modelling of crack formation in steel alloys during continuous casting and hot rolling
- Definition of guidelines for the design of refractory linings in metallurgical aggregates
- Development of innovative and efficiently working mold powders for the continuous casting process
- Influence of slag properties on the energy demand during the Electro Slag Remelting process



Area 3
Low Carbon Energy Systems

- Decarbonization of the steel industry through an exchange of carbon by hydrogen for the reduction of iron ores to diminish CO_2 emissions
- Adaption of reforming processes for the use of CO_2 from energy intensive industries, such as steel, gas and oil and refractory
- Increased energy efficiency in burners and furnace systems
- Further development of existing metallurgical process models and validation with real plant data



* Hydrogen Plasma Smelting Reduction

Area 4
Simulation and Analyses

metallurgical competence center

- Comprehensive modelling tools for metallurgical processes
- High quality simulation tools from particle scale to plant scale
- Novel methodology development for high resolution AND high speed simulations
- Continuous, discrete and coupled simulation engines
- Fusion of process expert knowledge and data scientists to provide applicable data analyses tools and prediction schemes