1. Acceptable Manufacturers
   1. AAF Flanders
   2. Other Approved Manufacturer
2. Quality and Environmental Management Systems
   1. The manufacturer shall have an ISO 9001 or ASME NQA-1 quality-based system at the manufacturing facility. The manufacturer shall make available documentation showing independent third-party certification or acceptable audit approvals and adherence to these systems.
   2. If requested, manufacturer shall make available a copy of their Corporate Quality Manual and references from clients of similarly sized projects or scope within the last 5 years.
3. AstroFan Construction
   1. Entire assembly shall be ETL listed in the US and Canada for electrical and mechanical safety.
   2. Each unit shall be factory assembled, tested, individually packaged, and shipped as one piece.
   3. Unit shall be nominally 2’x2’x4.25’ (wxdxh).
   4. Housing is to be double wall design with fully encapsulated sound attenuation on all sides including access door.
      1. Casing to be textured white epoxy powder coated galvanized steel.
      2. Structural components and blower deck shall be made of 14-gauge galvanized steel.
   5. Casters: Each unit shall have four (4) factory installed 360-degree swivel casters; two (2) with positive locking mechanism.
   6. Each unit shall feature one (1) 18”x18”x11.5” deep MEGAcel l eFRM HEPA filter and one (1) 16”x16” 4” deep MERV 11 VariCel 2+ HC Pre-filter.
   7. Shall produce HEPA-filtered air at all operational air flow rates, per industry standards.
   8. Sound levels (sound pressure) 4’ radially from the unit are as follows:

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| --- | --- | --- |
| **Model** | **Air Flow (CFM)** | **Sound Level (dBa)** |
| AstroPure 500 | 400 | < 44 |
| AstroPure 1000 | 800 | < 56 |
|  |  |  |

* 1. The integral fan motor assembly shall consist of a forward-curved fan wheel with maintenance-free sealed bearing and a direct drive ECM continuous-duty thermally protected motor that is accessible and removable. Units shall be available in 120V 60Hz.
  2. LCD Control Interface and embedded particulate matter and pressure differential sensors with the following functionality:
     1. Fan Speed adjustment from 0% to 100%
     2. Real time readout of both the HEPA filter and Prefilter airflow resistance
     3. Real time readout of PM0.5 level (#particles.cm3)
     4. Real time readout of PM1.0, PM2.5, PM10 level (micrograms/m3)
     5. User programmable operation schedule with optional decontamination mode
  3. All units shall be provided with a door interlock safety switch to disconnect power to the motor when the access door is removed.

1. MEGAcel I eFRM HEPA Filter
   1. Filter construction shall be extruded anodized aluminum for use in Open Plenum, Ducted Terminal, or Fan-Powered Systems. Frame style will be determined by filter application. The term “HEPA” shall be used generically to describe all high-efficiency filters that meet the following specifications. If possible, the filter and housing shall be from the same manufacturer to ensure form, fit, and function are maximized.
   2. Construction Criteria:
      1. The HEPA filter shall be constructed in accordance with the recommended construction requirements of IEST-RP-CC001, latest version.
      2. The media shall be of MEGAcel II eFRM (FlouroResin Media) technology and shall be produced by the filter manufacturer to ensure quality requirements and traceability are maintained.
         1. eFRM media shall consist of two membrane layers supported on each side with spun bonded synthetic scrim to eliminate media damage; glass fiber media is not allowed.
         2. The media pack shall be affixed permanently to the filter frame assembly by means of a solid, continuous, fire-retardant, phosphorous-free polyurethane sealant, forming a leak-free bond between the filter pack and filter frame. The sealant will be uniform off-white in color; will not exhibit any form of leaching, and no more than ¼” of wicking into the media. The sealant will be qualified at incoming inspection as well as point of dispensing to ensure homogenization and adequate curing and adhesion properties.
         3. Filter frame shall be designed for use in Gasket Seal system. The filter frame shall have tight corners. Corners must contain no cracks or uneven areas. Factory installed ¼” thick by ¾” wide dovetailed, close celled neoprene, silicone or EPDM gasket affixed to the filter frame sealing surface.
         4. Each filter shall have a unique label indicating filter size, lot number, unique serial number, model number, tested efficiency, pressure drop at volumetric test airflow, and UL compliance.
   3. Filter Performance Criteria/Factory testing:
      1. The filter shall have a minimum overall efficiency of 99.99% on 0.3micron particles and shall be tested and constructed in accordance with IEST-RP-CC001, latest version.
         1. The filter efficiency will be determined using a thermal condensation aerosol generator and photometer which will measure gross downstream penetration as compared to the upstream concentration.
      2. Each Filter shall be tested for initial (clean) pressure drop at rated flow.
         1. All cleanroom style filters are tested at airflows based on the net filter media area (excludes frame, center partitions, etc.). The nominal initial pressure drop, pressure drop and overall efficiency rating is as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **Filter Size (in)** | **Efficiency (0.3µm)** | **Rated Airflow (CFM)** | **Max. initial ΔP (in w.g.)** |
| 18x18x11.5 | 99.99% | 500 | 0.36” |
| 18x18x11.5 | 99.99% | 1000 | 0.80” |
|  |  |  |  |

* + 1. Factory Scan Test:
       1. Filters, 99.99% and higher, shall be factory scanned in accordance with IEST-RP-CC034 latest version.
       2. Scanning shall be accomplished by passing the sample probe perpendicular to and 1” from the filter face at no more than 2”/second using overlapping strokes to sample the entire filter face area.
       3. The challenge aerosol for factory scan testing is 4 cSt PAO (Poly Alpha Olefin). The two acceptable aerosol generation techniques are either the use of a Laskin nozzle generator or thermal condensation aerosol generator. Oil thread testing for local leaks using polyfuntional alcohol is an acceptable alternative.
  1. Underwriters’ Laboratories (UL):
     1. Filter Assemblies shall be UL Standard 900 classified.
  2. Labeling and Reporting:
     1. Each filter shall have a unique labeling indicating filter size, lot number, unique serial number, model number, tested efficiency, pressure drop at volumetric test airflow, and UL compliance.
     2. A test certificate shall be provided for each filter indicating filter-specific test data including the lot and serial number, along with the pressure drop and efficiency. A test certificate at a minimum should contain filter size, lot number, the filter’s unique serial number, model number, tested efficiency, tested pressure drop at volumetric test airflow, and scan test results. The challenge aerosol for both the efficiency and scan test must be outlined.