

REFERENCE

viledon®

PULSE-JET FILTER HOUSE FOR AIR SEPARATION COMPRESSORS IN HAZIRA, INDIA

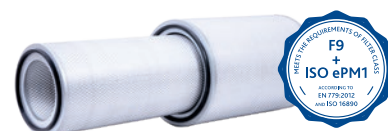
An India-based world leader in the manufacture and supply of industrial gases wanted to retrofit an old pulse filter house that provides clean air for three compressors generating oxygen. The supply line for these industrial gases runs over the fence of a steel plant. The user needed to solve severe fouling problems inside the compressors due to heavy pollution of the ambient air and was experiencing an extremely short working life for the existing filter cartridges.

The situation

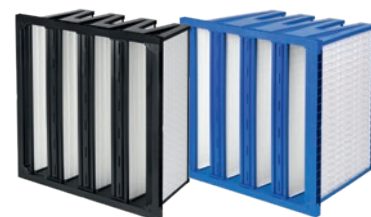
The site is located in Hazira, a small city in western Gujarat, India, which is an important trans-shipment point and an industrial hub on the banks of the Tapti River, eight kilometers from the Arabian Sea. The climate is tropical with warm, hot summers and high humidity. During recurring major shutdowns for cleaning the three compressors, the user discovered heavy contamination of greasy coal dust as well as coarse dust from the nearby steel plant. Air intake filtration of the old filter house was carried out by a single-stage pulse filter cartridge system with no prefiltration or downstream 'police' filter concept. Poor filter lifetime with the existing competitor cartridges of just 6–8 months required a completely new air intake concept. The user therefore decided to completely rebuild the entire filter house. The scope of this project included engineering, manufacture, construction, assembly and furthermore supervision for commissioning and start-up by our Indian facilities.

The Viledon® solution

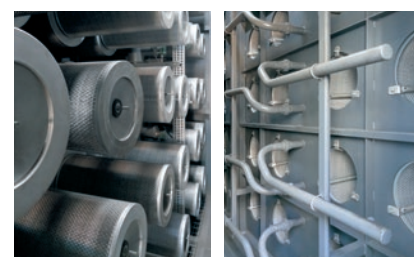
- The air intake filter housing is manufactured from carbon steel painted and fitted with weather hoods.
- In the prefilter stage: pocket filters made from filter mat medium P15/500S with stainless steel cages for coarse dust separation. The filter medium is resistant to a wide spectrum of chemicals and retains its technical filtration properties even after washing.
- The pulse-jet cleaning system for the 2nd filter stage with compressed air header and solenoid valves was individually customized by Freudenberg Filtration Technologies.
- 144 sets of pulsable Viledon® GTS double-cylindrical cartridges capture the main airborne particles in the 2nd filter stage.
- The policing filter concept is provided by MVPGT cassette filters in the 3rd filter stage followed by EPA filtration level with eMaxx E10 cassette filters in the final filter stage.
- First results of the new filtration concept indicate a filter lifetime of >2 years with no notable compressor contamination.



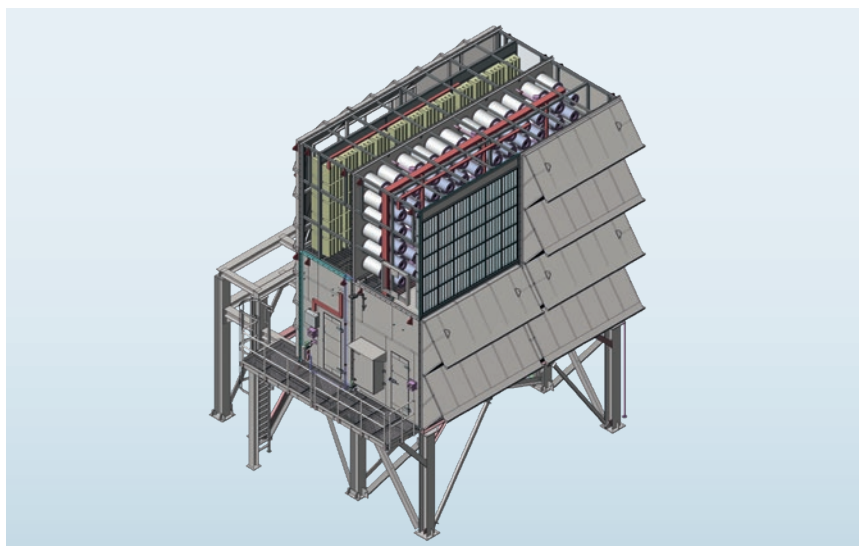
2nd filter stage: GTS cartridge set in double-cylindrical design



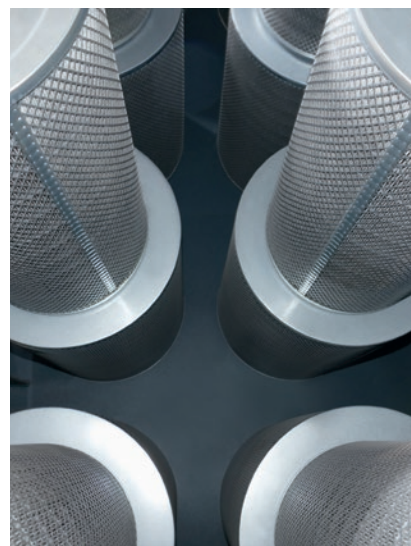
MVP GT98 and eMaxx E10 filters in filter stages 3 and 4



Filter house with GTS cartridge sets and compressed air header with solenoid valves



Pulse filter house design and GTS cartridge sets



Customer benefits

- The lifetime of the pulsable filter cartridges has been extended from 6–8 months for cartridge sets made from blended media to an anticipated >2 years with Viledon® GTS double-cylindrical cartridge sets and a professional upstream prefilter system as well as an efficient downstream policing filter system.
- All installed filters are ideally suited for the local conditions. Viledon® GTS cartridge sets with their 100% high-strength synthetic microfiber nonwoven media and water-repellent coating provide high humidity resistance.
- Slow differential pressure build up gives the filters a long working life.
- The clean compressor enables the plant to provide a constant and reliable oxygen supply to the steel plant.
- No more shutdowns or production loss due to filter replacements.
- Reliable and clean operation of the compressor reduces energy consumption.
- Site execution of the new filter house design was realized in a record time of 36 hours.



Compressed air header with solenoid valves (left) and sequential pulse control panel (right)

KEY DATA

Location	Hazira, Surat district in Gujarat, India
Compressor	3 Siemens STC GV 200-5 compressors
Intake air flow rate per unit	300,000 Nm ³ /h
Initial pressure drop (total system)	260 Pa
Intake air system / filters fitted	4-stage filter system 1 st stage: 120 rigid pocket filters made from a high performance medium P15/500S of filter class ISO coarse 75% 2 nd stage: 144 GTS 324-445 cartridge sets (double-cylindrical, 660 mm height), filter class ISO ePM1 75% (F9) 3 rd stage: 120 MVPGT98 cassette filters, filter class ISO ePM1 85% 4 th stage: 120 eMaxx E 10 cassette filters, filter class ISO ePM1 >95%
Scope of filter house delivery	Complete air intake housing made of carbon steel, painted • Weather hoods with stainless steel bird protection screen • Self-cleaning pulse system complete with air header, solenoid valves and blow pipes with nozzles • Micro-controller based sequential programmable control panel • Dust hoppers with damper • Transition duct with stainless steel trash screen • Modification of supporting structure and additional platforms

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