



GORE® Filtration Products

Metals Industry

Case History 8

Electric Arc Furnace

OPTIMIZATION POTENTIAL

The original baghouse design was based on furnace power-on time equal to 66 minutes. When additional chemical heat was added to the furnace to reduce power-on time to 51 minutes water sprays were installed to keep the temperature under the limit for polyester needled felt media. When frequent bag failures, spark damage and high differential pressure occurred the plant retained an independent laboratory to investigate the causes. They found severe levels of acidic moist heat hydrolysis of the polyester and fine micron dust penetration into the felt, concluding that the polyester felt was not suitable for this fine fume application.

SOLUTION

Optimized system settings and replace the existing woven polyester bags with GORE® ePTFE membrane bags with 16.8 oz/sq yd acid resistant fiberglass backing.

RESULT

The bag failures from sparks were eliminated. Hydrolysis is no longer a concern since the GORE™ ePTFE membrane and the fiberglass backing are acid and hydrolysis resistant. The baghouse pressure drop has decreased and flow has increased. More flow can be taken from the DEC so more of the fume is captured before escaping from the furnace.



Application: Steel Electric Arc Furnace for production of Merchant Bar

Baghouse: Pulse Jet Cleaning
741,000 Am³/h (436,000 acfm)

Number of bags: 5568

Filter area: 8200 m² (88,000 ft²)

Temperature: 135°C (275°F)

Filter material: GORE® membrane filter bag with 570 g/m² (16.8 oz/yd²) acid resistant fiberglass backing material

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