

BETTER AIR IS OUR BUSINESS®

# OFFSHORE AIR FILTRATION FOR GAS TURBINES AND ROTATING MACHINERY



# **OUR QUALIFICATIONS**

AAF International is the market leader in the design, manufacture and supply of filtration and acoustic systems for all types of rotating machinery. Our expertise includes intake filtration, intake silencing, acoustic enclosures, and exhaust silencing. We specialize in turnkey responsibility for offshore installation and commissioning of new and refurbished equipment.

Our systems can be found on thousands of installations around the world. During the entire production process, our operations are governed by our ISO 9001 certified quality system.





Two LM 5000's with AAF inlet filtration and acoustic systems in Abu Dabai.

### OFFSHORE AIR FILTRATION SYSTEMS TO MEET THE MOST DEMANDING OPERATING CONDITIONS

Gas turbines ingest a constant volume of air for a given rotational speed. They require high quality air in abundance, but they are susceptible to airflow restrictions. Air filtration and cooling devices restrict airflow and directly impact performance on gas turbines.

Effective management of the air quality and temperature is a major benefit for power enhancement, reduced heat rate and component life extension.

The aggressive environmental conditions that exist around offshore platforms have proved to be very demanding on gas turbines and their associated combustion/ventilation air intake systems.

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offshore platforms, have proved to be very demanding on gas turbines and their combustion/ventilation air intake systems.

The naturally occurring marine aerosol, which releases airborne salt crystals in both wet and dry phases, combined with the extremes of temperature, humidity and pressure, pose major problems for this type of equipment.

Platform drilling operations also generate a major source of airborne particulate matter with the periodic release of massive concentrations of mud burn dust cloud, and cement dusts. In addition the flare tip, lube oil vents, and engine exhausts release viscous hydrocarbons. These all impinge upon the intake system surfaces and act as a vehicle to attract and hold dry particulate.

Platform based air filtration systems are therefore required to effectively remove all these ingested particulates to a level that prevents fouling, erosion, and corrosion of the turbine and its inlet system.



Offshore platform gas flares can create smoke requiring high efficiency intake filtration.

### HIGH CAPACITY/HIGH EFFICIENCY AIR FILTRATION SYSTEMS

Considering that approximately 40% of all airborne particulates exist in the size range of less than  $2\mu$ m, and a further 40% occur between 2 and  $5\mu$ m; and that the relative humidity is constantly fluctuating between 30 and 100%, careful consideration must be given to the selection of an intake air filtration system.

AAF International, one of the world's leading authorities in offshore air filtration systems with experience gained from hundreds of offshore installations, has shown that the most effective way to achieve the operating objectives with an acceptable resistance, is with the AAF two stage high capacity, high efficiency air filtration system. This comprises a high efficiency interception/diffusion type filter (AAF HydroCel) preceded by a pre-filter/coalescer pad (AAF AMER-kleen) and weather hood or louvre.



Three LM 5000 filtration and acoustic packages under test for final installation on an offshore platform in the North Sea.



## AAF'S PROVEN TWO-STAGE SYSTEM

#### HydroCel High Capacity High Efficiency Filter

The HydroCel filter is a heavyduty, high capacity cartridge filter of extremely robust construction. It is specifically designed for use with rotating machinery and will withstand a differential pressure of 3.8Kpa before structural damage

is expected.

#### AMER-kleen M80 Disposable Filter

The pre-filter/coalescer pad is the well proven AMER-kleen. This economical, disposable filter is used in front of the HydroCel to act as a coalescer during periods of fog and high humidity. It is also extremely effective in the removal of the hydrocarbons and industrial pollutants generated by the platform operations. The AAF two-stage filter system is normally protected from driving rain and fine droplets, with a simple hood or louvre such as the AAF AMERVANE Vertical Louvre.

This combination of filters and weather louvre has been shown, by independent tests in both laboratory and offshore, to provide maximum machine availability with a minimum of downtime.

### HydroCel 95

The HydroCel 95 has a proven track record and has given users the opportunity to operate for longer periods between compressor washing cycles. Most filter systems offshore perform to a level where water washing is necessary on a 750 hour cycle, but when the HydroCel is installed, aeroderivative engines can run for up to 2,000 hours and longer between washing.

### HydroCel 95 H12

The H12 version of the HydroCel was developed to offset lost production, higher maintenance costs, and shorter machine component life associated with offline crank soaking/water washing cycles.

This super interception filter has superior performance on very small size crystals and droplets and it incorporates all of the special features of the HydroCel 95. The H12 can provide continuous running of the turbo machinery for up to 12 months - giving huge savings in operational costs and providing significant extra production revenue.

The H12 will remove 99.99% of all particles and droplets sized 0.7µm to 1.0µm diameter. Its unique media pleat design and water resistivity deliver exceptional performance, unmatched industrywide.



AAF filtration intake system on GT 35 Turbine BP ULA, North Sea, Norwegian Sector.



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