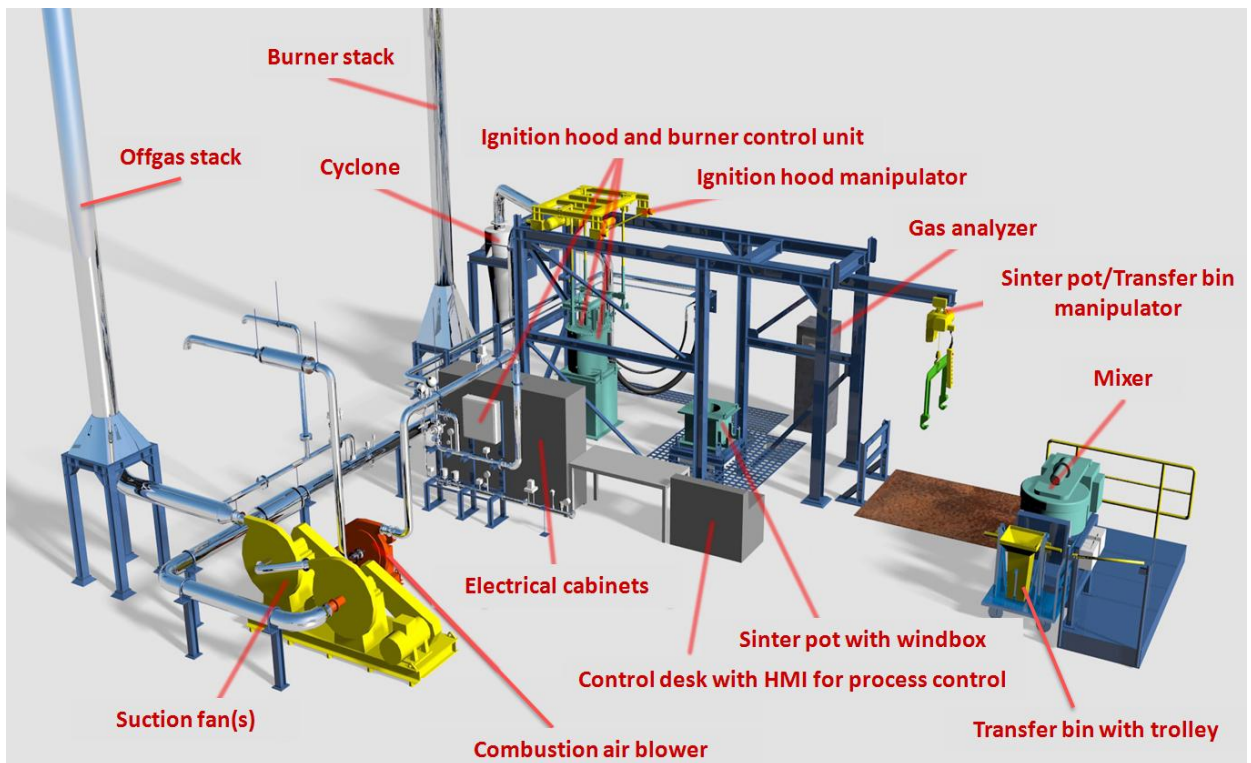


## Sinter Plant & Blast Furnace Optimization

by Pot grate testing (Sinter plant simulation)

### Concept

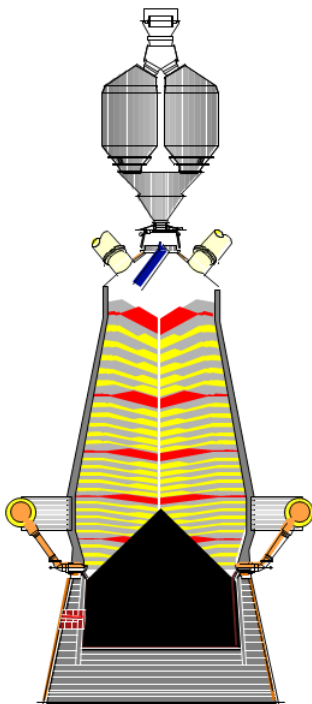
A continuous industrial sintering belt process is approximated by a batch “pot” grate test. The raw material in the stationary sinter pot passes through the same process stages as the material would on a sinter belt. Chemical composition and the physical properties of the produced test sinter are measured by means of standardized ISO-procedures and the results can then be applied into the real plant.



*Sinter test facility in a laboratory complex ( $\approx 100 \text{ m}^2$ )*

## Motivation

Managers are often reluctant to implement radical changes in their plants as these can result in risks regarding product quality or productivity. Therefore optimization paths are often not explored. Pot grate testing allows carrying out research activities and “what happens, if ...” scenarios, without affecting the industrial production plant. After the benefits and the suitability of sinter modifications have been proven by the simulation, the new sinter mix is introduced in the real sinter plant. Comparably low capital cost of the test sinter plant results typically into a fast return on investment of < 1 year!



✓ Chemical analysis

✓ Size analysis

✓ Drop strength

ISO 661

✓ Tumbling strength and Abrasion

ISO 3271

✓ Crushing strength

ISO 4700

Physical testing

✓ Low Temperature Disintegration

ISO 13930

✓ Decrepitation

ISO 8371

✓ Final degree of Reduction

ISO 7215

✓ Swelling

ISO 4698

✓ Reducibility

ISO 4695

✓ Reduction under load

ISO 7992

✓ Melting point

Thermal/metallurgical testing

## Benefits

- Optimization of the Pelletizing and Sintering Process
- Significantly increased productivity of the industrial sinter plant and BF
- Test of new raw materials, recycled wastes or different blends
- Evaluation of additives and recipes (binders, fluxes and solid fuels)
- Determination the oxygen required for the oxidation of magnetite to hematite