

ASC Intake Filtration System

Advanced self clean technology
for rotary machinery



BETTER AIR IS OUR BUSINESS®



GAS TURBINE
DIVISION

Ultimate filtration for harsh environments

The AAF ASC Intake filtration system is a unique concept in air filtration for gas turbine intakes and other smooth intake flow machinery. It combines inertial separation technology with self-cleaning air filtration in one compact package.



ASC Filters



Upstream Vanes

The development

In recognising the high failure rate of ordinary self clean filters located in difficult environments, AAF have developed the ASC hybrid filter system. Operators demanding continuous engine operation in the arduous environments prevailing in desert and gas turbine process applications have recognised the AAF ASC technology as the primary choice for combustion and ventilation application.

Why do regular pulse filters fail

Ordinary cylindrical and conical systems increase rapidly in differential pressure as they capture airborne dust.

This unwelcome process is accelerated in environments where high dust concentration is incident with high humidity levels and free moisture.

Cylindrical and Conical Systems

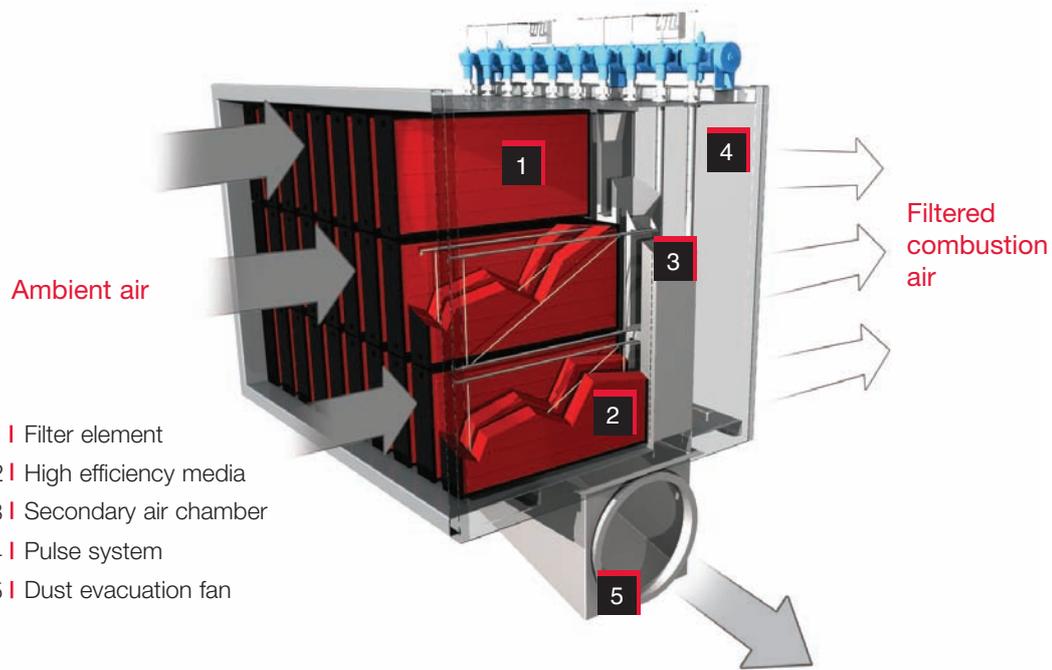
The cylindrical filter element contends with a continuously higher level of entrained dust and consequently a higher system pressure.

The filter elements trap dust during operation clogging the filter element. This restricts airflow and initiates a reverse pulse cleaning cycle. This pulses each individual filter element, however in the absence of an exhaust mechanism any dust removed is re-entrained by the positive suction of the adjacent filter.

When entrained dust is exposed to high relative humidity and/or free moisture individual particles swell reducing porosity further, causing a spike in system pressure.

During sandstorm conditions

When unable to exhaust captured dust from the system, ordinary cylindrical systems quickly reach terminal pressure enforcing turbine power de-loading or a forced shutdown.



Why AAF ASC with secondary air technology works

Dust laden air entering the ASC Intake System is captured by passing through the filter elements before heading to the turbine compressor.

The ASC does not rely on the filter to trap all of the incoming dust and dirt. In close proximity to each filter is the secondary air removal chamber, negatively pressurised by its exhaust fan. Heavy dust and dirt particles which make up over 90% of the incoming challenge are inertially accelerated past the filter element and removed from the system. The ASC media remains cleaner for longer only entraining the smaller airborne particles.

