

Intensification of Processes in the Non Ferrous Metallurgy: Slag-Treatment in the EAF/SAF with coke injection

- A slag cleaning treatment with metal recovery is necessary for ecological and economical reasons
- At the IME the intensification of slag cleaning of lead/zinc and copper slags in the EAF by coke injection is investigated, including injection trials in a water model and test runs in the pilot-scale EAF
- Aim of the investigation is the decrease of the treatment duration and thereby an increase in process efficiency



Injection Facility



Ball Valve

Technical Data of the Pilot-Scale EAF:

- DC or AC current possible
- max. current: 5,3 kA DC*
- max. voltage: 110 V*
- temperatures: > 1.800 °C
- shell height: 1 m
- total volume: 200 l
- outer electrode diameter: 150 mm
- inner diameter (h.e.): 65 mm

Hollow electrode feed system

Water cooled current supply

Off gas collection

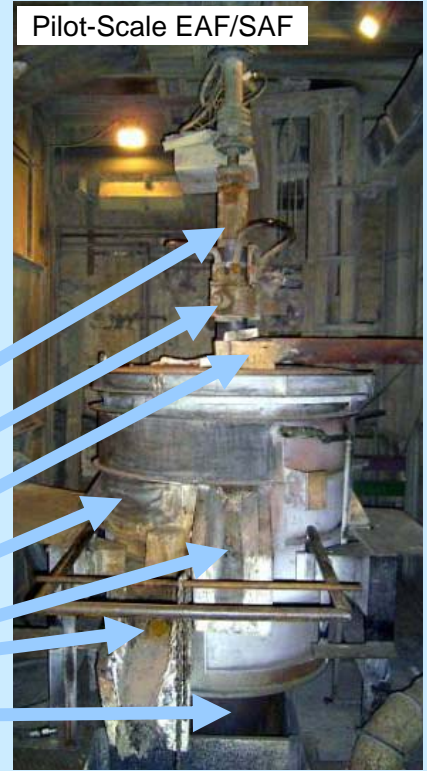
Water cooled shell

Tap holes

Water cooled bottom electrode

* to be increased to 10kA DC / 200V in 2007

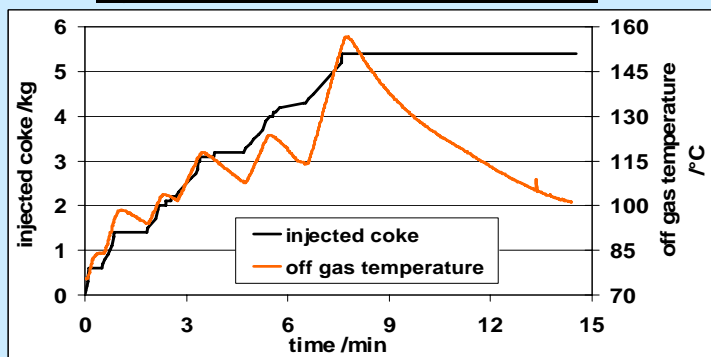
Pilot-Scale EAF/SAF



Main Characteristics of the IME Injection Facility:

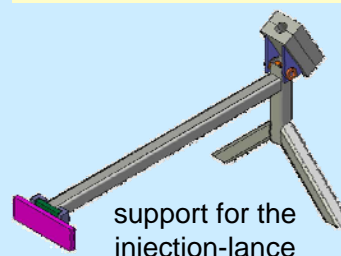
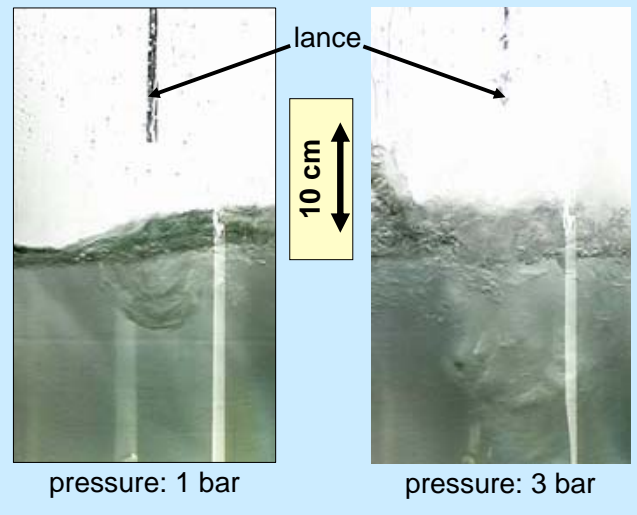
- pneumatic material conveyance with up to 3 bar
- volume of pressure vessel 45 l
- fully automatic operation by S7 control system
- weight calculation with accuracy of 0,1 kg
- continuously variable dosing with ball valve
- donated by Stein Injection Technology, Germany

Injection Trials in the Pilot-Scale EAF



lead/zinc slag: off gas temperature vs. injected coke

Qualitative Injection Trials in the Water Model



support for the injection-lance



copper-slag: produced matte with Cu-precipitation