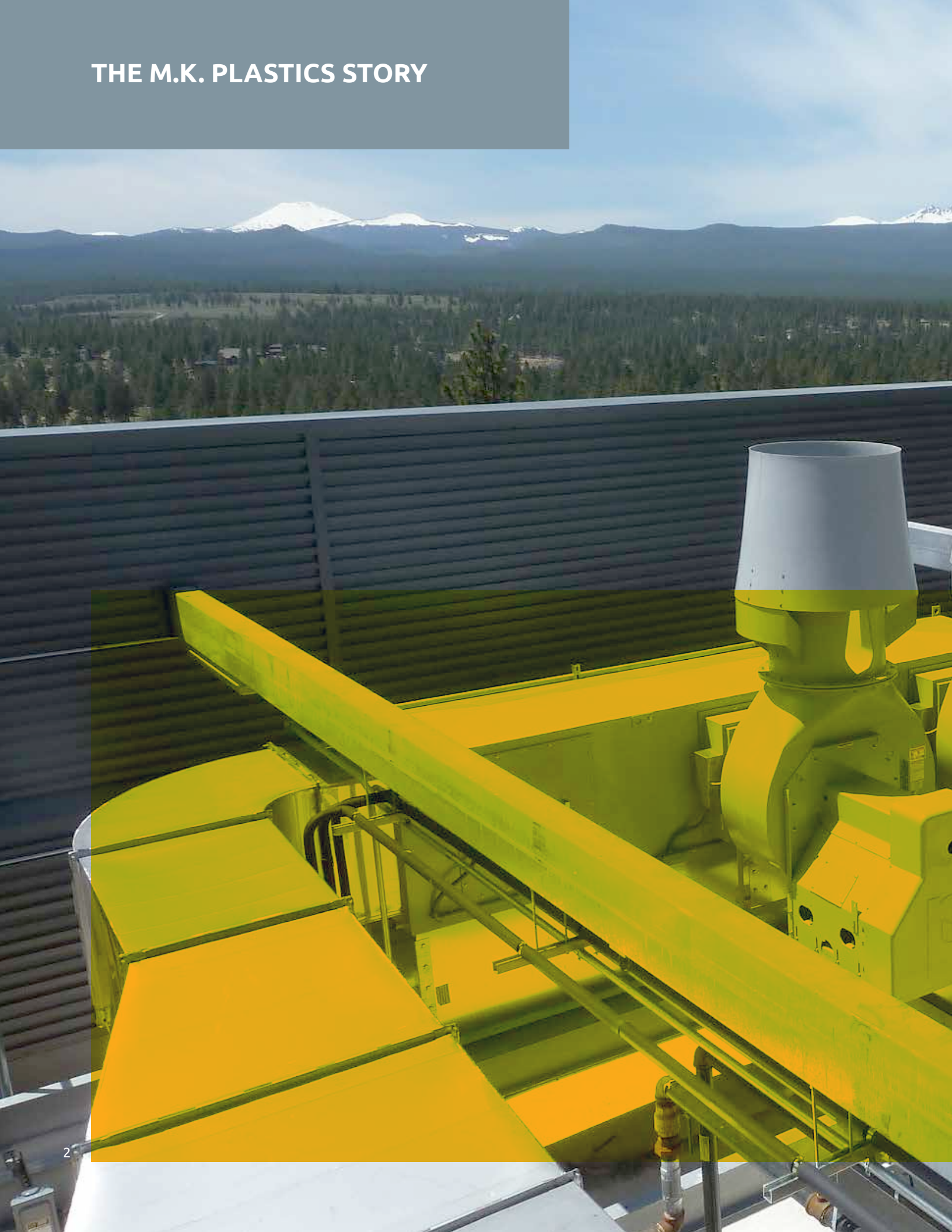
MK PLASTICS
CORPORATION




CORROSION RESISTANT AIR MOVEMENT & CONTROL PRODUCTS

THE M.K. PLASTICS STORY



M.K. Plastics products and technologies are patented in several countries, AMCA Certified for Air and Sound Performance.

We are a repeat supplier to hundreds of prestigious clientele for their critical ventilation requirements, such as Yale University, Harvard University, MIT, Columbia University, NASA and The Center for Disease Control.

Our FRP fabrication expertise and technology allows us to offer FRP exhaust systems as a price competitive alternative to stainless steel and other 'exotic' coated metal systems.

FRP and composite materials are essentially 'corrosion immune' and that 'immunity' is not dependent upon coatings or special treatments, therefore the resistance remains even if the material is scratched, dented, or scuffed. Theoretically, Coated Steel can match the corrosion resistance of FRP in many environments, so long as, and only if, the protective coating remains uncompromised. But in the real world, every day wear and tear inevitably compromises the coating.

For mildly or non-corrosive environments, Coated Steel might be an acceptable compromise between longevity and price. In corrosive environments, the replacement costs easily outweigh the slight premium of FRP which remains functionally immune to corrosion regardless of surface damage.

CONTINUOUS REINVESTMENT IN R&D

We invest 10% of our sales back into R&D, and maintain an R&D Engineering staff, which is why we have a history of innovation and industry patents, including:
first to obtain AMCA certification for our high plume fans; first to create a patented control system for lab ventilation; first to offer an FRP AMCA-certified control damper. In just the last 3 years we've come to market with:

- ***An improved DHK fiberglass fan with an over 80% efficiency rating***
- ***An industry first, our composite construction, K-Kore™ Plenum***
- ***An improved functionality to our patented Leadlag™ control system.***

We've recently invested in state-of-the-art CNC Machines to improve production times and construction quality for machined FRP parts, while also giving us the ability to rapidly engineer and test new molds and FRP designs.

CORROSION RESISTANT EQUIPMENT FOR CRITICAL SERVICE

WHY USE FIBERGLASS?

Corrosion can be a big problem in the HVAC industry - as Engineers, our goal is to design systems that are efficient and able to be cost effective over the life of the project. The challenge is to provide a balance, between life expectancy of products and cost to the project. FRP is an alternative material, which will provide a cost effective solution for the following reasons...

WHAT IS FIBERGLASS?

Fiberglass Reinforced Polymers (FRP), is a complex non-isotropic material, in which two or more distinct, structurally complementary substances, glass fiber and thermoset polymer resin, combine to produce structural or functional properties not present in the individual component. It is capable of being molded into complex shapes at reasonable cost, whereas fabricating out of metal can prove problematic and expensive.

TYPICAL APPLICATIONS FOR FRP FANS

Typical applications for FRP fans include any process in which corrosive fumes must be captured, moved, cleaned or vented. Fume-Scrubber systems will utilize FRP fans due to the very nature of high humidity and wet corrosive environment. Galvanizing and etching processes will utilize FRP fans for the exhaust. Waste Water Treatment Plants, laboratory exhausts and chemical laden industrial processes are known to have very demanding applications for equipment and rely on special materials such as fiberglass to withstand these corrosive environments.

A COMPETITIVE ALTERNATIVE TO STAINLESS STEEL

FRP is an economical alternative to 304 series stainless steel and is significantly less expensive than 316 series stainless steel, Corrosion-Resistant Alloys or titanium. For example, the cost savings realized by using FRP rather than 316 Stainless steel in fan Class I construction is typically in the order of 50%, 316 Stainless steel in fan Class III construction is typically in the order of 75%. In addition to the economic advantage, FRP fans often provide better performance than special alloys in handling airstreams that are particularly corrosive to metals.

COMPOSITE MATERIALS AND CONSTRUCTION

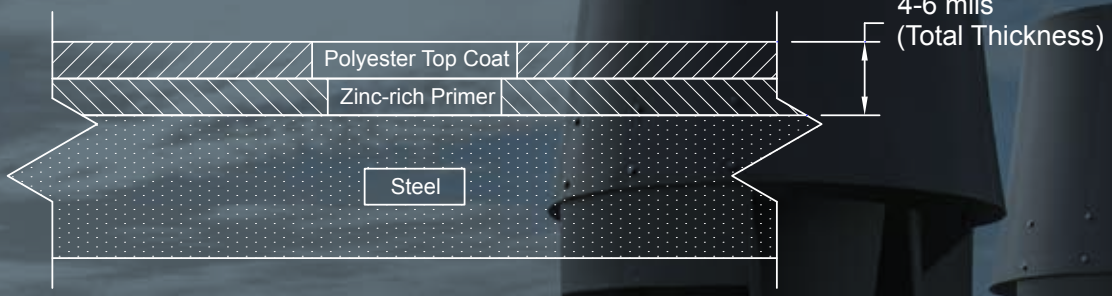
Since the 1950's when the use of fiber reinforced polymers began in marine construction, not a single instance of composite corrosion has ever been recorded. Mechanical components such as fans and ductwork fabricated from composite fiberglass have been in service for decades, and have established an industry-wide reputation for corrosion resistance.

