Sorbacal®

voestalpine
ONE STEP AHEAD.

LUEHR FILTER
Air Pollution Control Technology

CASE STUDY NR 21 • EUROPE

IMPROVING CUSTOMER PROCESS FLEXIBILITY AND FGT PERFORMANCE WITH SORBACAL® CDS

THE CHALLENGE

Voestalpine Stahl Donawitz is an integrated steel mill that is part of a globally leading steel and technology group. They embrace innovation and are always exploring new ways to do things better and more efficiently.

When Voestalpine learned about the new Sorbacal® CDS sorbent, they were keen to test it on their Circulating Dry Scrubber that treats the flue gas from their sinter plant.

The FGT system consists of an ESP followed by four well operated and efficient Luehr CDS units in parallel.

This plant has high concentration of KCl dust that passes through the ESP to reach the CDS units. KCl is a hydroscopic salt that can form sticky residues at high moisture content. As result, the moisture in the residue had to be kept at moderate values when using standard hydrate.

The trial objective was to evaluate the performance improvement of Sorbacal® CDS by increasing the moisture content of the recirculating residue.

THE LHOIST SOLUTION

Lhoist sorbent innovation, Sorbacal® CDS, brings improved flowability and can handle more than double the moisture content of standard hydrate.

During the Lhoist trial and in close collaboration with Voestalpine and Luehr Filter, the moisture content of the recirculating flow was increased progressively from 6 to 15 wt%. No process changes were necessary besides increasing the water injection rate and no operational issues were encountered. Note that by increasing the moisture content, the flue gas temperature decreased (quench).

Smooth, reliable and improved operation was realized throughout the 16-week trial with Sorbacal® CDS.

THE BENEFITS

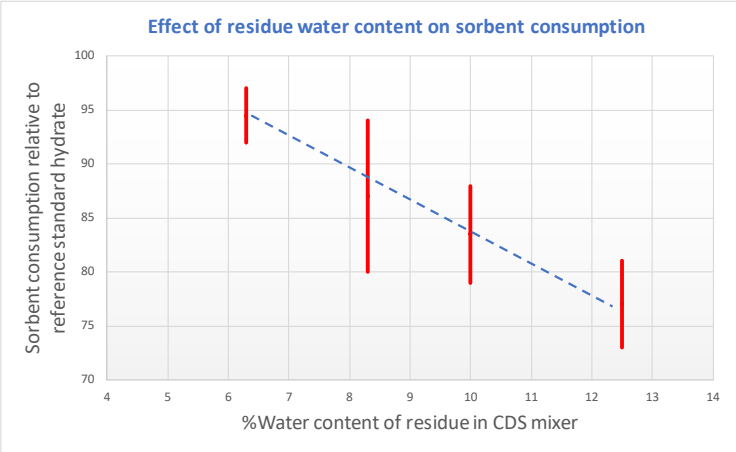
The combination of Sorbacal® CDS and high moisture content of the recirculation flow generated significant improvements:

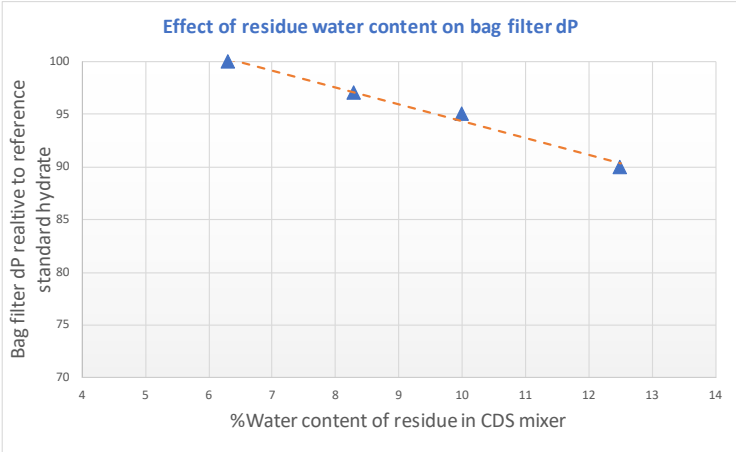
- 27% sorbent consumption savings
- 20% reduction in residue generation
- 10% lower pressure drop over bag filter
- No more buildup of sticky residue

Sorbacal® CDS increased the process flexibility whereby different fuel feedstocks could be considered at the sintering plant e.g. with higher sulfur or alkaline content. With the lower pressure drop the customer has the choice between energy & cost savings (lower ID fan power) or increased production output (higher gas flow rate).

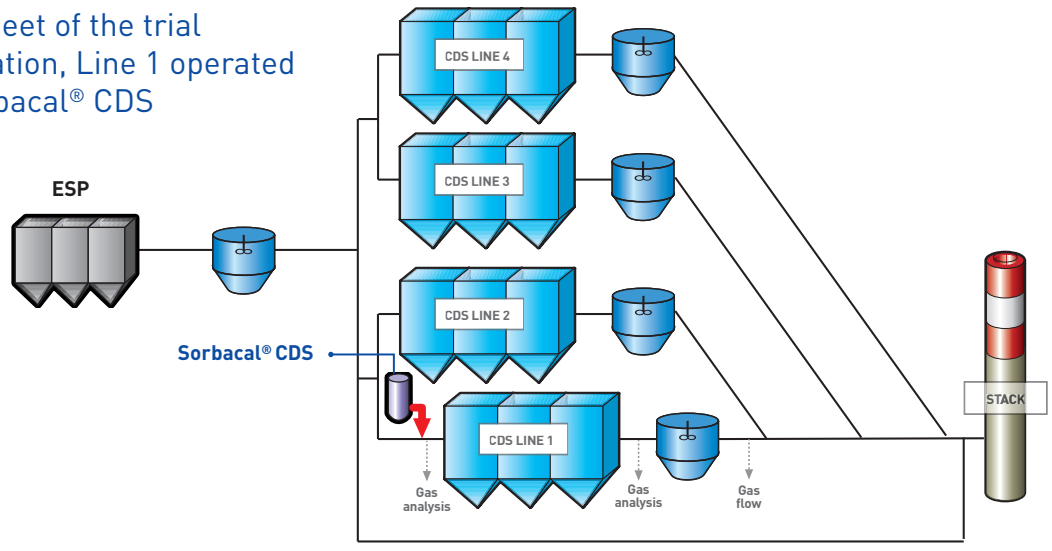
THE BENEFITS

A linear relationship between FGT performance improvement and water content of residue in the CDS mixer can be clearly seen.





Flowsheet of the trial installation, Line 1 operated on Sorbacal® CDS



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