

THE WORLD LEADER IN CLEAN AIR SOLUTIONS



# Healthcare Clean Air Solutions

PARTICULATE AND GASEOUS FILTRATION





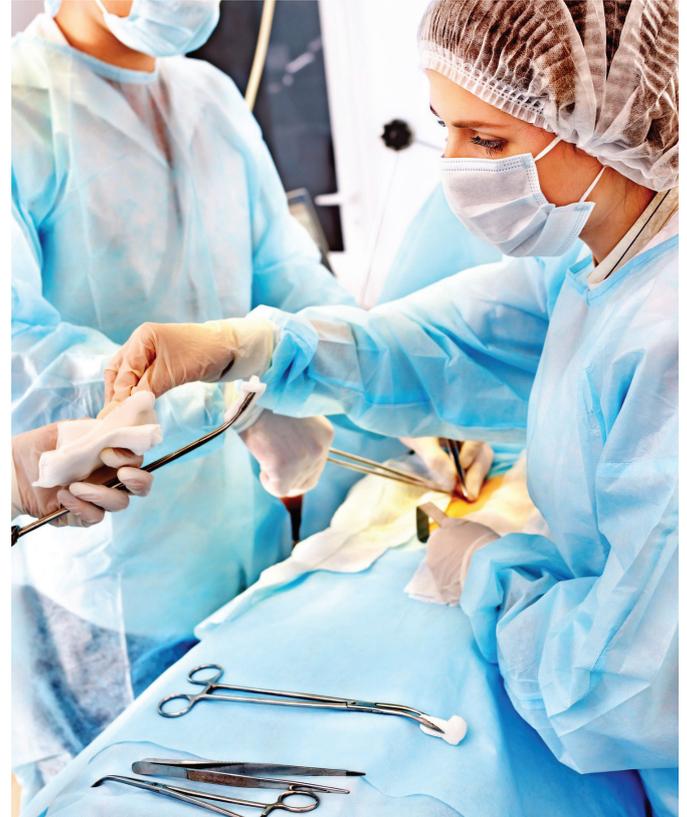
# Clean Air Solutions for Healthcare Facilities

Around the globe, AAF is providing clean air solutions for healthcare facilities in areas such as patient rooms, medical procedure areas, operating rooms, dentist offices, research centers, morgues, and cafeterias. From inexpensive disposable panel filters to high efficiency, extended surface filters and chemical gas-phase filtration, we market the widest range of air filtration products available.

## Strategic Approach to Air Filtration Solutions for Healthcare

Healthcare facilities pose a unique design challenge for heating, ventilation, and air conditioning (HVAC) system engineers. These systems fulfill a broad range of ventilation requirements and provide protection from airborne hazards. From operating rooms and laboratories to waiting areas and patient rooms—the risks and appropriate safety measures vary from space to space.

Our experts provide total filtration solutions to respond to every area in your healthcare facility—protecting patients, workers, and visitors is what we do.



# Clean Air Technology

## The Importance of Air Filtration

Clean air is vital in hospital and healthcare facility operations to protect patients, staff, and visitors from airborne diseases and infections, as well as providing a comfortable, healthy, and odor free environment. These facilities face unique challenges in controlling airborne pollutants and gaseous contaminants.

Healthcare facilities pay particular care to Indoor Air Quality (IAQ) concerns, because patients may have suppressed immune systems, making them more susceptible to adverse health effects. Healthcare workers, who spend many hours a day in facilities with potentially poor IAQ, are frequently at greater risk of exposure to infectious agents. Gaseous contaminants originate from a wide variety of sources, such as vehicle emissions, cleaning compounds, disinfectants, medical laboratories, office equipment, and waste removal areas. Best practice solutions address each of the various types of odors and gases.

AAF provides custom air filtration products and solutions to meet the most demanding airflow and efficiency requirements for controlling temperature, humidity, and air purification in any type of healthcare setting. AAF products are designed with energy efficiency in mind. Offering you the highest efficiency products with the lowest energy requirements, AAF has the filtration solutions to improve IAQ and reduce operating costs.