For example, composites play a major part in modern airline and automotive industries. Indeed, companies such as Boeing and BMW are no exception in maintaining this approach in decreasing weight and increasing corrosion resistance. Boeing's Dreamliner has an airframe comprising nearly 50% carbon fiber reinforced polymers and other composites. This approach offers weight savings on average of 30% compared to more conventional (and outdated) aluminum and metal designs.

THE ADVANTAGES OF FRP

Other than its primary function of providing outstanding corrosion resistant properties, fiberglass can also offer the following advantage:

- *If properly installed and maintained, the life expectancy of FRP material can range anywhere from 25 years to 50 years*
- *Very high strength-to weight ratio. Pound-per-pound basis, FRP is stronger than steel*
- *Extremely durable to impact or scratches, the surface will not corrode*
- *Weighs up to 30% less compared to equipment made out of steel and metal alloys*
- *True AMCA A spark resistant construction with the addition of a conductive carbon graphite liner, grounded outside the fan assembly*
- *Less maintenance - no repainting required due to corrosion and rusting*
- *ASTM B-117 Salt Spray Testing: 10,000 hours+ after testing, and no corrosion is expected even after 25 years (200,000+ hours)*
- *UV inhibitors added to the resins, and a Class 1 flame spread below 25*



POWDER COATING SYSTEMS FOR LABORATORY EXHAUST APPLICATIONS

There are applications where the severity of the corrosive exhaust is not an issue. Factors such as rate of corrosion, concentration of fumes, exhaust temperature, the amount of moisture, a variety of available colors and of course initial costs can sometimes make an Epoxy Powder coating on metal or aluminum HVAC equipment an attractive alternative to all fiberglass.

WHY POWDER COATING?

Powder coating is the application of paint in the form of a finely ground powder. The powder adheres by means of electrical attraction. After application, the coated part is heated to melt the powder then cooled so the melted powder forms a solid film. Powder coatings are the best choice for most applications and is a preferred method over the traditional Liquid Coating, which requires multiple coats to bring the mil thickness up to specification requirements. Powder coating has the following advantages:

- *Excellent corrosion and chemical resistance*
- *Superior finish because of its uniform coverage and thickness*
- *Less tendency to trap airborne dirt, making for a smoother surface*
- *Better adhesion, especially on edges, crevices and surfaces difficult to reach*
- *Compared to liquid coating - no drips, no pockets and no streaks*
- *Powder coating requires less time to completely cure, which means quicker shipping times*
- *Powder coating has little processing impact on the environment*
- *Better hardness finish*

M.K. Plastics Plastifer™ high performing two-part electrostatically applied, baked, corrosion resistant polyester powder coating has excellent chemical resistance to a wide variety of chemicals including acids, caustics, solvents, and high moisture. It is far superior to standard 8-10 mil liquid epoxy that is more subject to running or sagging, is manually applied and has a non-uniform coverage over the surface. Standard finish color is M.K. Plastics light gray, and comes with a two year (2) warranty.

All steel surfaces are cleaned and prepared using a multi-stage process that includes phosphate washing to increase corrosion resistance, surface area and improve paint adhesion. Coatings consist of a 70% zinc rich polyester primer and a polyester powder resin top coat that is electrostatically applied and cured. Final coating thickness is a minimum 4-6 mil for superior corrosion resistance, and includes UV inhibitors to prevent chalking from sunlight.

M.K. Plastics Polyester Powder Coating System is fully cured at 390°F, and a final pencil hardness of 2H+, has high humidity resistance (Humidity ASTM-D2247 = 4,000 hrs), and the coating also exceeds 4,000 hrs ASTM-B117 Salt Spray Test.

MARKETS AND APPLICATIONS

M.K. Plastics is a premier manufacturer of corrosion resistant fans, controls, exhaust systems and accessories for critical service applications within the following markets:

MUNICIPAL

Water treatment facilities around the world rely on M.K. Plastics Corporation for a variety of centrifugal and axial fans & blowers to withstand these corrosive environments. Water Treatment processes are known to be some of the most demanding applications for exhaust equipment and M.K. Plastics FRP fans and exhaust systems are ideal for this application due to both their superior corrosion resistance, but also the degree to which these fans can be made spark-resistant.

- ***Aeration***
- ***Biomass***
- ***Landfill***
- ***Odor Control***
- ***Pumping Lift Station***
- ***Pollution Control***
- ***Wet Well***
- ***Water Quality Lab***

MANUFACTURING AND PROCESS

The Manufacturing and Process Industries rely on critical-duty fans and exhaust systems to keep their plants running. M.K. plastics provides powerful and efficient fans and exhaust systems for those industries that require their equipment to operate in corrosive or explosive environments, or that require high-plume heights for their exhaust.

- ***Food Process & Packaging***
- ***Agribusiness***
- ***Battery Room***
- ***Electroplating / Galvanizing Process***
- ***Pulp & Paper***
- ***Pharmaceuticals Semiconductor Fab***
- ***Precious Metal Reclamation***
- ***Chemical Storage, Mixing, and Processing***
- ***Pollution Control***
- ***Fans for scrubbers***

LABS, RESEARCH AND HEALTHCARE

Laboratories and research facilities exhaust a wide variety of harmful, corrosive, and/or explosive fumes.

For proper ventilation of these fumes, exhaust fans must be capable of moving air at high velocities to achieve a high plume height and to entrain clean ambient air into the exhaust stream so as to dilute the chemical concentration in the airstream.

M.K. Plastics Corporation offers a complete line of laboratory & fume exhaust fans for meeting the most stringent industry standards. Our laboratory exhaust fans are often constructed of specialty materials to withstand the fumes associated with these environments.

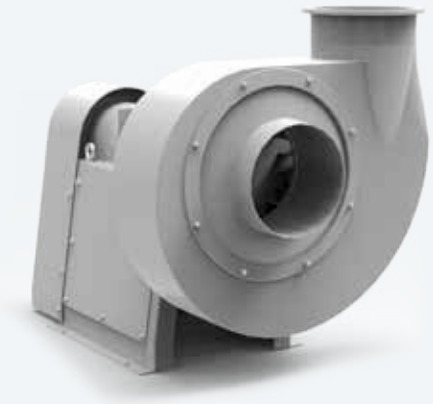
M.K. Plastics Corporation supplies thousands of fans to industries around the world. We work closely with architects, engineers and contractors to design and test fans that can meet the most precise quality and reliability.

- ***Infection Control Cleanrooms***
- ***Hospital or Clinical Labs***
- ***Biological Containment Labs***
- ***Pathology***
- ***Pharmacy***
- ***Laundry Exhaust***
- ***Nuclear Imaging***
- ***General Chemistry Lab***
- ***Radio-Chemistry Lab***
- ***Animal Laboratory***
- ***Vivarium***
- ***Fume Hoods***
- ***Hydrofluoric Acid Hood***
- ***Perchloric Acid Hood***

OTHER APPLICATIONS

- ***Swimming Pool***
- ***Photo Processing***
- ***Coastal Buildings***
- ***Military***
- ***Marine***

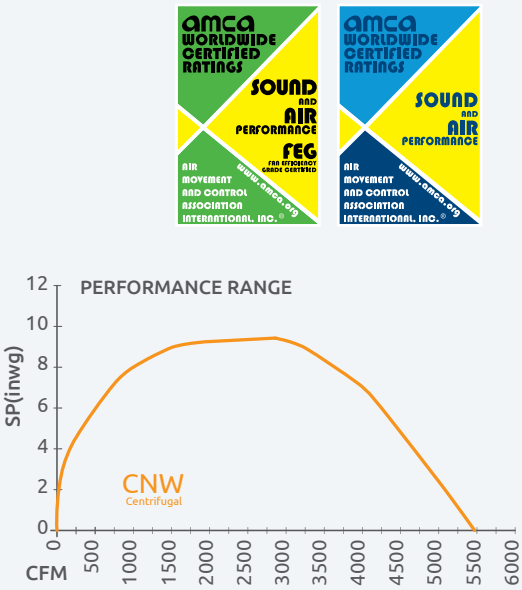
CENTRIFUGAL FANS, BLOWERS, ROOF & WALL EXHAUSTERS



