

REFERENCE

viledon®

GTS CARTRIDGE SETS FOR COASTAL POWER STATION IN SAUDI ARABIA

The project involved upgrading the air intake filters of a combined cycle power station located in coastal Saudi Arabia. This facility is one of the world's largest desalination & power plants and has 12 GE 7FA gas turbines, all running at base load in a combined cycle configuration with steam turbines.

The situation

The site is located in a challenging coastal environment with filters having to cope with year-round humidity as well as high levels of dust from the desert and nearby petrochemical & refinery facilities.

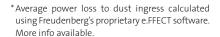
OEM filters were initially installed on all 12 turbines leaving the turbine operators disappointed with the results:

- Competitor filters only offered efficiency at F8 filter class and the inadequate filter efficiency causes substantial fouling on turbine blades.
- Due to this buildup of fine dust, each turbine suffered serious power output losses of 10 MW or more. (≙ 6 % of output) between offline washes.
- Filter lifetime of 24 to 30 months was too short to meet the major outage intervals of 3 years.
- The 80% cellulose/20% synthetic media of the OEM filters was unable to cope with the humidity, particularly in the autumn and winter seasons.

The Viledon® solution

Installation of Viledon® 100% synthetic GTS cartridge sets (conical/cylindrical).

- By virtue of higher filtration efficiency, Viledon® GTS filters reduced dust ingress and fouling into the turbine by an estimated 45%*.
- As a direct result of higher filtration efficiency, turbine output degradation was reduced by > 50% to about 5 MW between offline washes.
- At the same time Viledon® GTS cartridges reached a service life > 3 years, thus meeting the site's planned outage schedules.
- With the Viledon® GTS's 100% synthetic media, stable pressure drop is achieved even during fog ambient humidity and fog is no more a concern for the operators.
- Over a period of 2.5 years, the turbines at the site were sequentially upgraded from competitor to Viledon® GTS filters and all 12 turbines are now running on GTS filters.





GTS cartridges in cylindrical and conical design



Installation of Viledon® GTS cartridges

You can find detailed information at



www.freudenberg-filter.com > World of Industrial > Services and Engineering > Filter efficiency calculation







Customer benefits

- Extended lifetime of cartridges. From 24 to 30 months with competitor filters, the operators now achieve 36 months or more and are able to reliably meet major outage intervals.
- Higher output and therefore, sales revenue generated especially in peak summer months due to significantly lower fouling and turbine output degradation.
- Improved and stable pressure drop values despite dusty, humid and coastal conditions.
- Viledon® GTS cartridge sets are ideally suited for the local conditions; optimized pulse-jet cleaning cleaning.



Initial situation: huge dust accumulation on filter house floor as a direct result of very high ambient dust concentrations

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1,636 m³/h (2,484 m³/h per filter set)
tage: prefilter glassfiber mats placed zontally in weather hoods tage: 528 sets of GTS 324-445 cartridges ndrical/conical, 660 mm height) of filter is ISO ePM1 75% (to ISO 16890 standard) 9 (to EN779:2012 standard)
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Installed Viledon® GTS cartridges after 20,000 hours in operation

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