



REFERENCE

viledon®

GTS CARTRIDGE SETS FOR INTAKE AIR FILTRATION OF TWO POWER STATIONS IN RATCHABURI, THAILAND

Two utilities for the national power grid in Thailand experienced in several air intake systems short lifetimes of the originally installed filter cartridges and wanted to improve the turbines' power output and minimize unplanned down-times. Both considered power plants are located in the Ratchaburi province of Thailand featuring rural wetlands with tropical, wet and dry, savanna climate. The power plant RPCL runs 3 units of Mitsubishi M701F gas turbines, while the second plant RGCO runs 6 units of GE Frame 9FA gas turbines.

The situation

All units were initially equipped with pulsable filter cartridges of conical/cylindrical design based on cellulose blend media and nanofiber layer. The customers wanted to change the existing systems for the following reasons:

- Filter lifetime was consistently less than 12 months/8,000 hours and pressure drop increased rapidly.
- Detailed records of the customers showed substantial power output losses.
- The sites have to cope with high humidity of > 80% during the rainy season from May until October which has a significant impact on the filter performance in particular if the filter medium has no anti-moisture properties.
- The process of fouling on the blades was accelerated by use of low filter grade cartridges.

The Viledon® solution

Competitor filter cartridges made of cellulose blend media have been replaced by

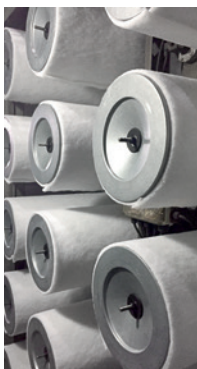
- 800 sets of F9 pulsable Viledon® GTS

cartridges at an air flow of 2,385 m³/h per set, installed to 3 units of RPCL plant.

- 672 sets of F9 pulsable Viledon® GTS cartridges at an air flow of 2,726 m³/h per set, installed to 6 units of RGCO plant.
- Each cartridge is additionally equipped with a wrapper made of a synthetic-organic filter material. The wrappers arrest coarse particles and function as coalescers for removing humidity.



GTS cartridges in cylindrical and conical design



Installed GTS cartridge sets with wrappers





Air intake filter houses of power station in Ratchaburi (plant RPCL)



Customer benefits

- The lifetime of the cartridges is extended from 3 months respectively 12 months (depending if installation started at the beginning of the rainy or dry season) with competitor products to > 25 months (plant RGCO) respectively > 24 months (plant RPCL) with Viledon® cartridges without operating the pulse-jet system.
- Viledon® GTS cartridge sets are ideally suited for the local conditions with high humidity. The 100% high-strength synthetic microfiber nonwoven media with water-repellent coating provide high humidity resistance.
- Slow differential pressure build ups allow long lifetimes.
- Reliable and clean operation of the gas turbine's compressor sections optimizes the sites's fuel burn and minimizes the overall heat rate.
- The customers are very satisfied and the customer RGCO reports > 3% compressor efficiency increase due to reduction in fouling.



Air intake filter houses of power station in Ratchaburi (plant RGCO)

KEY DATA		
Location	Ratchaburi province, Thailand, Plant RGCO	Ratchaburi province, Thailand, Plant RPCL
Gas turbine	GE Frame 9FA (6 units), 230 MW/GT	Mitsubishi M701F (3 units), 245.8 MW/GT
Intake air flow rate per unit	1,832,111 m³/h	1,907,989 m³/h
Initial pressure drop (total system)	3.11 mbar	3.36 mbar
Alarm pressure drop	8.47 mbar	14.9 mbar
Intake air system / filters fitted	2-stage filter system with weather hoods + moisture separators 1st stage: Wrappers made of a high performance nonwoven from break-resistant synthetic fibers 2nd stage: 672 GTS 445-324 cartridge sets (cylindrical/conical, 660 mm height) of filter class F9/ISO ePM1 80 %	2-stage filter system with weather hoods + moisture separators 1st stage: Wrappers made of a high performance nonwoven from break-resistant synthetic fibers 2nd stage: 800 GTS 445-324 cartridge sets (cylindrical/conical, 660 mm height) of filter class F9/ISO ePM1 80 %

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