CNW

MEDIUM PRESSURE AND VOLUME CENTRIFUGAL FIBERGLASS FAN

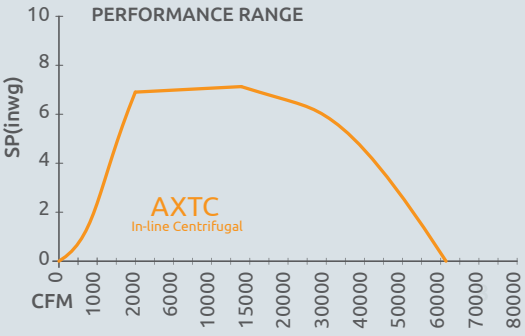
- *160 to 400 (6" to 16")*
- *Airflow from 50 to 5,500 cfm*
- *Static pressure to 9.0 inches w.g.*
- *AMCA licensed for Air, Sound and Fan Efficiency Grade*
- *Drive arrangements: Belt drive arrangement #10 and direct drive arrangement #4*
- *Applications: Corrosive Environments, General HVAC, Water Treatment Plants, Air Pollution & Odor Control, Pulp & Paper, Chemical Process, Swimming Pools, Pharmaceutical, Laboratory Exhaust, Explosion-Proof Environment*



AXTC

IN-LINE CENTRIFUGAL FIBERGLASS FAN

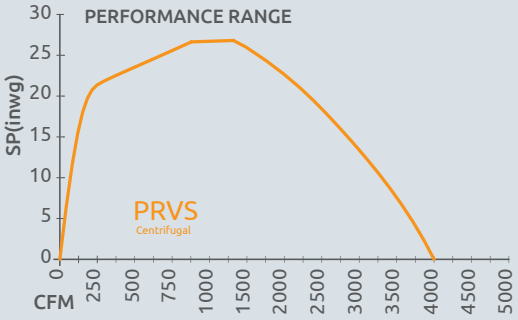
- *1825 to 6000 (18" to 60")*
- *Airflow from 3,000 to 60,000 cfm*
- *Static pressure to 7.0 inches w.g.*
- *AMCA licensed for Air and Sound*
- *Drive arrangements: Belt drive arrangement #9*
- *Applications: Corrosive Environments, General HVAC, Water Treatment Plants, Air Pollution & Odor Control, Industrial Process & Exhaust, Explosion-Proof Environment*



PRVS

HIGH PRESSURE/LOW VOLUME CENTRIFUGAL FIBERGLASS BLOWER

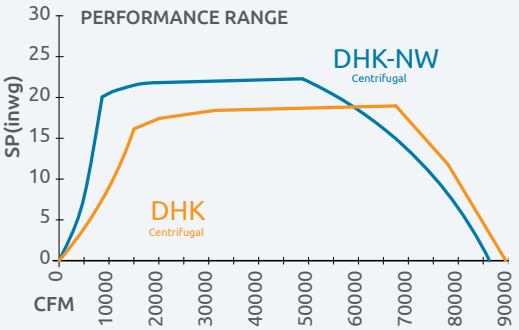
- *63 to 250 (2.5" to 10")*
- *Airflow from 50 to 4,000 cfm*
- *Static pressure to 26.0 inches w.g.*
- *AMCA licensed for Air and Sound*
- *Drive arrangements: Belt drive arrangement #10 and direct drive arrangement #4*
- *Applications: Corrosive Environments, Water Treatment Plants, Air Pollution & Odor Control, Process Air, Explosion-Proof Environment*

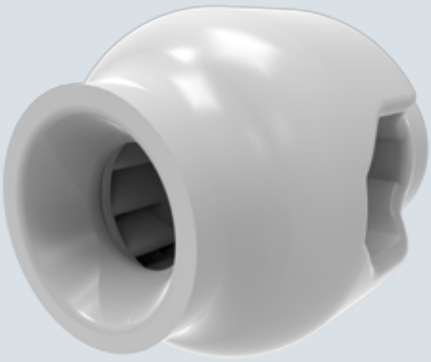


DHK & DHK-NW

MEDIUM-HIGH PRESSURE AND VOLUME CENTRIFUGAL FIBERGLASS FAN

- *1225 to 6000 (12" to 60")*
- *Airflow from 700 to 88,000 cfm*
- *Static pressure to 22.0 inches w.g.*
- *AMCA licensed for Air, Sound and Fan Efficiency Grade*
- *Drive arrangements: Belt drive arrangement #9 and #10, direct drive arrangement #4 and #8*
- *Applications: Corrosive Environments, General HVAC, Water Treatment Plants, Air Pollution & Odor Control, Pulp & Paper, Chemical Process, General Manufacturing, Marine, Semi-Conductor Plants, Microchip, Industrial Process & Exhaust, Pharmaceutical, Laboratory Exhaust, Explosion-Proof Environment*

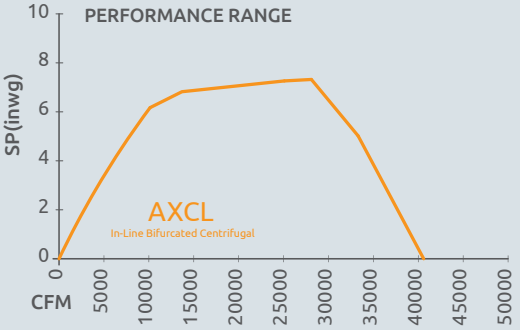




AXCL

IN-LINE BIFURCATED CENTRIFUGAL FIBERGLASS FAN

- *1225 to 4900 (12" to 49")*
- *Airflow from 500 to 40,000 cfm*
- *Static pressure to 7.0 inches w.g.*
- *Drive arrangements: Belt drive arrangement #9 and direct drive arrangement #4*
- *Applications: Corrosive Environments, General HVAC, Water Treatment Plants, Air Pollution & Odor Control, Industrial Process & Exhaust, Explosion-Proof Environment*

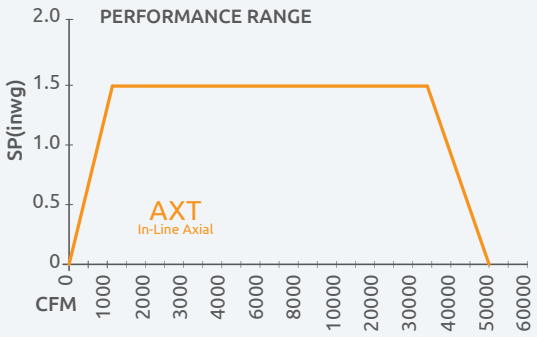


AXIAL FANS, ROOF & WALL VENTILATORS

AXT

IN-LINE AXIAL FIBERGLASS FAN

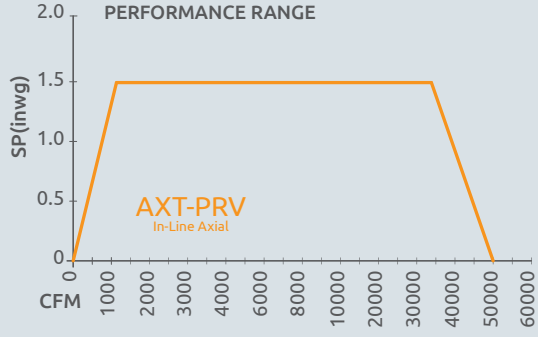
- *12" TO 60"*
- *Airflow from 500 to 50,000 cfm*
- *Static pressure to 1.5 inches w.g.*
- *Drive arrangements: Belt drive arrangement #9 and direct drive arrangement #4*
- *Applications: Corrosive Environments, General HVAC, Water Treatment Plants, Air Pollution & Odor Control, Process Air, Explosion-Proof Environment*

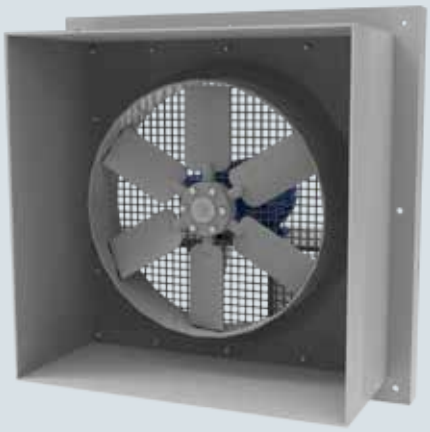


AXT-PRV

FIBERGLASS AXIAL POWER ROOF VENTILATOR

- *12" TO 60"*
- *Airflow from 500 to 50,000 cfm*
- *Static pressure to 1.5 inches w.g.*
- *Drive arrangements: Belt drive arrangement #9 and direct drive arrangement #4*
- *Applications: Corrosive Environments, General Rooftop Exhaust, Chemical Storage Rooms, Water Treatment Plants, Air Pollution & Odor Control, Explosion-Proof Environment*