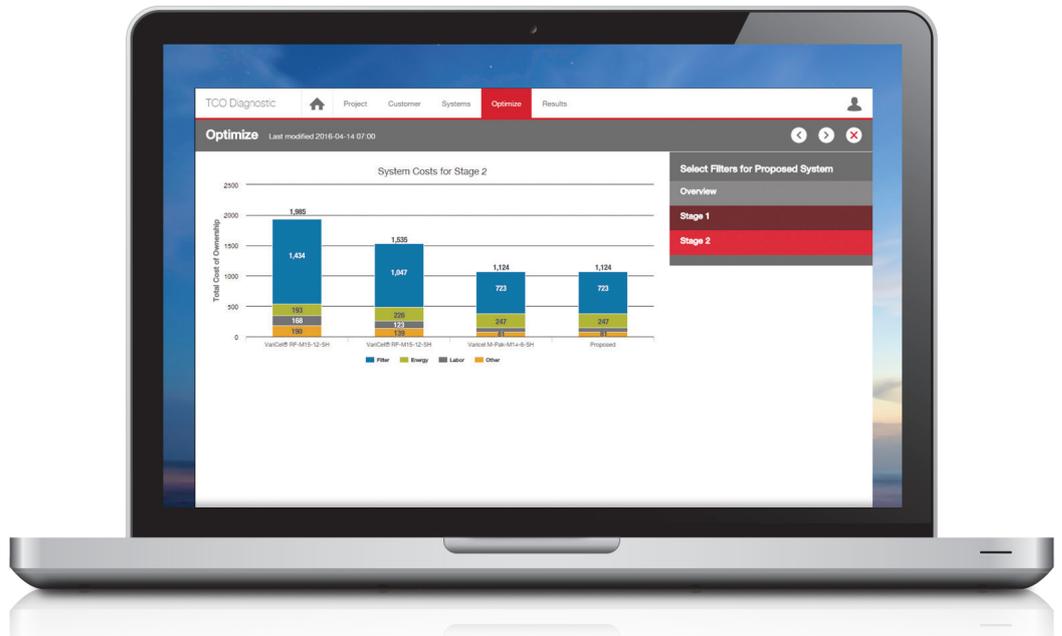
## Optimize Your Environment with TCO Diagnostic®

Faced with an influx of potentially contagious patients and their families, it is clearly imperative to reduce risk by removing airborne contaminants generated inside and outside the doors of healthcare facilities. In addition to the effects of contaminants on patients and hospital workers, corrosive gases can damage HVAC units, control rooms and electronic instrumentation, diagnostic equipment, X-ray machines, and office equipment.

A thorough air filter audit of your HVAC Systems is the first step that AAF takes, in order to provide you with professional guidance and analysis for cost savings and risk reduction. By conducting this audit, we will be able to understand your current state and then utilize TCO Diagnostic®, an advanced analytical software tool, to identify how your facility can perform even better.

The purpose of TCO Diagnostic is to assist you in selecting the best filters for your air handling systems and to understand their sensitivity to your operating conditions, in order for your system to operate in the most optimal and effective manner.

TCO Diagnostic provides the insight to identify improvement opportunities, find the optimized options, and tailor to your specific needs for a comprehensive purchase perspective—improving air quality, energy savings, and operational flexibility while reducing total cost of ownership.





## Filter Efficiencies for Healthcare Central Ventilation and Air Conditioning Systems

Published by the American Institute of Architects, Academy of Architecture for Health, and Assistance from the U.S. Department of Health and Human Services.

Area Designation	Minimum No. of Filter Beds	Minimum Filter Efficiency	
		Filter Bed No. 1 ISO 16890 (EN779:2012)	Filter Bed No. 2 ISO 16890 (EN779:2012)
<b>General Hospitals</b>			
All areas for inpatient care, treatment, and diagnosis, and those areas providing direct service or clean supplies such as sterile and clean processing, etc.	2	ISO coarse (EN779:G4)	ISO ePM1 (EN779:F8)
Protective environment room	2	ISO coarse (EN779:G4)	HEPA
Laboratories	1	ISO ePM1 (EN779:F7)	–
Administrative, bulk storage, soiled holding areas, food preparation areas, and laundries	1	ISO coarse (EN779:G4)	–
Recirculation of air within individual isolation rooms	1	HEPA	–
<b>Psychiatric Hospitals</b>			
All areas for inpatient care, treatment, and diagnosis, and those areas providing direct services	2	ISO coarse (EN779:G4)	ISO ePM1 (EN779:F8)
Administrative, bulk storage, soiled holdings, laundries, food preparation areas	1	ISO coarse (EN779:G4)	–
<b>Nursing Care Facilities</b>			
All areas for resident care, treatment, and/or diagnosis, and those areas providing direct service or clean supplies	2	ISO coarse (EN779:G4)	ISO ePM1 (EN779:F7)
Administrative, bulk storage, soiled holding, laundries, food preparation areas	1	ISO coarse (EN779:G4)	–
<b>Outpatient Facilities</b>			
All areas for inpatient care, treatment, and diagnosis, and those areas providing direct service or clean supplies such as sterile and clean processing, etc.	2	ISO coarse (EN779:G4)	ISO ePM1 (EN779:F8)
Laboratories	1	ISO ePM1 (EN779:F7)	–
Administrative, bulk storage, soiled holding areas, food preparation areas, and laundries	1	ISO coarse (EN779:G4)	–

### Notes

- 1) Additional roughing or prefilters should be considered to reduce maintenance required for filters with efficiency higher than ISO ePM2,5 (EN779:M6).
- 2) Filter class based on ISO 16890 (EN779:2012).
- 3) Non-central AHU Systems shall be equipped with permanent (cleanable) replaceable with a minimum ISO coarse (EN779:G2).
- 4) Filter Bed Location. Where two beds are required, Filter Bed No. 1 shall be upstream of A/C components. Filter Bed No. 2 shall be located downstream of any fans or blowers

(Blow-through System).

