

GE
Energy

AltairNeptune™

Filtration System



Marine Protection



imagination at work

Introduction

The AltairNeptune™ filtration system represents the most advanced engine inlet protection technology for the marine environment. Incorporating the familiar three-stage vane/coalescer/vane approach in a super-compact unit, this system protects marine gas turbines around the world.

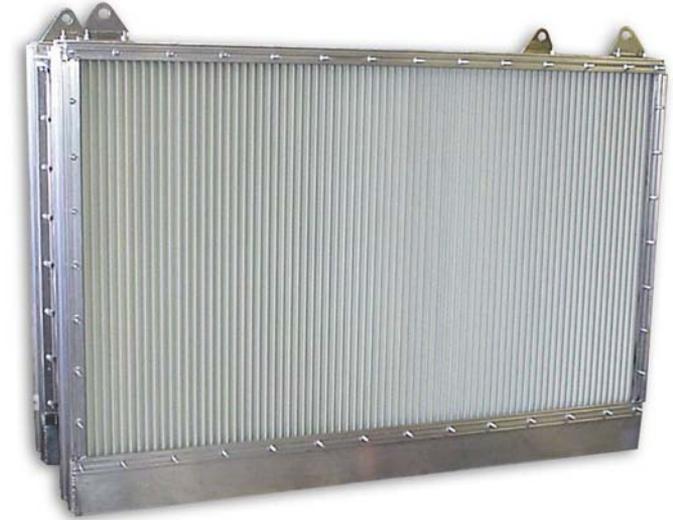
Super-compact

Operating at velocities as high as 3000 FPM (15 m/s) allows the filtration package to be over 50% smaller than conventional three-stage systems and provides increased flexibility in ship design. The ultra-compact nature of the unit does not compromise the pressure loss or performance of the system, which meets or exceeds all relevant engine specifications. The smaller frontal cross-section also results in a reduced radar signature.

Outstanding salt removal performance is achieved by utilizing GE Energy's proven SRS Technology™ process. This ensures optimum protection against blade corrosion and prolongs turbine life.

Robust design

The system can be supplied in corrosion-resistant stainless steel or marine-grade aluminum, and has been successfully

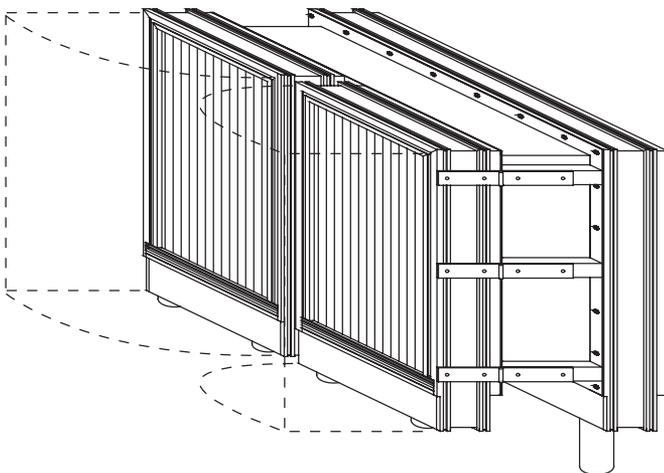


shock-tested in accordance with national military standards for international naval use. The AltairNeptune range of filter elements is designed for a long and low-maintenance life. Additional equipment such as snow hoods and anti-ice protection can be easily added to the system depending on specific environmental conditions.

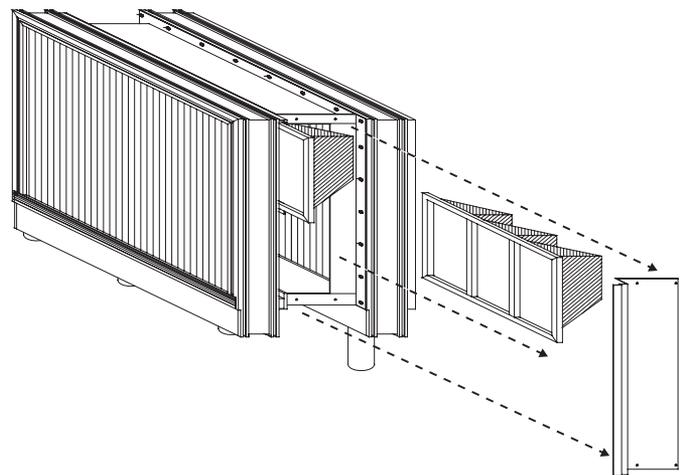
Ease of Access

As space onboard ship can be very limited, the compact design of the unit offers increased flexibility to minimize the area occupied by the filtration system. A number of access options are available - the illustrations show just two possibilities.