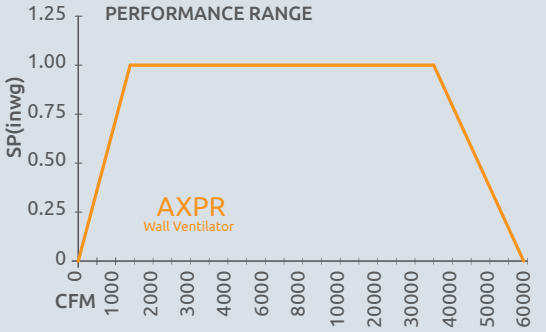


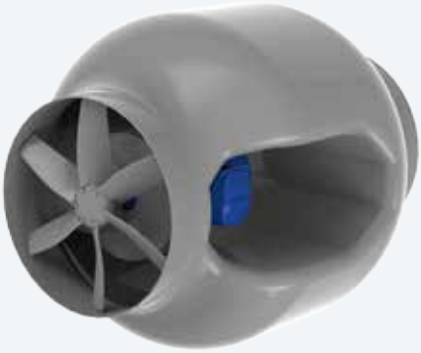


AXPR

FIBERGLASS AXIAL WALL PANEL FAN

- *12" TO 60"*
- *Airflow from 500 to 60,000 cfm*
- *Static pressure to 1.0 inches w.g.*
- *AMCA licensed for Air*
- *Drive arrangements: Direct drive arrangement #4*
- *Applications: Corrosive Environments, Sidewall Exhaust & Supply, General HVAC, Water Treatment Plants, Swimming Pools, Chemical Storage Rooms, Explosion-Proof Environment*

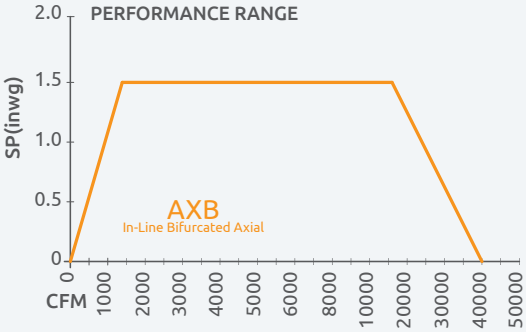


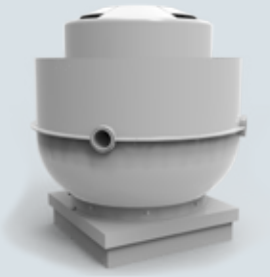


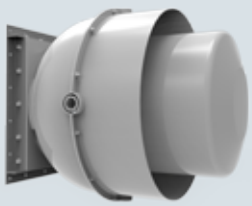
AXB

IN-LINE BIFURCATED AXIAL FIBERGLASS FAN

- *1225 to 4900 (12" to 49")*
- *Airflow from 500 to 40,000 cfm*
- *Static pressure to 1.5 inches w.g.*
- *Drive arrangements: Belt drive arrangement #9 and direct drive arrangement #4*
- *Applications: Corrosive Environments, General HVAC, Water Treatment Plants, Air Pollution & Odor Control, Industrial Process & Exhaust, Explosion-Proof Environment*



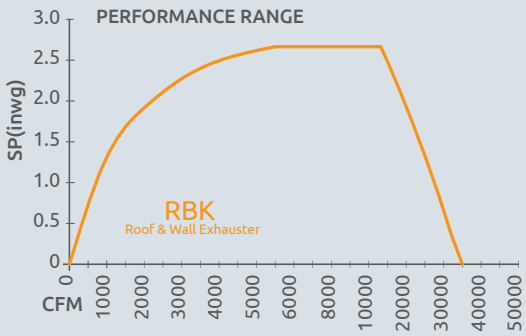




RBK

CENTRIFUGAL ROOF & WALL FIBERGLASS EXHAUST FAN

- *12" to 40"*
- *Airflow from 500 to 37,000 cfm*
- *Static pressure to 2.5 inches w.g.*
- *Drive arrangements: Belt drive arrangement #9 and direct drive arrangement #4*
- *Applications: Corrosive Environments, General HVAC, Water Treatment Plants, Air Pollution & Odor Control, Swimming Pools, Chemical Storage Rooms, Explosion-Proof Environment*



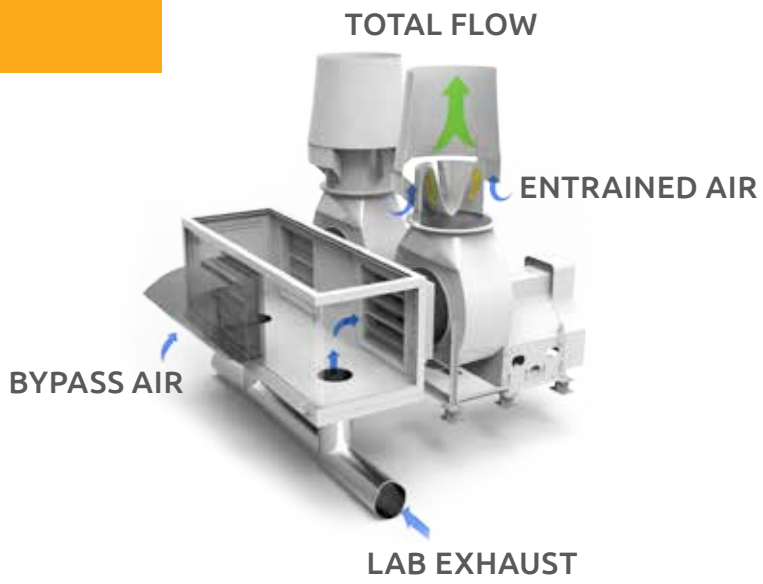
HIGH PLUME EXHAUST SYSTEMS

HOW THE AXIJET® HIGH PLUME EXHAUST SYSTEM WORKS...

The Axijet is an induced flow fan that is used to extract laboratory, process, or fume hood effluent air and dilute the effluent with outside ambient air. Because of the nozzle design, the exhausted effluent is displaced high into the atmosphere at a constant high discharge velocity.

The Axijet fan(s) extract the effluent from the source and space. In many cases an optional system balancing plenum may be used, with or without an optional outside air bypass damper. These accessories are dependent on each specific design requirement. The exhausted effluent is then forced through the fan discharge venturi (stack), at high velocity where further outside induced dilution air is introduced. This induced air plus the laboratory exhaust is then discharged into the atmosphere at high velocity.

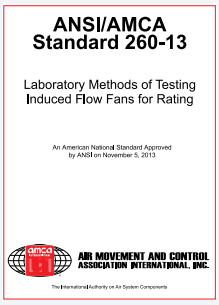
As a result, the Axijet has greater exhaust dilution, higher discharge velocity, greater exhaust mass, and a greater plume height than conventional blowers and fans.



WHAT IS AMCA 260?

AMCA Standard 260 'Laboratory Methods of Testing Induced Flow Fans for Ratings' was first introduced in 2007 with the purpose of establishing a uniform method of determining the total exhaust fan discharge flow of an induced flow fan. Therefore, based on existing AMCA 210 and 300 standards and testing, the entrained airflow obtained can be now used to calculate and provide consulting engineers and facility owners independent performance verification for critical exhaust applications.