- 5) Humidification equipment shall be located 15' minimum upstream of Filter Bed No. 2.
- 6) Filter housing blank-off panels shall be permanently attached to frame constructed of rigid materials, and have sealing surfaces equal to or greater than filter efficiency installed in frame.
- 7) Filter measuring devices shall be installed across each filter bed having a required efficiency of ISO ePM2,5 (EN779:M6) or more, including hoods requiring HEPA filters.

# Controlling Contaminants

*“HVAC Systems may contribute far more both to transmission of disease and, potentially, to reduction of transmission risk.”*

– Airborne Infectious Disease,  
ASHRAE Position document June, 2009



## Hospital Laboratories

Chemical safety and cross contamination control are vital to testing and research laboratories in any hospital. The success of some lab processes, such as in-vitro fertilization, are dependent on air purity.



## Critical Procedure Areas

Faced with an influx of potentially contagious patients and their families, it is imperative to reduce and remove airborne contaminants generated inside and outside the doors of the emergency room, as well as reduce indoor airborne contaminants from undiagnosed patients, in order to protect staff and visitors in waiting areas.

Outside emissions from vehicles in and around emergency areas and ambulance bays can be harmful, odorous, and irritating. Comprehensive filtration systems, including AAF particulate and gas-phase solutions, are required to ensure a safe, effective emergency procedure area.



## Equipment Areas

Healthcare equipment and instrumentation are major investments that should be protected, and AAF can help. Areas and items of concern may be the HVAC units, control rooms and electronic instrumentation, diagnostic equipment, X-ray machines, and office equipment.

Select from AAF’s preliminary and final filter options to enhance the life of your equipment. AAF gas-phase filtration can reduce corrosive gases to protect equipment from potential failures caused by corrosion, and can control gaseous contaminants for worker protection and procedure success.



## Rooftop Ventilation Area

Air intake areas are especially important, since the air brought in must be filtered to remove emissions from rooftop helipads, outside industries, and automobile emissions. It is also important to remove odors associated with helicopter exhaust, cooking exhaust, and outdoor-sourced pollutants to protect the health of guests and staff. AAF particulate and gas-phase filtration products help ensure the acceptability of outdoor air for building ventilation.



## Cafeteria

We know there is a direct connection with the air we inhale, our health, and our general comfort. It is important not only to reduce the possibility of spreading infections, but also to maintain a comfortable environment by reducing or eliminating odors from cooking and cleaning. AAF total filtration solutions can control odors associated with cooking and cleaning activities.



### Emergency Room

Critical procedure areas, including operating theaters, outpatient surgery suites, labor and delivery units, and oncology procedure areas, demand optimum protection against airborne contaminants. Comprehensive filtration systems, including AAF particulate and gas-phase solutions, are required to ensure a safe, effective procedure area.



### Treatment Rooms

Minimize exposure to communicable diseases and protect immune compromised patients with AAF's custom air filtration solutions. These solutions can control airborne contaminants that may lead to adverse health effects for exposed personnel and patients.



### Morgues

AAF particulate and gas-phase filtration solutions should be used to eliminate occupational exposure to infectious diseases and associated odors in this hospital area.



### Loading Dock/Waste Removal

Remove emissions and smells from loading docks, maintenance, and waste incineration areas with AAF's comprehensive line of particulate and gas-phase filtration solutions. Emission sources can include idling delivery vehicles and dumpster odors.



### Patient Waiting Areas

Airborne diseases and illnesses have increased the need for improved IAQ solutions. All buildings contain a mixture of chemical sources with varying effects. Most chemicals will cause irritation if the concentrations are high enough, so it is important to use the best filters to protect and improve IAQ for building occupants.

