

Case Study

GORE® LOW DRAG Filter Bags: Silicomanganese Ferroalloy Production, Emalahleni, South Africa

Challenge

Transalloys (Pty) Ltd currently uses five submerged arc furnaces to produce silicomanganese (SiMn) at a capacity of 180,000 tons per year. Transalloys was looking to expand its production capabilities, requiring more capacity for air pollution control. Rather than build larger baghouses — an investment that would also require larger fans and more new equipment — Transalloys chose to investigate the potential APC capacity increase it could achieve with GORE LOW DRAG Filter Bags.

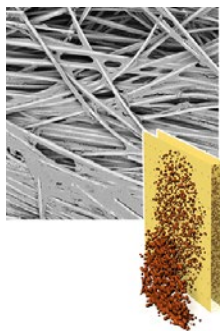


Solution

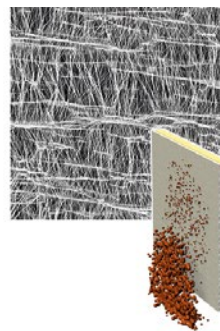
In its investigation of Gore's solution, Transalloys performance tested the new filter technology in one of its baghouses. GORE LOW DRAG Filter Bags were installed in one of the baghouse's eight compartments, while two adjacent compartments were fitted with standard ePTFE membrane filter bags, both new and previously used. The pressure differentials and relative flows through each compartment were monitored to determine the capacity increase achievable with Gore's filter bags.

Application	Silicomanganese (SiMn) production
Process	Submerged arc furnace
Filter material	GORE LOW DRAG Filter Bags
Plant capacity	Increasing
Gas flow rate	120,000 Nm ³ /hr
Operating temperature	180 °C (up to 250 °C)
Total filter area	5,460 m ²
Air-to-cloth ratio	34 Am/h (0.6 Am/min)
Differential pressure	2.06 kPa

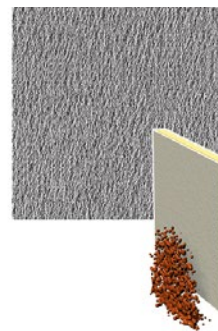
Conventional Fabrics



Standard Membrane



GORE LOW DRAG
Filter Membrane

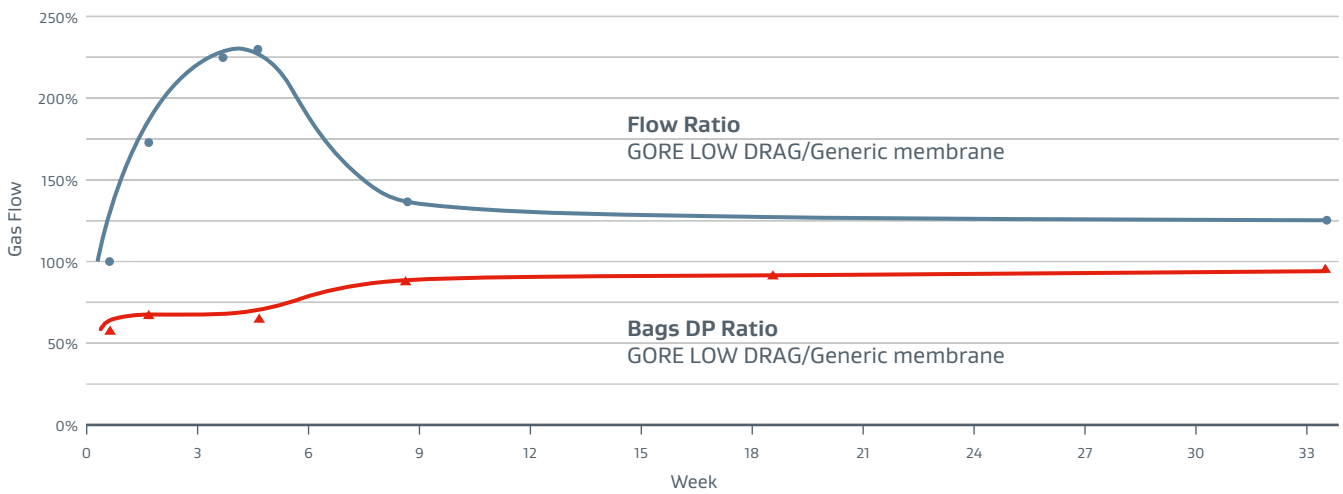


Result

After 33 weeks of testing, the GORE LOW DRAG Filter Bags continued to provide approximately 26% more gas flow than either of the other test compartments at comparable pressure drops, with fewer emissions overall. The Gore filter bags also delivered an excellent response to start-up and to the cleaning system.

By providing additional flow capacity without adverse effects to bag life or emissions, the GORE LOW DRAG Filter Bags allow Transalloys to consider either saving electrical (fan) energy at current flow rates or potentially increasing system flow rates to accommodate greater furnace production.

Flow Ratio: GORE LOW DRAG Filter Bags vs. standard bags (new)



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