- ***Each Axijet fan has been tested by a third party accredited air and sound laboratory for inlet side and discharge side performances, cataloged and certified***
- ***M.K. Plastics certifies that the Axijet line of Induced Flow Exhaust Fans are licensed to Bear the AMCA Certified Ratings Seal for Induced Flow Fan Air and Sound Performance***




AMCA 210 Figure 15

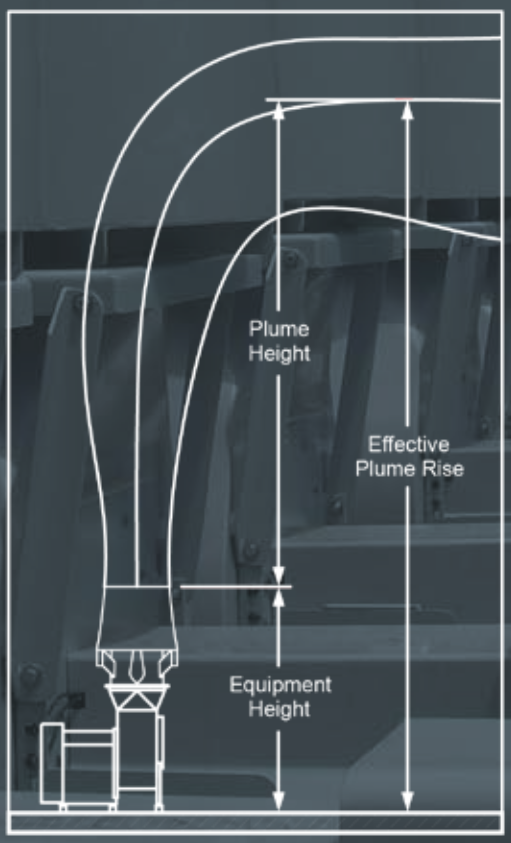

AMCA 260 Figure 1 Test

EFFECTIVE PLUME HEIGHT

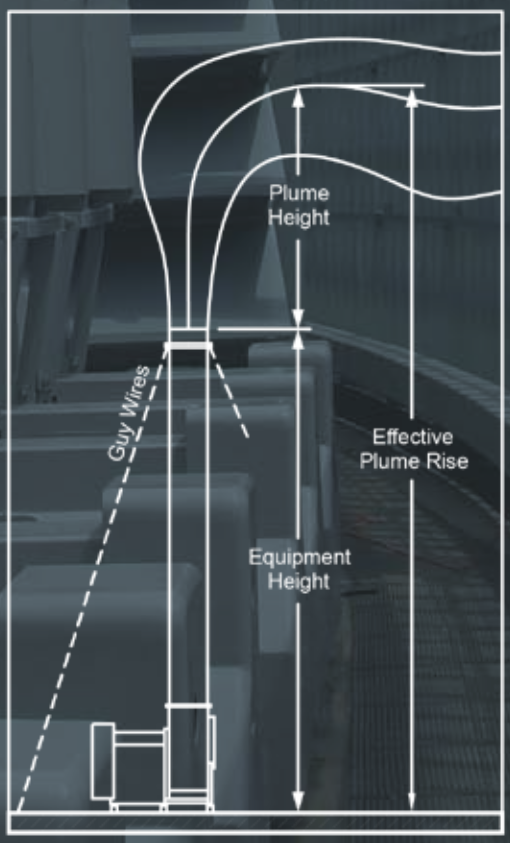
It is important that the exhaust plume height is high enough to prevent re-entrainment of the contaminated exhaust back into the building, reducing indoor air quality and compromising the health of the building occupants.

Effective Plume Heights are calculated values based on the fan discharge performance and meteorological conditions. Formulas and calculations for the effective plume height are presented in the ASHRAE Applications Handbook.

Axijet High Plume Dilution Fan

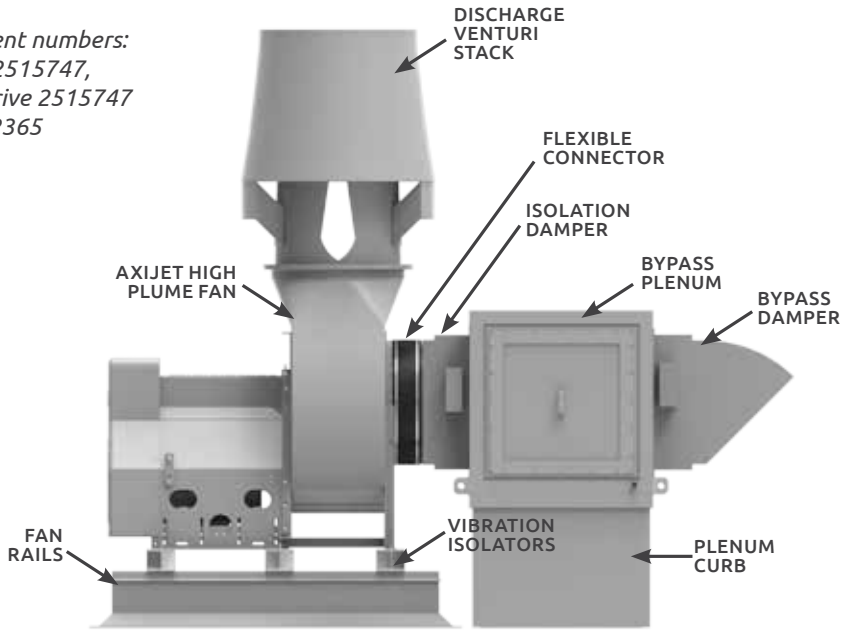


Coventional Fan with Stack



AXIJET® CENTRIFUGAL HIGH PLUME DILUTION FAN

Axijet is a 'registered trademark', patent numbers: 5439349, 7018287 B2, 7077627 B2, 2515747, 7077739 B2, 2140163. 'EZ-4' direct drive 2515747 (Canada),LeadLag Control System 682365



AXIJET DESIGN FEATURES

- *Applications for variable or constant volume systems*
- *Roof or interior mounted with easy access to drive components for ease of maintenance*
- *Centrifugal, backward inclined, airfoil impeller that allows for stability to efficiently exhaust large volumes of air at medium to high pressures*
- *Low radiated sound levels*
- *Stable operation throughout operating curve*
- *Non-overloading power characteristics*
- *Available in sizes from 1225 (12") to 7300 (73"), with capacities from 1,200 cfm to 95,000 cfm and up to 10.0" of s.p., with high discharge velocities and entrainment*

CHOICE OF MATERIALS OF CONSTRUCTION

- *Heavy gauge, continuously welded steel construction with corrosion resistant electrostatically applied powder coating*
- *AMCA C or B spark resistant construction*
- *Stainless steel*
- *100% FRP (Fiberglass Reinforced Plastic), for extra corrosion resistance to the exhaust, (AMCA A spark resistant construction)*
- *'FSW' - Fiberglass construction with coated steel impeller*

DRIVE CONFIGURATIONS

BELT DRIVE

- *Available in arrangements #1, #9 and #10*
- *Ease of maintenance to the drive components without contact of the contaminated exhaust*
- *Drives are sized for 150% of the motor horsepower*
- *Fan bearings are sized for an L10 life of 200,000 hours*

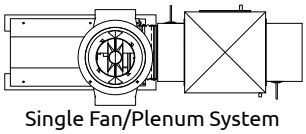
DIRECT DRIVE

- *Available in arrangement #4, partial wheel width and housing modifications for specific performance requirements*
- *Arrangement #8, recommended for higher horsepower applications and for ease of motor replacement on large motors*
- *With the use of variable frequency drives (VFD), a wide range of motor speeds are available for required fan performance*
- *Compact fan footprint and low maintenance*
- *Available with EZ-4(registered trade mark symbol) and Swingout design, for ease of motor & wheel assembly removal*

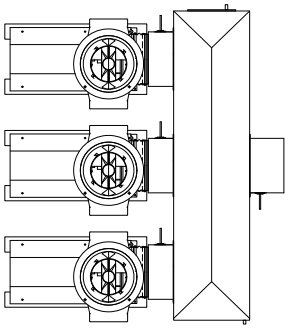
BYPASS AIR PLENUMS

- *Inlet mixing plenum in double wall fiberglass K-Kore, coated steel or stainless steel*
- *Steel plenums available in either single or double wall insulated construction*
- *Bypass and Isolation Dampers*
  - *Motorized control or gravity operated*
  - *Available in coated or anodized finish aluminum, FRP or stainless steel*
  - *Factory mounted electric or pneumatic actuators*
- *Roof mounted equipment designed to withstand wind loads up to 125 mph without the need of guy-wires*

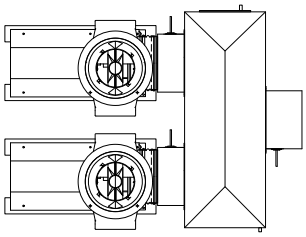
CENTRIFUGAL AXIJET® CONFIGURATIONS



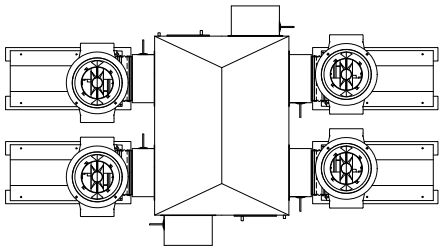
Single Fan/Plenum System



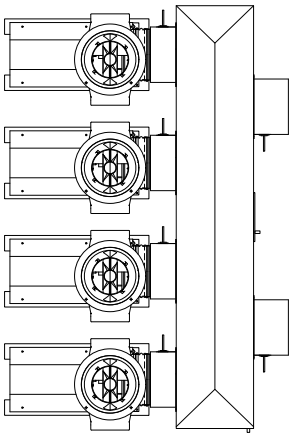
Triple Fan/Plenum System



Dual Fan/Plenum System



2x2 Quad Fan/Plenum System



Quad Fan/Plenum System

STANDARD DRIVE ARRANGEMENTS

BELT DRIVE ARRANGEMENT #9

BELT DRIVE ARRANGEMENT #10

DIRECT DRIVE ARRANGEMENT #4

OPTIONAL DIRECT DRIVE ARRANGEMENTS

AMCA ARRANGEMENT #8

DIRECT DRIVE EZ-4®

DIRECT DRIVE 'SWINGOUT'

INLINE AXIJET®-V HIGH PLUME DILUTION FAN

The Axijet-V is a vertical, inline High Plume Dilution Fan that combines the benefits of axial flow and centrifugal fans, with a high plume dilution stack and windband.