Front access (hinged)



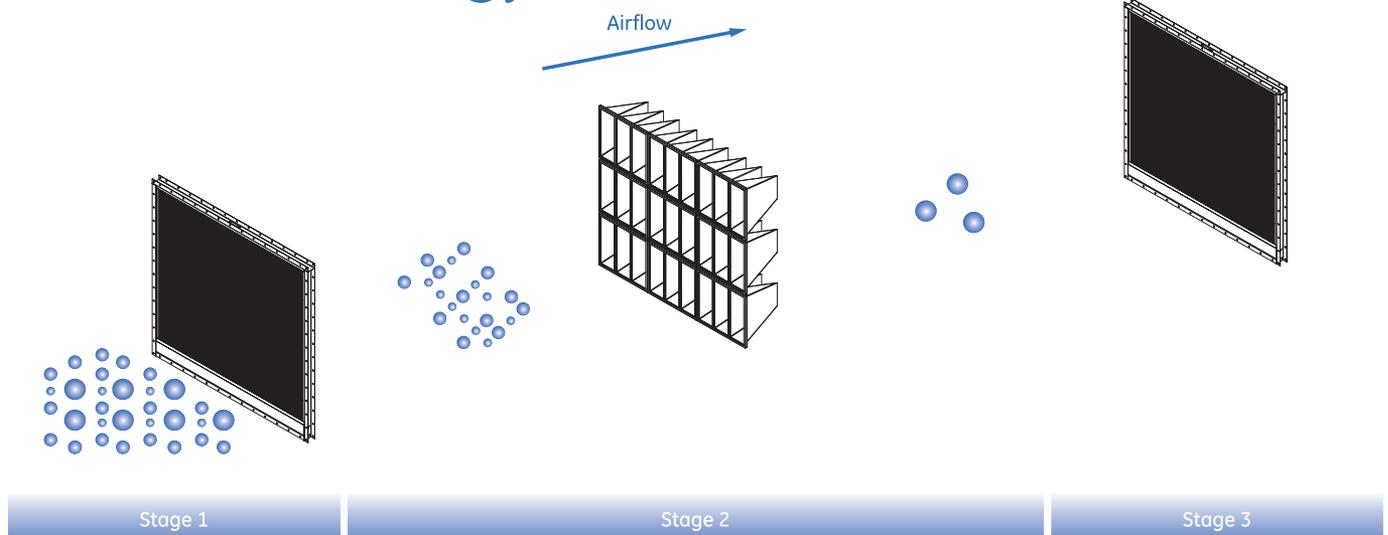
Side access



Key Benefits

- Exceptional salt removal performance in all environments helps reduce turbine corrosion
- Increased ship layout flexibility due to the system's ultra-compact design
- Ideally suited to naval applications due to robust construction and shock-tested design
- Inherently small frontal cross-section results in reduced radar signature
- Reduced maintenance costs due to long-life filter designs
- Range of filter/coalescer options to match your specific application

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 AltairNeptune filtration system utilizes GE Energy's unique SRS Technology process to protect the turbine from damage. This process, which is the result of nearly 40 years' experience in marine and offshore filtration, removes both solid and liquid contaminants in all weather conditions and at all levels of humidity. Removing the particulate from the system substantially reduces the possibility of salt leaching or becoming re-entrained in the air stream.

SRS Technology is deceptively simple. 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 coalescence stage. Fine aerosols that have penetrated Stage 1 are coalesced to form larger droplets that can be easily removed by the third stage. Dust and other solid particulate is also removed. As all marine and offshore pre-filters and high efficiency filters in the range are optimized for coalescence as well as dust filtration, this dual function can be carried out without compromise.

Stage 3 is typically a vane separator or similar, which removes any 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.

AltairNeptune Filter Elements

The AltairNeptune range of filter elements includes three cleanable high efficiency bag filters offering performance levels to suit different applications.



Filter Type	Product Name	Performance
High efficiency filter	HV600	Very high efficiency filter designed to operate at velocities of up to 1150 FPM (6 m/s). Outstanding salt removal performance with low pressure loss.
	HV1000	High efficiency filter combining high salt efficiency, low pressure loss and excellent dust capture. Operates at velocities of up to 1900 FPM (10 m/s).
	HV1500	High efficiency filter operating at velocities of up to 3000 FPM (15 m/s). Designed for environments with high levels of small particulate.

Performance Data

	HV1500	HV1000	HV600
Nominal velocity	2600 FPM 13.25 m/s	1900 FPM 10 m/s	1150 FPM 6 m/s
System pressure loss at nominal velocity *	3.35 IN WG 85 mmH ₂ O	2.28 IN WG 58 mmH ₂ O	1.22 IN WG 31 mmH ₂ O
Gravimetric efficiency vs ASHRAE **	80%	90%	98%
Salt output vs NGTE 30 knot aerosol *** (efficiency)	0.0025 ppm (99.93%)	0.0036 ppm (99.90%)	0.0013 ppm (99.97%)

NOTES

* System includes front and rear stage Marine Vane Separator (MVS)

** Tested in a marine environment

*** 3.6 ppm input

All data are shown for indication purposes and are subject to change without notice

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/airquality.

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