

GE Energy

AltairSystem3™

Filtration System



The new high performance filtration system
from the offshore experts



imagination at work

Introduction

Combining the benefits of recent developments in filtration technologies with proven SRS Technology for protection against salt contamination, the AltairSystem3 filtration system raises the performance of compact high-velocity air inlets for offshore applications.

This next-generation technology builds upon the successful AltairSystem2 system now in use throughout the world, which utilizes GE Energy's trusted SRS Technology to remove both wet and dry salt particulate. The new system adds outstanding sub-micron particulate and droplet removal efficiency—wet or dry—without compromising the pressure loss of the system. This advanced technology solution is ideally suited to offshore environments (particularly dry climates) with high dust-loadings such as areas close to desert landmasses, or locations affected by Harmattan and Shamal wind conditions.



Protection from salt, water, and particulate

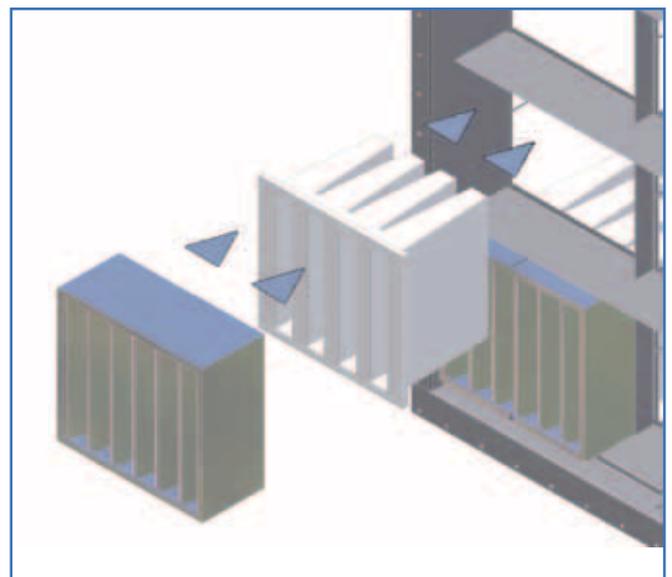
The AltairSystem3 unit has high efficiency at high air velocity, removing sub-micron particulates and dry salt, while maintaining established standards of wet salt performance. Gas turbine users can benefit from reduced maintenance—caused by compressor fouling.

In addition reduced salt levels make the system ideal for installations using sour fuel without compromising performance. The high dust-holding capacity helps provide longer life, which helps extend intervals between shutdowns.

Easy to upgrade

The components of the new system have been developed specifically taking into account compatibility with existing AltairSystem2 installations. For retrofits and upgrades the AltairSystem3 holding frame flange will fit directly into most existing AltairSystem2 filter houses without any need for hot-working on site. The sizing of the filter elements and the design performance parameters mean that the same number of filters are required in an upgraded system as in an existing one.

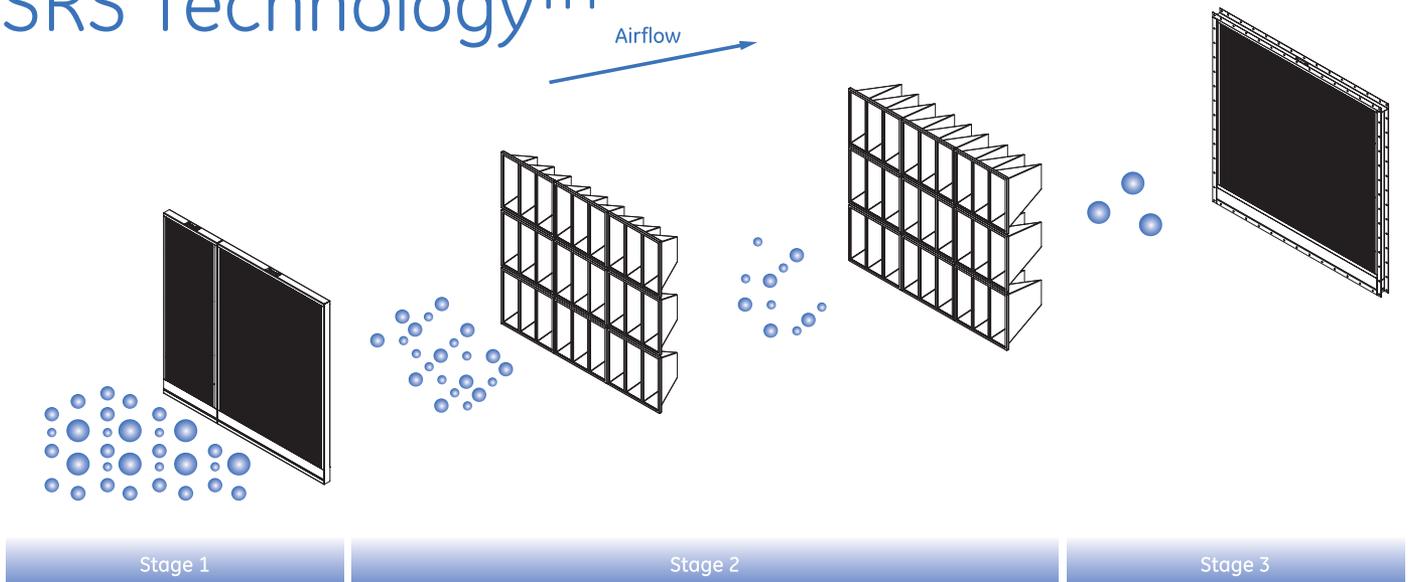
The AltairSystem3 holding frame is deeper than the existing systems to accommodate the new style filters. However, the design engineers have ensured that there is no impact on the overall size, including depth, of the filter house. As shown in the illustration the new pre-filter sits immediately in front of the final filter and is easily inserted or removed whilst the final filter remains in place.