The Axijet-V has the advantage of a compact design and straight-through airflow where roof space is limited.

AXIJET-V DESIGN FEATURES

- *Applications for variable or constant volume systems*
- *Mixed Flow impellers for reduced sound generation and lower energy consumption*
- *Available in belt drive arrangement # 9 for easy inspection and maintenance of drive components*
- *Weather cover completely encloses the motor and V-belt drive from the elements. Provided with slots for ventilation, the cover is easily removable for inspection and maintenance*
- *Direct drive arrangement #4, for lower maintenance. Variable frequency drives (VFD), allow for a broader range of motor speeds and fan performance*
- *Stable operation throughout operating curve*
- *Non-overloading power characteristics*
- *Available in sizes from 1225 (12") to 5425 (54"), with capacities from 1,200 cfm to 78,000 cfm and up to 8.0" of s.p., with high discharge velocities and entrainment*

CHOICE OF MATERIALS OF CONSTRUCTION:

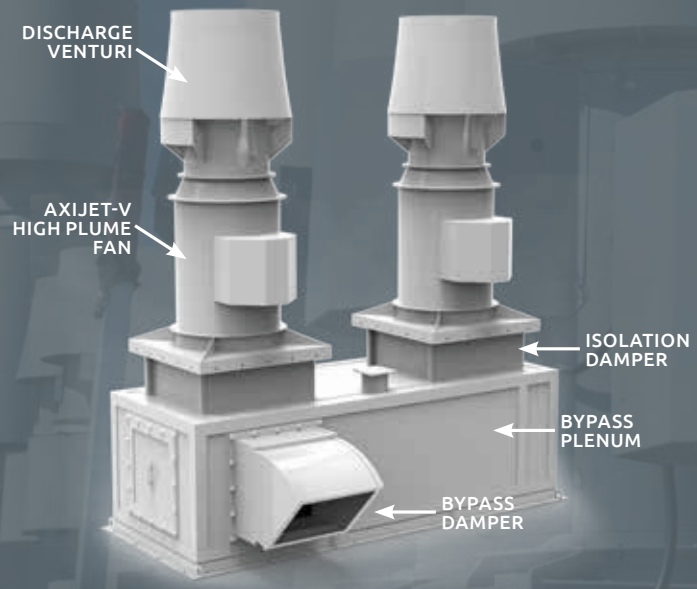
- *Heavy gauge, continuously welded steel construction with corrosion resistant electrostatically applied powder coating*
- *Stainless steel*
- *AMCA A, B or C spark resistant construction*
- *Custom colors available*

BYPASS AIR PLENUMS

- *Inlet mixing plenum in either coated steel or stainless steel*
- *Available in either single wall or double wall insulated construction*

BYPASS AND ISOLATION DAMPERS

- *Motorized control or gravity operated*
- *Available in coated or anodized finish aluminum, FRP or stainless steel*
- *Factory mounted electric or pneumatic actuators*
- *Roof mounted equipment designed to withstand wind loads up to 125 mph without the need of guy-wires*



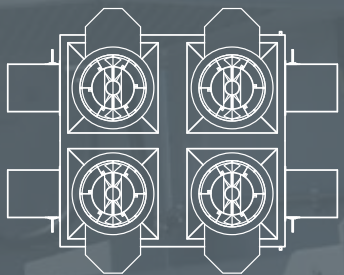
AXIJET-V CONFIGURATIONS

Single Fan
Plenum System

Dual Fan
Plenum System

Triple Fan
Plenum System

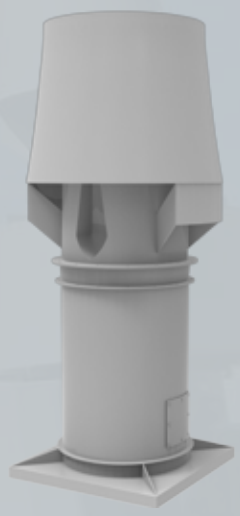
Quad Fan
Plenum System



2x2 Quad Fan
Plenum System

AXIJET-V ARRANGEMENTS

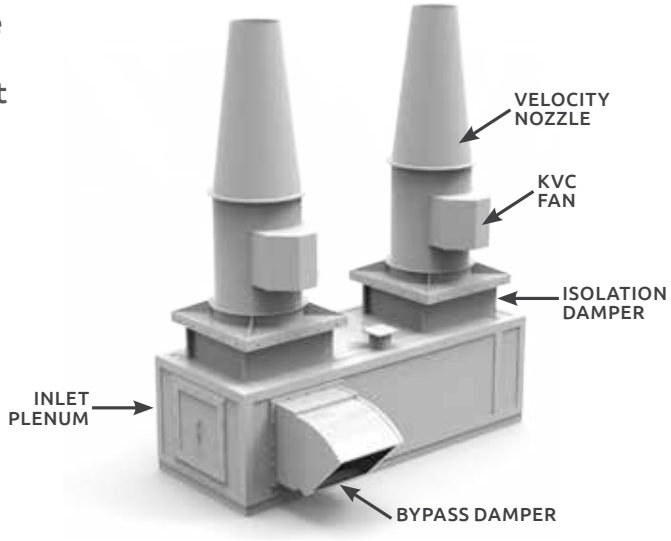
BELT DRIVE ARRANGEMENT #9



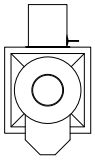
DIRECT DRIVE ARRANGEMENT #4

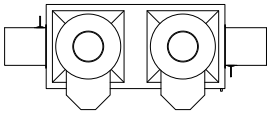
KVC HIGH PLUME FANS

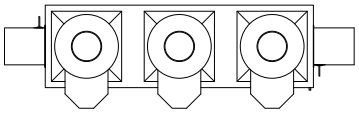
Similar in design to the Axijet-V, the KVC High Plume Laboratory Exhaust Fan incorporates a tapered discharge velocity nozzle, which makes it a more cost effective solution for lab exhaust applications.

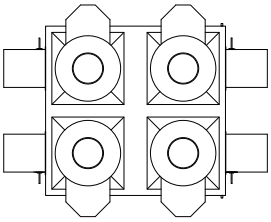


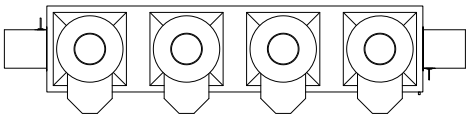
KVC CONFIGURATIONS


Single Fan Plenum System


Dual Fan Plenum System


Triple Fan Plenum System


2x2 Quad Fan Plenum System


Quad Fan Plenum System

KVC ARRANGEMENTS


BELT DRIVE ARRANGEMENT #9


DIRECT DRIVE ARRANGEMENT #4

KVC DESIGN FEATURES

- *Applications for variable or constant volume systems*
- *Straight-line centrifugal for low/medium to higher pressures*
- *Available in belt drive arrangement #9 for easy inspection and maintenance of drive components*
- *Weather cover completely encloses the motor and V-belt drive from the elements. Provided with slots for ventilation, the cover is easily removable for inspection and maintenance*
- *Direct drive arrangement #4, for lower maintenance. Variable frequency drives (VFD), allow for a broader range of motor speeds and fan performance*
- *Meets ANSI Z9.5, NFPA 45 and ASHRAE guidelines*
- *Non-overloading power characteristics*
- *Available in sizes from 1225 (12") to 3650 (36"), with capacities from 450 cfm to 38,000 cfm and up to 8.0" of s.p., with a minimum discharge velocity of 3,000 fpm*
- *Either bypass plenum or curb mounted*

CHOICE OF MATERIALS OF CONSTRUCTION

- *Heavy gauge, continuously welded steel construction with corrosion resistant electrostatically applied powder coating*
- *Stainless steel*
- *AMCA A, B or C spark resistant construction*
- *Custom colors available*

AXIJET® LEADLAG™ EXHAUST FAN CONTROL SYSTEM

AXIJET® LEADLAG™ INTRODUCTION

Safe and proper control of manifold exhaust systems can be critical, complex and often quite difficult. Simply put, the purpose of any exhaust system is to:

- *Maintaining the space negative within +/- 10% of the static pressure set point*
- *Avoid control hunting*
- *Maximize the energy efficiency*

M.K. Plastics has been an innovator with over 50 years of exhaust experience. We have taken this combined experience and developed our patented Leadlag Control package. The Leadlag package, as designed, has implemented those years of experience into a user friendly and field modifiable robust package.

