The New IME Recycling Research Center (IRRC)-Research and Development in Semi Production Scale

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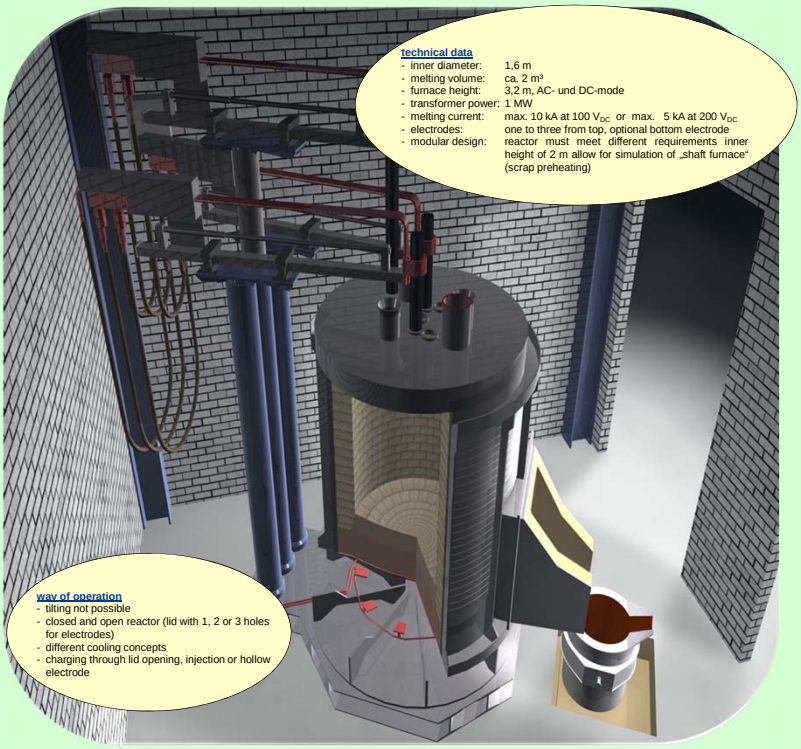
The New IME Recycling Research Center (IRRC)- Research and Development in Semi Production Scale

Electric Arc Furnace (EAF)

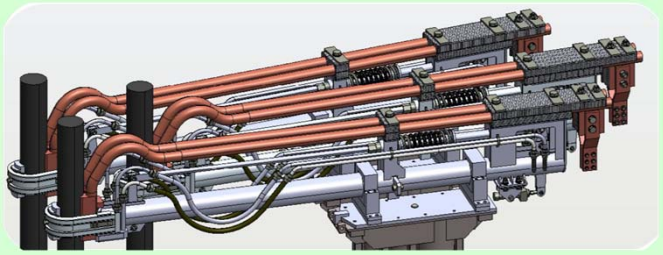
research areas:

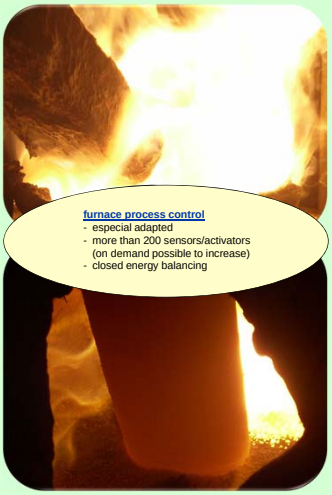
battery recycling / slag cleaning / recovery of recycling material / non ferrous metals / ferro-alloys / steel



technical data
- inner diameter: 1,6 m
- melting volume: ca. 2 m³
- furnace height: 3,2 m, AC- und DC-mode
- transformer power: 1 MW
- melting current: max. 10 kA at 100 V_{DC} or max. 5 kA at 200 V_{DC}
- electrodes: one to three from top, optional bottom electrode
- modular design: reactor must meet different requirements inner height of 2 m allow for simulation of „shaft furnace" (scrap preheating)

way of operation
- tilting not possible
- closed and open reactor (lid with 1, 2 or 3 holes for electrodes)
- different cooling concepts
- charging through lid opening, injection or hollow electrode





furnace process control
- especial adapted
- more than 200 sensors/activators (on demand possible to increase)
- closed energy balancing

Top Blown Rotary Converter (TBRC)

research areas:

melt treatment of different metals / converter metallurgy (Cu, Steel) / working angle of TBRC / burner technology (parameter of burner adjustment, melting behaviour) / installation engineering / lifetime of refractory / purge gas treatment / processing of PGM

multifunctional gas burner
- air or oxygen operated burner up to 500 kW
- "stepless" operation from 21 to 100 % oxygen
- change from convection to radiation heating
- variable flame length during O_2-operation with constant burner power

adaptable size of converter/reactor
- $\varnothing_{inside}$ <1400 mm, $H_{cylindr}$ <1000 mm
- working volume in vertical position max. 1 m³
- working volume in 20°-position 0,1-0,25 m³
- two reactors: Al 1-2 rpm, Cu/Pb 10 rpm

operation mode
- tiltable and rotatable furnace vessel
- melting in nearly horizontally up to nearly vertically position is possible
- treatment by purge gas in any position
- change of usable volume by alteration of refractory thickness
- flexible operation mode by usage of multifunctional burner
- installation of purging devices (porous plugs) possible

technical data
- rotation speed: up to 10 rpm, max. 1550 °C
- total volume: 3,5 m³
- melting volume: 50-1000 l, melt angle 0-90°
- furnace height: 1,8 m
- outer diameter: 1,7 m
- furnaces pots: Al/Mg or Cu/Pb
- melt weight: 2 t Al or 5 t Cu

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