ASC advanced self cleaning

When called to action blowpipes located downstream of each filter element direct a jet of clean pressurised air simultaneously through parallel vertical columns of filters. This momentary pressurisation and reverse of air flow dislodges the accumulated particles from the filter elements, automatically reconditioning the filter for continued, uninterrupted service. The dislodged dust is immediately vacuumed into the secondary cleaning circuit avoiding direct re-entrainment of the dust or its passing into any adjacent filter element.

Free moisture removal

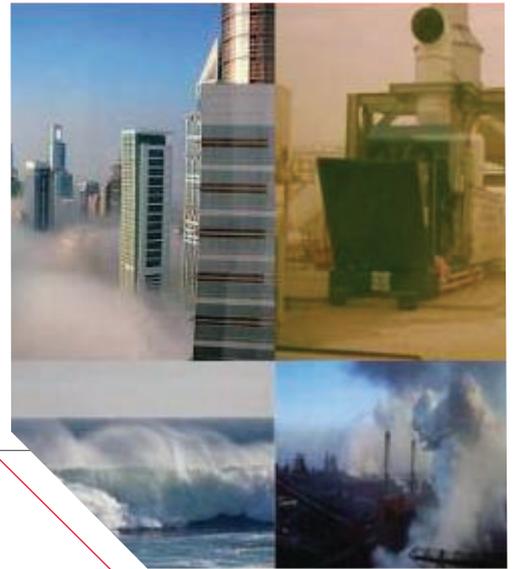
The layout and orientation of the ASC system was conceived for the application of vane technology for free moisture removal within the intake face.

In environments where fog is prevalent the effective performance of the vanes offers significant performance advantages to both reducing pressure loss and extending filter life.

Installations in Middle East, coastal facilities fitted with moisture eliminators have achieved up to four years operational life from a single set of filter elements without any experience of machine trip due to high differential pressure.

The ASC Advantage

AAF's ASC intake filter system is designed to offer maximum protection in harsh environments where extreme weather conditions such as sandstorms, high rainfall, fog and high salt concentration are present.



Location: UAE



Location: Kingdom of Saudi Arabia



Location: Kingdom of Saudi Arabia



Location: Oman

Longest Filter Life

The ASC Secondary Air technology has been proven to allow operators to extend filter life, often trebling prior experience. Reducing the production interruption for filter change improves engine availability.

Pressure loss is far more stable and less effected by extremes of relative humidity and fog.

Operators in coastal located desert climates repeatedly achieve 3 years uninterrupted production.

Compact package

The ASC system is considerably smaller than an ordinary self-cleaning system. This means that it can be easily adapted to existing supporting structures for retrofit and also reduces shipping and installation costs.

Low average pressure loss

Lower initial and average pressure differential across the system improves engine fuel efficiency.

Operating Benefits:

- Low pressure loss boosts available power
- Reduced engine fuel consumption and maintenance costs
- Increased turbine availability
- Similar in size to equivalent older static filter systems which makes retrofit easier. In many cases existing structures can be utilised without major modification
- Less pulsing reduces energy costs



Easy Conversion and Retrofit

Gas Turbines operate in varying environmental locations and so it is necessary sometimes to modify an air inlet system to fine tune the machine performance or to overcome drastic deficiencies.

Equally at AAF we understand many operators have older equipment which has either come to the end of its useful life and is unsafe to operate or where incremental equipment repair fails to reverse the performance degradation.

In response to this AAF's technical centre has engineered easy-to-convert packages which can be applied to Gas Turbine, Compressor and Diesel Engine equipment.

Our applied division aim to utilise your existing plant through exploiting our compact ASC solution.

The modular ASC technology is the perfect refit system in instances where present technology is failing to provide reliable and effective protection. It can be applied on combustion duty or enclosure ventilation where the unique design provides a small compact unit.

The advantage of its small size means it easily adapts to existing support structures and most critically can be converted in a record installation time reducing planned outage intrusion.

Choose the right media for your application

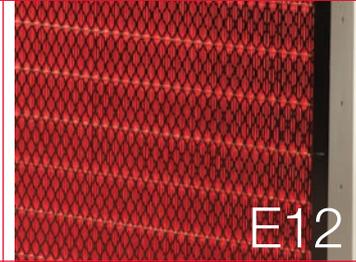
AAF offers a variety of filters that are optimised to different efficiency requirements.

PanelPak Media

The ASC high efficiency media is available in a range of types and efficiencies specially treated to provide exceptional resistance to high humidity. Each filter element is supplied with a moulded gasket fitted to the air leaving face, which guarantees a positive airtight seal every time the filter is changed.

