Case history

GORE® LOW DRAG Filter Bags – Improving Process Efficiency in TiO2 Production

Challenge

A customer was employing standard filter bags (ePTFE membrane on polyester felt backer) in finishing bag houses in the production of titanium dioxide (TiO2) pigments. New product lines with enhanced TiO2 particle surface treatment subsequently posed filtration challenges. Compounding the challenge was the introduction of an additional feed line (dual feed) to some of their bag houses to help meet production rates/targets. As a result of these changes, the pressure drop (dP) across the bag house exceeded set limits, which necessitated stopping production every 30 minutes for offline cleaning. The customer desired a filter bag with improved cleanability, to reduce the need for offline cleaning and improve production efficiency.

Application:
TiO2 Production (Packing Bin)

Baghouse Type:
Pulse Jet

Filtration Material:
GORE® LOW DRAG Filter Bags
(543 g/m² polyester felt backer)

Bag house feed rate:
8 tons/hour

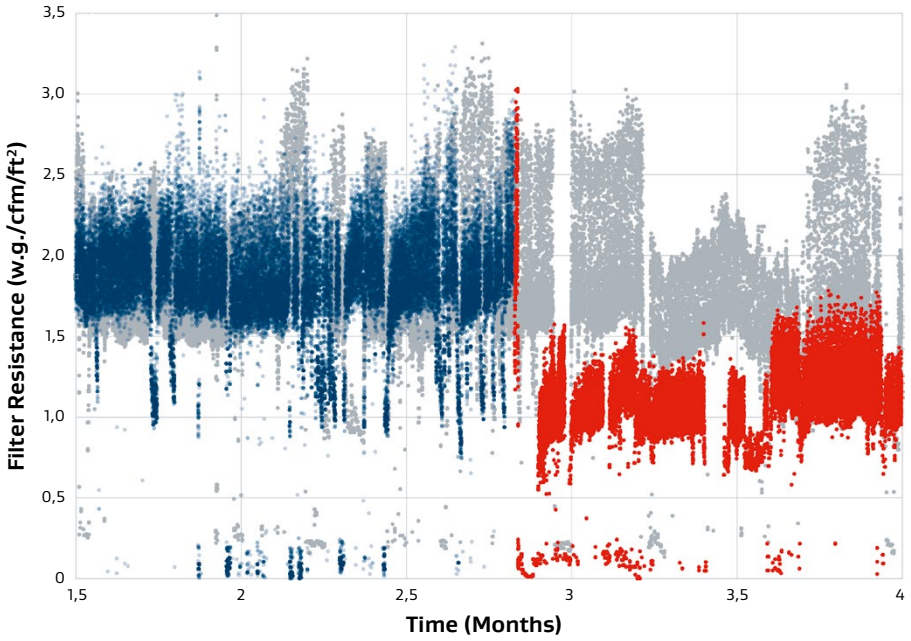
Air-to-cloth ratio:
1.2 m/min (4 fpm)

Operating temperature:
120 °C (250 °F)

Bag life:
2 years (typical)

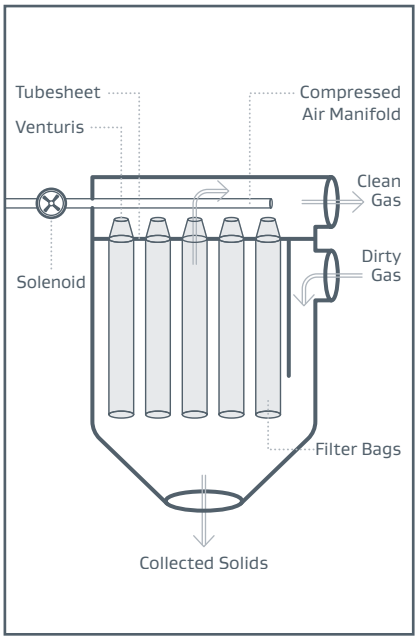
Solution

The customer replaced its traditional membrane filter bags with GORE® LOW DRAG Filter Bags. These filters incorporate a proprietary ePTFE advanced membrane comprising a more cleanable surface which facilitates lower baghouse dP and increased airflow. The enhanced cleanability and decreased dP enabled the continuous operation of the feed bin, without the need to pause production for offline cleaning.



- **Baghouse A**
  Standard Filter Bags
- **Baghouse A**
  GORE® LOW DRAG Filter Bags
- **Baghouse B**
  Standard Filter Bags

Together, improving life



Result

Cleanability of a filter bag is directly related to filter resistance, which is the differential pressure divided by the air-to-cloth ratio (ACR).

Lower measured filter resistance is indicative of a more cleanable surface, ultimately resulting in lower DP and longer bag life. The figure on the front page compares the measured filter resistance in two identical feed bin baghouses.

Baghouse A was initially fitted with standard membrane filters, which were then subsequently replaced with GORE® LOW DRAG Filter Bags at 2.5 months. Standard membrane filters were installed in Baghouse B for the entire duration of the experiment as a control. The data clearly show that the measured resistance was reduced by 50% after installation of the GORE® LOW DRAG Filter Bags, whereas the control baghouse stayed constant. In this case, the lower filter resistance also facilitated continuous operation of the feed bin without exceeding the prescribed dP limit of the baghouse, improving the process efficiency and throughput. Improvements were realized in both single and dual feed systems.

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