



MED MODEL GTAF



**Mueller
Environmental
Designs, Inc.**



**Air Filtration
Evaporative Cooling
Noise Control
Mist Elimination
Turnkey Projects**



FILTRATION

Due to large amounts of air required to operate a gas turbine, the cleanliness of the air is of primary importance for turbine performance and life expectancy. Dirty intake air will cause erosion, fouling, corrosion and cooling passage plugging.

Erosion is caused by sand and mineral dusts, in the 10 to 20 micron sizes, impacting axial compressor blades. Fouling is normally due to ingestion of mineral or plant matter, smoke and hydrocarbon fumes which adhere to rotor and stator blades. In both instances blade profile is changed reducing aerodynamic performance with subsequent continuous drop in compressor efficiency. Erosion is permanent and requires parts replacement, fouling can be corrected by cleaning.

Generally, average airborne dust does not result in corrosion; however, combinations of moisture and airborne aerosols containing sea salt or ammonium compounds result in compressor blade pitting. Pitting causes a roughening of the airfoils with consequent reduction in the aerodynamic performance of the compressor.

Airborne sodium chloride and certain metals contribute to hot gas path corrosion. The corrosion occurs during the combustion process. Sodium combines with sulfur and/or oxygen forming a liquid flux depositing on hot gas components. Potassium, vanadium, and lead, either as sulfates or oxides, cause the normally protective oxide film on hot gas components to be disrupted so that parts oxidize faster.

Cooling air for passages in the combustion liner and first stage nozzles, is pulled from the turbine compressor. When dirty inlet air is present in the cooling air, dust particulate builds up in the cooling passages, reducing heat transfer, causing temperatures to increase, giving rise to cracking.

Mueller Environmental Designs can provide an inlet air filtration system designed to remove solid particulate, moisture, and salts in a compact, low pressure drop, cost effective product.

TYPICAL GENERAL ARRANGEMENT

The general arrangement of the inlet air filter system consists of inlet air filter house with filter maintenance area, clean air plenum, rubber isolation joint, implosion door, duct with inlet trash screen and 90° degree elbow, structural steel, ladders with platforms. The isolation joint's angle mating flange will be drilled to match turbine inlet flange. The filter house design provides for six banks of filter elements 3 wide and 5 high.

The inlet filter is a three stage system comprised of 2 1/2 pass weather louver, graded density fiberglass pre-filter pad and high efficiency final filter.

WEATHER LOUVER

The weather louver is formed from a single sheet held in position by a bolted segmented spacer arrangement enclosed in an all welded frame eliminating the use of rivets, self-tapping screws, or spot welding, providing a weather protection system that ensures long operating life with minimal corrosion possibilities. The weather louver frame is bolted to the housing structure. The framing system incorporates a rear dam with open front, allowing complete water drainage from the louver blades.

PRE-FILTER PAD

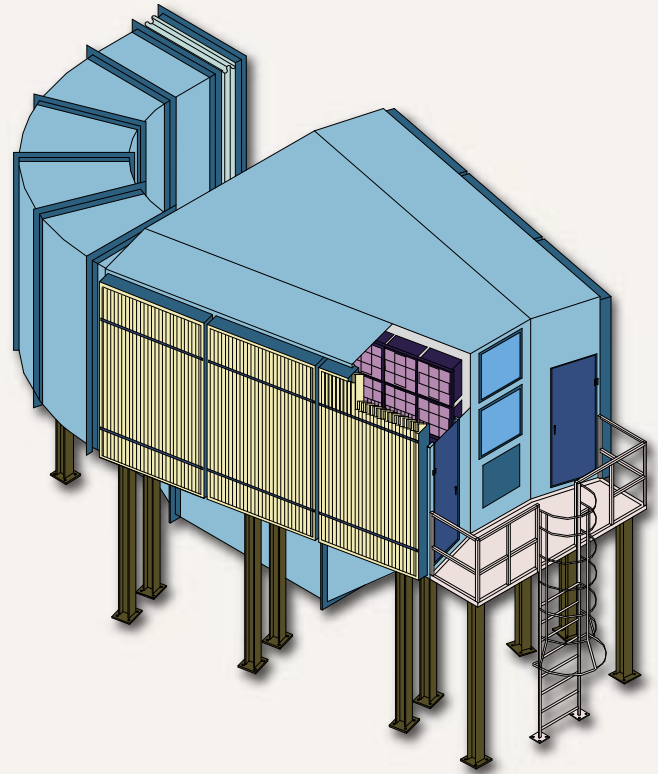
The MED PF-80 Pre-filter Pad is a 24" X 24" X 4" viscous impingement disposable glass-fiber pad of progressive density from air entering side of the pad to the air leaving side, trapping dust and dirt in every part of the pad increasing filter efficiency and lengthening final filter life. The filter pad is color coded to ensure proper installation; the air leaving side is white and is placed next to the final filter. The filter pads are made from continuous fibers joined together in all directions to form a permanently bonded, highly resilient, strong media, eliminating the possibility of glass particles breaking off and entering the final filter. An adhesive has been applied to retain large quantities of dust and dirt.

FINAL FILTER

The MED GTF-90 Final Filter is 24" X 24" X 12" Deep, heavy duty, high efficiency cartridge type filter with moisture proof media, all galvanized cell sides and headers. The filter element is designed to flow a maximum of 2000 CFM per cartridge. The filter media is flat mat pleated fiberglass, with corrugated aluminum separators, and welded hardware cloth face guards on both the air entering and air leaving sides. The pre-filter pad can be changed without having to shut the system down, nor will it disturb the seal of the final filter, resulting in a continuous operating system.

FILTER HOLDING FRAME

Each filter holding frame is corrosion resistant 16 ga. galvanized steel, supplied with four retaining clips and gasket to maintain a positive pressure seal between frame and final filter element. A formed gate front with friction fit stops, hold the pre-filter in place. The filter frames are individually welded together to form a 3 frames wide by 5 frames high assembly, bolted into a frame (nuts welded to bolt), and sealed with a silicone sealer to prevent bypassing.



SYSTEM PERFORMANCE

The inlet air system aerodynamic performance operates between 1.50" W.C. (clean) and 3.50" W.C. (dirty), based on an air flow of 144,000 CFM at 60

The filtering efficiency of the extended surface area cartridge filter with pre-filter is 99% by weight arrestance, based on AC Fine test dust, resulting in removing 99.2% of all dust particles 5 microns and larger in the air stream. The total dust holding capacity of each individual filter combination is 1260 grams at 2.75" W.C. pressure drop.

CONSTRUCTION

The filter house sub assemblies are 3/16" welded carbon steel formed plate construction. The structural design will withstand 100 MPH wind loads. Lifting eyes are provided for ease of handling. All carbon steel surfaces are sandblasted internally and externally and painted with 3 coat epoxy paint system.

FEATURES:

- All Welded carbon steel construction
- Internal and external three coat epoxy paint system
- Galvanized, replaceable, filter framing system
- Single Sheet, replaceable, weather louver blade design
- High dust holding capacity pre-filter pads
- High efficiency cartridge type final filter

OPTIONS:

- Custom Design Configurations
- Extended Surface Bug Screens
- Anti-icing Systems
- Exaporative Coolers
- Bird and Trash Screens
- Instrumentation
- Platforms and Ladders
- Implosion Doors
- Ancillary Fabrication
- Intake and Exhaust Silencers
- Low operating pressure drop

WARRANTY

Mueller Environmental Designs, Inc. warranties against poor workmanship, material defects and failure due to improper equipment selection.



MED MODEL GTAF-50



MED MODEL GTAF-75



MED MODEL GTAF-72



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