ASC Filter

High efficiency filter for air intake systems

Key Data	PanelPak F8	PanelPak F9	PanelPak E12
			
Filter Class to EN779:2002	F8	F9	E12
Filter Class to ASHRAE 52.2 - 2007	MERV 14	MERV 16	-
Features & benefits	<ul style="list-style-type: none"> • Higher capacity • Longer life • Reinforced media for transport protection 	<ul style="list-style-type: none"> • For machinery needing up to F9 efficiency • Higher capacity • Longer life • Reinforced media for transport protection 	For EPA efficiency requirements please contact your local supplier for more information
Nominal air flow rate	2300 m ³ /h 1350 CFM	2300 m ³ /h 1350 CFM	-
Initial pressure drop at nominal air flow rate	282 Pa 1.13" WG	260 Pa 1.04" WG	-
Recommended final pressure drop	1000 Pa 4" WG	1000 Pa 4" WG	-
Bursting Strength	25"	25"	25"
Average arrestance	>99.9%	>99.99%	-
Average efficiency	90%	95.01%	-
Dimensions	Nominal: 24" x 9.75" x 48" Exact: 610 x 300 x 1230mm	Nominal: 24" x 9.75" x 48" Exact: 610 x 300 x 1230mm	Nominal: 24" x 9.75" x 48" Exact: 610 x 300 x 1230mm

ASC Intake Filter System Accessories

AAF offers a range of add-on technology to compliment the high performance ASC.

As a provider to some of the world's largest turbine manufacturers and operators, AAF understands the requirement for greater power and enhanced efficiency.

The AAF (H)EPA filter products have achieved a remarkable reputation for providing clean air to Gas Turbines operating in the hostile environment prevailing offshore and coastline locations.

Please contact your local AAF representative for more information on (H)EPA products and applications.

	Moisture Removal	(H)EPA Filters	
	Free-moisture allowed to interact with coalesces on media fibers, mixing with captured dirt particles which absorb the moisture, swell and increase pressure drop. Water accelerates dirt- and salt-laden water leaching which carries over to foul the engine compressor.	An additional filtration stage for removal of ultra-fine (sub-micron) particulate. Proven technology which negates the requirements for on or offline water washing while recovering otherwise reduced engine output and fuel economy.	
Key Data	AmerVane VI	HydroVee XL	HydroVee HXL
			
Filter Class to EN779:2012 /N1822:2009	Fine Mist	E10 / E12	E10 / E12
Filter Class to ASHRAE 52.2 - 2007	96% @ 25 micron	MERV 16	MERV 16
Features & benefits	The AmerVane VI high velocity weather louver, designed and patented by AAF, is a heavy-duty, high efficiency, mist eliminator. Ultra-low operating pressure drop makes the AmerVane VI a truly cost-effective, first-stage separator to any intake filter system.	Developed from the success of the class-leading HydroCel offshore unit, HydroVee filters deliver high-efficiency performance with minimal pressure loss. Employ AAF HydroVee when experiencing salt and hydrocarbon compressor fouling in high-moisture coastal or tropical environments.	The big brother to the HydroVee XL, the HXL's 450mm-deep casing allows for 28.8 m ² for longer filter life while reducing pressure loss. Featuring a huge dust holding capacity, the HXL provides peace-of-mind performance in the harshest environments.
Nominal air flow rate	4.5 m/s (900 FPM)	4250 m ³ /h 2500 CFM	4250 m ³ /h 2500 CFM
Initial pressure drop at nominal air flow rate	27 Pa @ 2.5m/s 0.11" WG @ 490 FPM	285 Pa 442 Pa 1.14" WG 1.77" WG	187 Pa 329 Pa 0.75" WG 1.57" WG
Recommended final pressure drop	-	635 Pa 2.55" WG	635 Pa 2.55" WG
Bursting Strength	> 6225 Pa, > 25" WG	> 6225 Pa, > 25" WG	> 6225 Pa, > 25" WG
Average arrestance	-	100%	100%
Initial efficiency @MPPS	-	89.6%, 99.9%	92.7%, 99.5%
Dimensions	185mm deep vane. Length and quantity of vanes to suit filter housing.	Nominal: 24" x 24" x 12" Exact: 592 x 592 x 292mm	Nominal: 24" x 24" x 17" Exact: 592 x 592 x 440mm

Quality, expertise and innovation

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