GORE® Filtration Products

Metals Industry

Case History 2

Ferrosilicon

Optimization Potential

Baghouse airflow was 30% below design. This caused insufficient heat removal at the furnace. Maintenance of electrode system and mechanical stokers increased. Holes were cut in the ducting after the furnace to draw in cool air, as the aramid fiber bags used could only be operated up to 190ºC. Aramid fiber bags failed after 12 to 18 months due to hydrolysis caused by steam that passed through the baghouse when leaks occured in the furnace cooling water supply.

Solution

Installed GORE® membrane filter bags with Teflon B® woven glass backing material and new cages. Optimized system flow settings.

Result

Extraction at the furnace has increased above the design. The main fan damper is partially closed to control the extraction at the furnace. Tapping fume has been added into the same baghouse. The smelt house environment is much cooler, and it led to a decrease in maintenance of the electrode system and mechanical stokers. The GORE® Membrane/Teflon B® glass bags lasted 3 years and were immune to hydrolysis.
The operating temperature has been increased to 230^{0}C.
Visible emission at the stack has been eliminated.
After 3 years, the first set of GORE® membrane filter bags were replaced with SUPERFLEX® filter bags which have now been in operation for more than 5 years. The electrical capacity of the furnace has been upgraded by 30%.

Application:	Filter evacuates an electric arc furnace used to produce 14-16 % FeSi
Capacity:	39.000 Tons milled/ atomised FeSi per yr
Furnace:	12 MVA
Baghouse:	Pulse-Jet Baghouse with 6 compartments
Number of bags:	1526 filter bags
Filter area:	3960 m^2
Temperature:	230^{0}C
Emissions:	Less than 5 mg/Nm^3
Filter material:	GORE® membrane filter bags with 288 g/m^2 (8.5 oz/yd^2) woven glass backing material

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