

APPLICATION

THE TASK

Blast furnaces are continuously operating systems which are tapped in regular intervals to draw out the molten crude iron and the slag. Therefore a driller pierces the plug in the tap hole at the lower end of the blast furnace. The hot crude iron and the slag have a temperature of approximately 1,500 °C when flowing into a refractory-lined channel. Crude iron and the slag get separated by a skimmer and head to the crude iron torpedo ladles and the slag ladles. As final step the tap hole gets plugged again.

These processes can create significant dust emissions. Those consist mainly of oxides from iron and other metals (products from the reaction of the hot metal with ambient air) as well as crystalline carbon. Those dust emissions must be captured and safely collected for the protection of man, environment and machines. Strict official requirements for dust emissions and the demand for continuous operation require an efficient and reliable filter system. After all, the furnace campaign shall take as long as possible considering the massive efforts for shut-down and re-start. Typically blast furnaces often work through years or even decades. Downtimes are scheduled only for the unavoidable repair works at the blast furnace itself.



THE SOLUTION

For the dedusting of the different processes (at the blast furnace e.g. drilling, tapping, plugging) a total extraction rate of 1,000,000 Am³/h was set for the design of the filter unit. This includes the requirement that the filter unit can be serviced during operation. The modular design of the Herding® MAXX filter unit for this application case offers the possibility to set 25 % of the filter unit off-line for service purposes.

The extremely high separation efficiency of the installed Herding® Sinter-Plate filter elements assures a safe and sustainable compliance with the regulations for dust emissions. The Jet-Pulse cleaning system for the filter elements works on minimized compressed air consumption due to the use of high-efficient solenoid valves in combination with a consumption-optimized cleaning logic.



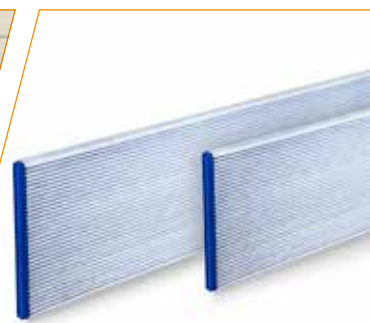
PRODUCTION OF IRON AND STEEL



Herding® MAXX filter unit



Jet-Pulse
cleaning system



Sinter-Plate filter media
Herding® DELTA 2250/9

Furthermore the construction of the complete filter unit must withstand the extreme range of ambient and operating conditions. The design considers a temperature range from -40 °C to + 80 °C.

The bolted design and the pre-assembly of major components allow a fast erection on site (compared to conventional bag filters a reduction of up to 40 %), with no need for welding works. Moreover the usage times for cranes and platforms could be reduced to a minimum.

FEATURES OF THE FILTER UNIT Herding® MAXX

- » Design air flow: 1,000,000 Am³/h
- » Clean gas compartment as walk-in plenum for weather protected access to the filter elements
- » Jet-Pulse cleaning system located outside of the air stream and therefore accessible for service during operation
- » Cleaning logic for minimization of compressed air consumption
- » Low clean gas dust emission rate for safe compliance with current and future limit values
- » Expected life times of 10 years and more for sustainable minimization of maintenance efforts and down time risks

ADVANTAGES AND BENEFITS OF THE Herding® SINTER-PLATE FILTER MEDIA

- » Pure surface filtration provides constant operating conditions
- » Extremely low dust clean gas dust emission rate for future safe operation
- » High relative filtration area allow compact design of the filter units
- » Rigid filter media does not flex during operation or cleaning, therefore no tear & wear
- » Long service life results in low service costs
- » Filter media can be assembled without need for lifting devices

Herding GmbH
FILTERTECHNIK

August-Borsig-Str. 3
92224 Amberg
Germany

Tel.: +49 9621 630-0
Fax: +49 9621 630-120
Mail: info@herding.de

herding.com