REFERENCE

viledon®

PULSE JET GTS FILTER CARTRIDGE SETS AT POWER PLANT IN TEXAS

Introduction
The site is located in a rural area of northern Texas and uses a 501G gas turbine in a combined cycle mode. The climate is hot and humid with rain and fog particularly through the fall and winter seasons.

Initial situation
- The plant runs on an intermediate load basis and previously **replaced OEM filters every year** when pressure drops of up to 4" w.g. (1,000 Pa) would be reached.
- In 2014, the site switched to an alternate filter manufacturer whose filter lifetime was expected to be 2 years. However its filters were unable to effectively coalesce atmospheric moisture and pressure drop had risen significantly by the first winter season.
- One of the reasons for the **pressure drop increase of competitor filters was the collapse of many pleats** under high moisture load. Closing of pleats led to a lot of filter media being left unused which resulted in a reduction of filter lifetime.
- The plant operator asked Freudenberg to solve the problem of inlet filters reacting negatively to moisture. A target filter lifetime of 24 months was set by the customer despite the highly demanding site conditions.

The Viledon® solution
- After analysis of site conditions and previous filter history, Freudenberg recommended the **Viledon® GTS filter cartridges** of filter class ISO ePM1 80% (F9). They meet all of the customer requirements: high efficiency, strong resistance to moisture, high dust holding capacity as well as robust construction.
- With F9 filter class (to EN 779 standard), GTS offer a higher class of filtration efficiency than the OEM installed filters.
- GTS filters are of standard dimensions. As a result filter installation was very simple and was completed ahead of schedule with no modifications required of the filter retention system.
- The GTS cartridge system has now been in operation for over 30 months. By comparison after 20 months of operation, competitor filters had spiked to a pressure drop of up to 7.8" (1,950 Pa) when faced with rain and/or fog. The GTS in comparison now has a stable pressure drop of about 1.2" w.g. (300 Pa) at base load.
- The original set of GTS filters is all set to handle its third winter season at the site.

GTS cartridges in cylindrical and conical design

Installed GTS cartridges

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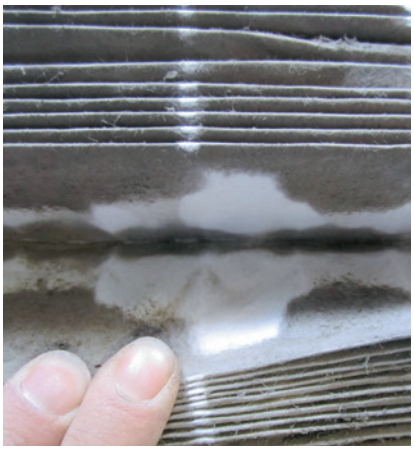
Air intake filter house of power station in northern Texas

Installed GTS cartridge sets

Benefits for the user

- Compared to the OEM installed filters the upgraded filtration system with Viledon® GTS cartridges offers higher protection of turbine blades against fouling.
- Turbine now has **negligible output degradation compared to 4 % earlier**.
- Extended lifetime of the filters along with stable pressure drop of the filtration system
- Moisture coalescing capability of GTS filters protect the filter house and turbine from corrosion.
- The stable and predictable filter pressure drop allows for reliable operation for long periods between maintenance shutdowns.
- Reduced labor and maintenance costs due to long filter lifetimes despite the dusty industrial environment and very high atmospheric humidity.
- High compressor cleanliness is maintained and as a result, **unscheduled compressor washes are not required**.



Collapse of pleats with competitor filters

TECHNICAL DATA	
Location	North Texas, USA
Gas Turbine	Siemens Westinghouse 501G
Intake air flow rate per unit	983,255 cfm (1,670,560 m³/h)
Intake air system / filters fitted	Single-stage filter system 576 GTS 445-324 cartridge sets (cylindrical / conical) of filter class ISO ePM1 80% / F 9

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