As mentioned, control hunting is probably one of the most difficult aspect in control. When dealing with large mechanical devices such as fans and integrating them into a complex building with multiple variables, it is common that a control system will receive multiple commands, thus creating instability and the inability to maintain proper static pressure. These instabilities will manifest themselves by the system continuously surging and slowing down. This is control hunting.

With M.K. Plastics decades of experience in manifold design in laboratory exhaust applications, we have been able to develop a unique and proprietary exhaust fan control package that overcomes these difficulties. Our patented control package has been used successfully in service for close to 15 years. By dedicating it specifically to the exhaust system with enhanced functionality, we are able to provide a safe and efficient exhaust control.

M.K. Plastics Leadlag Control packages have integrated standard features, such as:

- *Automatic cycling of fans*
- *Integrated energy savings mode*
- *Isolation damper position*
- *Static pressure control*
- *Multiple alarm modes with most parameters being field adjustable*

Additional features include:

- *Airflow measuring*
- *Rotation sensors*
- *Vibration sensors*
- *Bearing temperature*

Compatibility with fans controlled by Variable Frequency Drives (VFD), and can be used to reduce fan speed before opening the bypass damper.

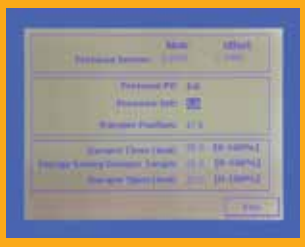
Energy Saving Mode: With Energy Saving Mode enabled, the PLC will monitor the bypass damper(s) position and if it is determined that the system is receiving too much bypass air, the PLC will shut down a fan. System static pressure will then be maintained by reducing and modulating the bypass air. Note, the system will shut down all but one fan in this mode. If the system static pressure is reduced, the PLC will engage one of the Lag fans.

Emergency Fire & Smoke Mode: Fans on or off (depending on State or Local Authority Codes).

BACnet communication option compatible for the Building Automation Control Networks.

ALARM MODES

- *System pressure alarm- low/high (standard)*
- *System pressure sensor failure (standard)*
- *Isolation & bypass damper open/close failure - control actuator position (standard)*
- *Variable frequency drive (VFD) failure (standard)*
- *Fan inlet pressure failure (standard)*
- *Fan speed alarm (option, as required)*
- *Fan back-spin alarm (option, as required)*
- *Vibration alarm (option, as required)*
- *Temperature alarm - bearings (option, as required)*



K-KORE™ COMPOSITE AIR PLENUMS
K-KORE™ COMPOSITE ENERGY RECOVERY PLENUMS
(PATENTED)

K-Kore™ Plenums are a revolutionary line of exhaust and energy-recovery plenums manufactured from advanced composite materials that offer:

- *30% to 50% weight savings over steel*
- *Improved 50-Year service life with virtual corrosion immunity*
- *Improved leakage rates (SMACNA Class II or higher) and overall thermal performance*
- *Superior sound attenuation*
- *True no-thru-metal construction throughout the entire cabinet depth*
- *All 316 stainless steel hardware*
- *Fast ROI: in maritime and other corrosive environments, K-Kore™ plenums can achieve ROI in as little as 2 years due to the short mean time between replacement for steel plenums*
- *Meets all applicable Fire, Flame, and Smoke codes and requirements, including NFPA 45, NFPA 90A, and UL 1995, as well as ASTM-E84 and UL 723 flame spread and smoke development standards/requirements*

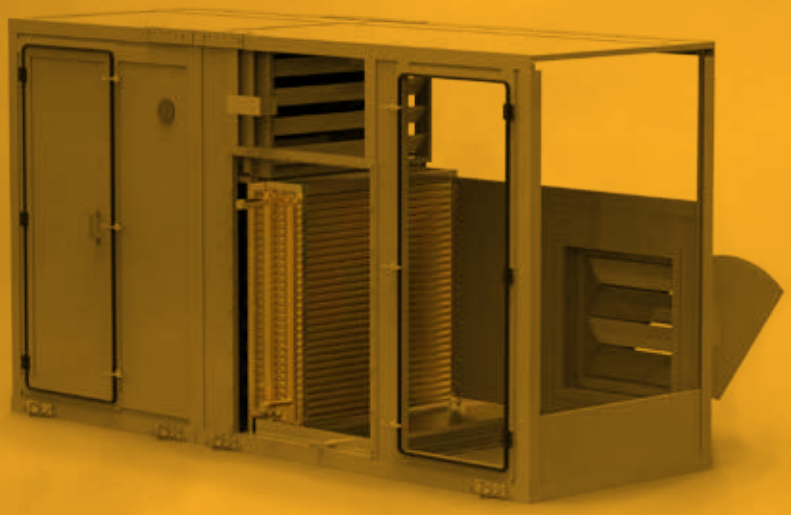
Manufactured with the same high-quality corrosion resistant FRP (fiberglass reinforced polymers) as the Axijet™ fans, K-Kore™ Plenums far exceed the durability, strength, and corrosion resistance of steel plenums and come with a standard 5-year factory warranty against cabinet corrosion.

ENERGY RECOVERY

K-Kore™ Plenums are available with a complete line of filters and energy recovery coils. These systems provide energy transfer between exhaust and supply air streams to reduce operating costs, and to prevent cross contamination between exhaust and supply.

MK Plastics 'ERU' systems offer the following:

- *Coil options range from standard steel coils used in non-corrosive environments to corrosion resistant 316 stainless steel casing construction with Heresite™, Blygold™ or Electrofin™ coatings*
- *Coils are fully replaceable and include a patent-pending slide-out drain pan design that allows for complete replacement of all steel elements*
- *The FRP casing of the K-Kore™ Plenums is so durable that it will outlast by decades even the most durable of all coated steel, aluminum or copper components*
- *Acoustic and Thermal resistance flexibility for all applications: 1.25" or 3" wall thicknesses, with complete No-Through Metal construction at all locations, including base frame, floors, walls and roof panels*
- *Outdoor units are equipped with an absolute Weatherproof Roofing System: a standing seam clad roof is completely independent from the air pressure seal*
- *Sloped roof 0.25" to 12"; all joints are triple sealed to prevent air and water leakage*
- *Cabinet materials: M.K. Plastics 1.25" FRP composite K-Kore™ panel, or 3" insulated FRP composite panel*
- *Cabinet insulation is available in a variety of Fiberglass densities*
- *Triple sloped, 304 or 316 Stainless Steel drain pans with 1.5" or 2" schedule 40 drain connections*



K-KORE™ ADVANTAGES

- *Light weight leads to lower cost for structural support grids and easier installation*
- *Acoustic properties of composite structure with honeycomb core far exceed the sound reduction capabilities of steel*
- *Very low leakage rates of SMACNA Class 2 or better, providing a superior overall thermal performance*
- *Corrosion "Immunity." FRP has a service life of well over 50 years and there has never been a corrosion related failure of FRP material even after continuous immersion in saltwater for over 50 years*
- *Customizable design provides flexibility to adapt to almost any jobsite requirement*

The simple fact of the matter is that steel is not a particularly suitable material for exhaust and energy recovery plenums. It's heavy, subject to corrosion, easily dented, and has high thermal conductivity and relatively poor thermal performance.