# Particulate Filtration Solutions

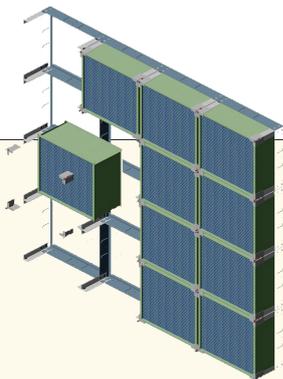
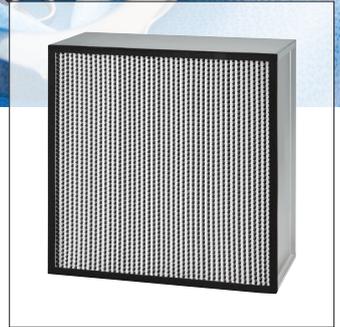
## HEPA and ULPA Filters

HEPA and ULPA filters are the most efficient air filters commercially available. They are used in isolation rooms, protective environment rooms, organ transplant areas, and other applications requiring ultra-clean air. AAF HEPA filters are individually tested before shipment to ensure they meet rated efficiency and resistance. AAF HEPA and ULPA filters are available in a variety of efficiencies—from 99.97% tested on .3  $\mu\text{m}$  particles to 99.9995% and higher tested on .1 to .2  $\mu\text{m}$  particles. All filters are available scan-tested.



The HEPA/ULPA Filter line delivers:

- Individually tested for certified performance
- Designed to meet the demanding requirements of critical applications
- ePTFE Filtration Technology provides superior durability
- Filters designed specifically for high airflow applications requiring HEPA efficiency at an ultra low pressure drop
- High capacity, space saving designs



### HVAC Retrofilt Solutions—Easy Upgrade to HEPA Filtration

Easily upgrade to HEPA filtration without increasing energy use or modifying costly blowers. AAF HEPA Holding Frames are designed for a tight seal with our HEPA filters, eliminating bypass leakage without increasing energy use.

Since AAF HEPA Holding Frames are available in the same sizes as existing Universal HVAC frames, duct expansions and transitions are unnecessary.

## High Efficiency Extended Surface Filters

These rigid, extended surface filters are ideal for use in all high efficiency applications, including nurseries, ICU, patient care and treatment rooms, diagnostics, laboratories, sterile storage areas, and minor surgical suites. The supported pleat box filters provide strength and integrity in high flow, turbulent, and variable airflow conditions.



The High Efficiency Extended Surface Filter line features:

- Filter classes M6–E10 (EN779:2012; EN1822:2009)
- ISO ePM<sub>2,5</sub> to ePM<sub>1</sub> (ISO 16890)
- Patented Impress® Technology delivers a higher DHC and a lower pressure drop for greater energy efficiency
- Filters designed to remove airborne biological contaminants in critical areas, such as hospitals and pharmaceutical processing
- Heavy-duty construction and high performance in tough operating conditions
- Particulate and gaseous contaminant removal



# Particulate Filtration Solutions

## Pleated Panel Filters

The AAF pleated panel filter line provides the industry's broadest selection of high performance, high capacity filters, including specialty and standard capacity options. This enhanced line of filters offers consistent air quality, improved process performance, social responsibility, and optimized Total Cost of Ownership.

Pleated filters can be used as prefilters to protect and extend the life of higher efficiency, more expensive final filters.



The Pleated Panel Filter line features:

- Filter classes G2–M5 (EN779:2012)
- ISO coarse to ePM10 (ISO 16890)
- Lowest life cycle pressure drop and highest Dust Holding Capacity (DHC) reduces energy consumption and total operating costs
- Lowest initial resistance panel filter in the industry, combined with high DHC provides an extended life cycle and energy efficient performance
- High efficiency pleated filter supports achievement of LEED® credits by significantly improving Indoor Air Quality (IAQ) and reducing energy consumption
- Economy grade filter selections for medium to light duty applications



# Gaseous Filtration Solutions

AAF has assumed an industry leading position with the development of its innovative SAAF™ (pronounced as “SAFE”) product line, designed to reduce or eliminate harmful gaseous contaminants. In combination with our expertise in airborne particulate filtration, SAAF products and solutions allow us to develop unique and effective total filtration solutions to protect people, processes, and equipment.

No other company offers this combination of experience, expertise, innovation, and capability to combat airborne contaminants, particulate and/or gaseous, and deliver the best clean air solutions.



The SAAF product line features:

- Patented chemical media cassettes with superior sealing and energy savings. These cassettes also fit in most legacy units. The housings are designed for quiet operation and durability.
- Complete chemical media line – adsorbents, oxidants, and blends configured by and produced under the supervision of our world-class global research and development teams.
- Environmental Measurements related to the ISA Standard S71.04: “Environmental Conditions for Process Measurement and Control Systems. Airborne Contaminants to determine types of contaminants and their relative concentrations.”
- RoHS compliant Corrosion Control
- Comprehensive, industry leading software – SAAF Tech Tools analyzes applications, develops solutions, configures equipment and media, and delivers a complete technical proposal.

## Cleanroom Components

For guaranteeing an efficient installation and effective operation of terminal air filtration systems, AAF offers a broad range of matching cleanroom components. These components vary from ceiling grids to light fixtures.

Please contact your local AAF affiliate office for tailored advice and a custom-made solution, designed by AAF cleanroom specialists.

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