Donaldson
FILTRATION SOLUTIONS

CASE STUDY

Optimizing Airflow: How a Filter Upgrade Restored Compressor Performance

Donaldson Turbo-Tek™ H_2O+ Filters Help Bolster Efficiency and Cut Downtime in Challenging Conditions

OVERVIEW

An air separation plant situated near the Columbia River in British Columbia, Canada installed an industrial compressor at their facility more than a decade ago. At the time of the installation, the system was equipped with state-of-the-art F8 synthetic media filters engineered to handle the required air volume and challenging environmental conditions of the region including snow, hoar frost, and summer humidity.

Since the original installation, the area has undergone significant changes. The growth of multiple industrial companies – including a zinc and lead smelting operation – and an increase in the frequency of seasonal wildfires have impacted the customer's operating conditions. Elevated daily levels of industrial hydrocarbons, along with the dense smoke, soot, and ash from the wildfires, were plugging the filters and adding stress on the system causing:

- **Increased pressure drop**
- **Downstream blade fouling**
- **Unplanned maintenance and filter replacements**

CHALLENGE

Boost the system's filtration efficiency to account for the increased amount of soot particles and industrial hydrocarbons, without compromising compressor efficiency, in a system that includes 288 filter cartridges.

SOLUTION

Donaldson engineers conducted laboratory testing on used F8 filters provided by the customer. In-depth analysis determined that the F8 filters were unable to effectively capture the submicron-sized particles (0.2µm and smaller) now prevalent in the region.

Working with the plant's environmental engineering team, Donaldson upgraded the existing F8 inlet filtration to (H)EPA E12 Turbo-Tek™ H_2O+ filters.

The filters incorporate fully synthetic, watertight, multi-layer depth-loading media providing E12-class filtration protection capturing over 99.5% of submicron particles, and a prefilter engineered to withstand industrial hydrocarbons.

RESULTS

The switch to Donaldson Turbo-Tek H_2O+ filters helped this plant eliminate blade fouling and return system performance to near-original levels. After multiple years in use, the E12 filters continue to deliver enhanced protection and efficiency for this facility in challenging conditions.

The filters performed so well that the leadership team has standardized Turbo-Tek H_2O+ for all its North American plants to help eliminate the need for washdowns and premature filter replacement between major outages.

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