FRP is simply an inherently superior material choice for this application. The challenge has been creating a manufacturing and design process that will produce the required strength, toughness, and flame resistance required of construction materials. We are very proud to announce that those challenges have been more than overcome by M.K. Plastics and that our plenums meet and exceed every standard in the industry.

MVT VENTURI PERCHLORIC ACID EXHAUST SYSTEM

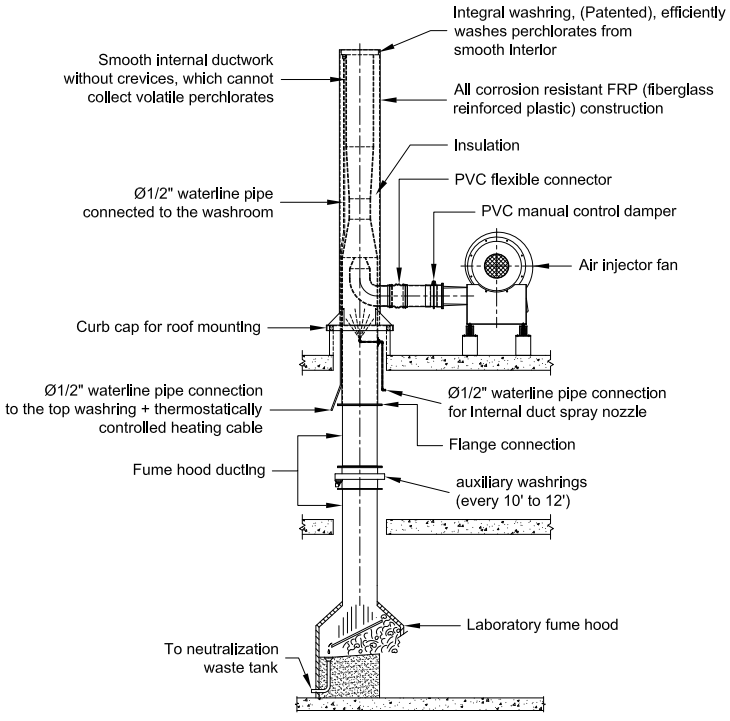
FRP fans and exhaust systems are an inherently better choice than coated steel in terms of corrosion resistance and anti-sparking characteristics. In fact, our patented corrosion resistant FRP Perchloric Acid exhaust systems are specifically designed to address the unique corrosion, fire, and explosion hazards of Perchloric Acid.

MK Plastics has done more perchloric acid systems than anyone else in North America. The design and functionality of our systems proves our experience and knowledge.

- *Induced exhaust blowers means that no moving parts are exposed to the exhaust airstream, with the fan easily accessed for safe service and repair*
- *Our washdown system includes a primary washring and spray nozzle assembly built into the exhaust stack that ensures a straight vertical washdown inside of the duct, which more effectively reaches and cleans all parts of the exhaust system, including any accumulated perchloric crystals within the Venturi exhaust*
- *Corrosion resistant fiberglass ducting from the perchloric fume hood to the Venturi exhaust stack can be provided with auxiliary washrings for vertical ducting, and auxiliary spray nozzle assemblies for elbow and sloping duct runs*
- *Optional 316 stainless steel auxiliary washrings and spray nozzles assemblies available, (stainless steel ducting – by others)*

Fiberglass Reinforced Plastic (FRP) construction providing superior corrosion resistance to Perchloric acid.

- *Exhaust stack is insulated to prevent condensation of acid vapors and formation of ice*
- *Water wash line is electrically heat traced to prevent freezing in sub-zero applications*
- *System is available with a programmable wash down timer and solenoid valves*
- *System is designed to be self draining*
- *Complies with "ACGIH", NFPA 45 and "CRC Handbook on Laboratory Safety"*
- *Available sizes from MVT 4308 to 4320 (8" to 20"), with induced fume hood capacities from 250 cfm to 3,230 cfm and up to 2.0" s.p.*



PERCHLORIC ACID EXHAUST DESIGN FEATURES

FIBERGLASS DAMPERS & LOUVERS

K-PD FIBERGLASS AIRFOIL CONTROL DAMPER

The M.K. Plastics series K-PD fiberglass control dampers are intended for low to medium pressure and velocity applications where corrosive elements exist in the air stream. The dampers are center pivoted and are available in both parallel and opposed blade design. An extended shaft enables both manual and motor control. Linkage is out of the air stream concealed in the frame. Maximum temperature is 200°F. The dampers can be either flange or duct mounted, flange drilling is available as an option.The K-PD series dampers are AMCA Certified for Air Leakage & Air Performance, and are licensed to bear the AMCA Seal.

K-GD FIBERGLASS GRAVITY BACKDRAFT DAMPER

The M.K. Plastics series K-GD end-pivoted fiberglass gravity backdraft dampers are intended for low to medium pressure and velocity applications where corrosive elements exist in the air stream. Recommended for backdraft control to allow airflow in one direction and prevent airflow in the opposite. Maximum temperature is 200°F. The K-GD series dampers can be flange or duct mounted in either vertical or horizontal applications. Counter weights are available to assist opening and closing of the blades, either mounted to the blades or exterior to the frame, outside of exhaust, depending on the application and installation. All counter weights are fully adjustable.

K-RD FIBERGLASS ROUND CONTROL DAMPER

The M.K. Plastics series K-RD are manufactured to meet the needs of the odor control and corrosive HVAC industries by providing a corrosion-resistant FRP Damper that is used to regulate an exhaust flow or shut off and isolate a system. The operating conditions for the dampers are designed to match the operating conditions of the duct system. Premium vinyl ester resins are used throughout the damper. Fire-retardant resins are also available for a Class 1 flame spread. The K-RD 503 & 504 series dampers are AMCA Certified for Air Leakage & Air Performance, and are licensed to bear the AMCA Seal.

K-FL FIBERGLASS FIXED BLADE DRAINABLE LOUVER

The fiberglass K-FL is a fixed blade drainable louver used in applications where corrosive air exists, for exhaust, air supply or pressure relief. Available for in cavity wall installation, or flange mounted to the exterior/interior of the wall.

FRP & PVC DUCTING AND FITTINGS

M.K. Plastics is a leading manufacturer of high quality fiberglass reinforced plastic (FRP) and Polyvinyl Chloride (PVC) products for industrial and commercial exhaust, ventilation and process related duct systems. We offer customized ducting, fittings, enclosures according to your specifications. Engineering assistance is available for the design of ductwork projects requiring non-standard construction.

CONTACT US

to find out which system
is right for you.

info@mkplastics.com
www.mkplastics.com
TEL: 514-871-9999
TEL: 888-278-9988 (US Toll Free)

MK PLASTICS

M.K. PLASTICS HISTORY

In 1963, Mel Cooper, the founder of M.K. Plastics, was doing mechanical contracting and higher end ventilation systems when he was approached by McGill University in Montreal with a request to fabricate PVC ductwork.

At the time PVC was almost non existent and mostly unknown in Canada and the United States. But Mel created the ducting for McGill University and quickly went on to become an expert in thermoplastics.

So when a customer needed a corrosive resistant, FRP fan as well as ducting, M.K. Plastics immediately created the required fan for the clients. They already had the labs, the equipment, and the experience working with PVC and fiber reinforced polymers and they went on to become one of the first manufacturers in North America to fabricate FRP fans.

M.K. Plastics continued that string of firsts: first to construct a fiberglass centrifugal fan. First to get AMCA certification for sound and air performance for their fiberglass fans. First to create a patented pressure control system for laboratory exhaust applications and they remain the only company in the industry providing an entire range of AMCA Certified fiberglass products: Perchloric Acid exhaust system, low, medium to high pressure centrifugal fans & blowers, wall mounted ventilators & exhausters, high plume dilution exhaust fans, fiberglass bypass plenums, and a wide range of fiberglass control, balancing & backdraft dampers.

OUR COMMITMENT

Certified for excellence in performance and noise reduction, we are devoted to providing:

- ***The highest quality corrosion resistant fans and systems available***
- ***Superior engineering support for our equipment***
- ***Industry leading technology and experience***
- ***Highly skilled application engineering associated with the equipment and systems we manufacture***

OUR FACILITIES

We design and manufacture complete ventilation systems in our own facilities as we have done for six decades, assuring quality, and reliability and constant innovation. Our dedicated engineering and R&D team designs, refines, and tests all of our fans and blowers in our 70,000 sq. ft. manufacturing facility and performance testing laboratory in Montréal, Québec, Canada.

M.K. Plastics is proudly represented in major markets around the globe.

99-01-December 2015