Key benefits

- Outstanding salt removal efficiency—wet or dry—in all humidities helps ensure greater turbine protection and longer intervals between turbine maintenance
- Exceptional initial sub-micron particulate efficiency—without any impact on pressure loss
- Higher through-life efficiency of final filter (against both wet and dry contaminants)
 - Significantly reduced compressor contamination
 - Reduced need for washing
- High velocity design gives more compact unit than alternative systems
- Longer in-service filter life with vastly improved dust-holding capacity
- Minimized installation time due to physical compatibility with AltairSystem2

SRS Technology™



The ingestion of airborne salt has long been proven to be a major contributing factor in both decreased turbine performance and reduced engine lifetime. The AltairSystem3 unit utilizes GE’s unique SRS Technology system to protect the turbine from damage. This system, which is the result of 40 years’ experience in marine and offshore filtration, removes both solid and liquid contaminants in all weather conditions and at all levels of humidity. Three key stages are employed:

Stage 1 is referred to as the ‘bulk water removal’ stage. The majority of the liquid (rain, sea spray, coarse aerosols) entering the inlet is removed and drained away using a vane separator.

Stage 2 is the coalescer/filtration stage. Fine aerosols that have penetrated Stage 1 are coalesced to form larger droplets that can be easily removed by the third stage. Fine dust and other solid particulate are also removed by the high performance filter media.

Stage 3 is a vane separator which removes concentrated saline solution that has passed through Stages 1 and 2. Not only is this entrained liquid captured, but it is removed from the inlet by a manometrically-sealed drainage system.

System Performance Data

(Includes first stage Marine Vane Separator, OHB3 pre-filter, OHF9 final filter, and final stage marine vane separator)

Clean pressure loss at rated flow (@ 5 m/s)	425 Pa, 1.70 inWG
Salt output per MMBL @ 20% RH	0.0871 ppb _w
Salt output per MMBL @ 90% RH	0.0002 ppb _w

AltairSystem3 Filter Elements

The AltairSystem3 range of filter elements includes two cleanable pre-filters and a disposable high efficiency filter. The filter elements provide a range of efficiency levels to suit different applications.

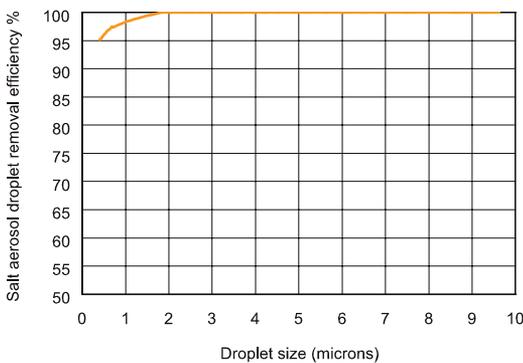


Filter Performance Data

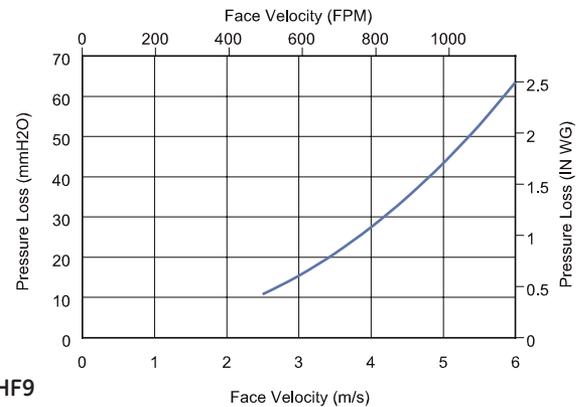
	Prefilter OHB3	Prefilter OHB4	Final filter OHF9
ASHRAE 52.2 rating*	—	—	MERV 15
EN779-2002 rating	G3	G4	F9
Dust holding capacity @ 450 Pa (1.8 inWG) AC Fine	—	—	1470 g
Rated air flow	6,400 m ³ /hr 3,800 cfm	6,400 m ³ /hr 3,800 cfm	6,400 m ³ /hr 3,800 cfm
Clean pressure loss at rated flow	80 Pa 0.31 inWG	140 Pa 0.56 inWG	220 Pa 0.88 inWG
Maximum air flow	7,768 m ³ /hr 4572 cfm	7,768 m ³ /hr 4572 cfm	7,768 m ³ /hr 4572 cfm
Burst strength	6225 Pa 25 inWG	6225 Pa 25 inWG	6225 Pa 25 inWG
Nominal dimensions	580H x 620W x 265D mm 22.8H x 24.4W x 10.4 D in		580H x 620W x 430D mm 22.8H x 24.4W x 17 D in

*minimum neutralised (isopropanol) fractional efficiency

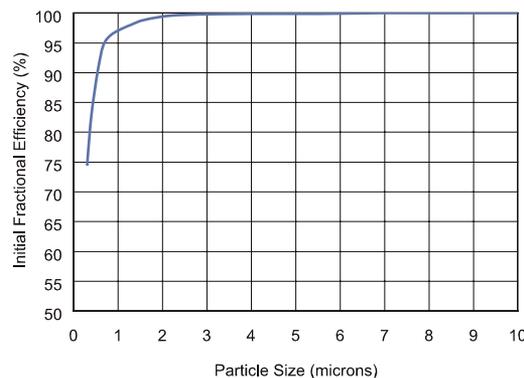
System salt droplet removal efficiency



System pressure loss MVS*/OHB3/OHF9/MVS



Fractional efficiency OHF9



*Marine Vane Separator



For more information on Altair systems contact your GE Energy sales representative at +44 (0) 1420 541 188 (UK) / +1 502 499 2151 (US), or visit us on the web at ge-energy.com/gtinlet.

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