THE WORLD LEADER IN CLEAN AIR SOLUTIONS

Corrosion Control for Control Rooms & Process Control Environments

AIRBORNE PARTICULATE AND GASEOUS CONTAMINANT SOLUTIONS

AAF® INTERNATIONAL

Bringing clean air to life.®

Corrosion Control for Control Room & Process Control Environments

Index

AAF - Your Clean Air Partner

Founded in 1921, AAF is a name recognized globally for quality, expertise, and innovation in Air Filtration. It is headquartered in Louisville, Kentucky, USA and has operations in 23 countries, 6 R&D centers and has 260 sales offices worldwide. It is a Daikin group company which is a diversified international manufacturing company and a global leader in air-conditioning with the group annual revenue of $23 billion.

The broad product and service portfolio covers a versatile range of both particulate and gasphase filtration solutions that offer the customer the answer to each air quality challenge, tailored to the specific application needs. All products are designed and tested to meet the latest filtration standards, such as ISO16890 for particulate filters and EN1822:2009 for HEPA filtration.

The region EEMEA, CIS & SAARC countries has 3 manufacturing units 1 of them in Middle-East (Saudi Arabia) and 2 in India (Bengaluru, Karnataka and Noida, Uttar Pradesh). The company has dedicated inside free and outside free trade zones to re-export to CIS and African countries.

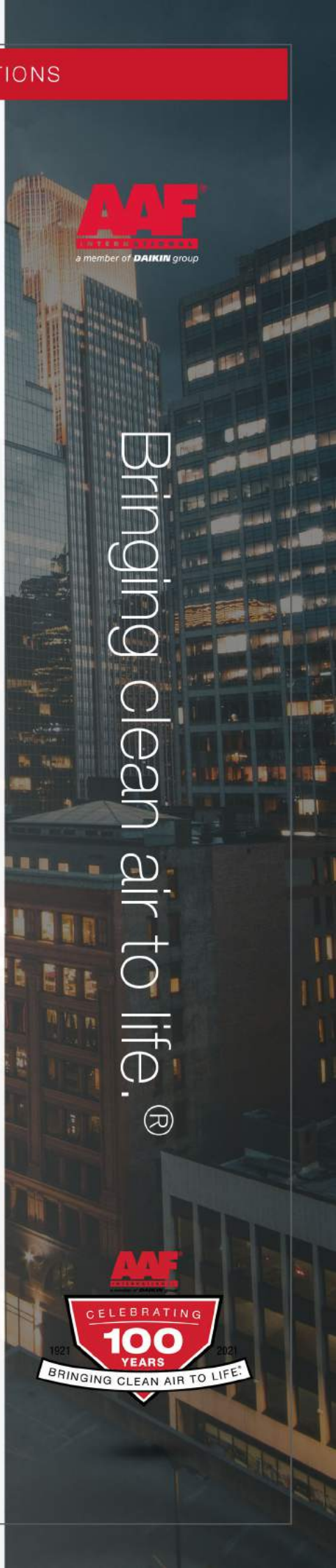
In 1995, AAF established its unit in Riyadh, Saudi Arabia. It was the first MNC air filter company of the region. The unit is ISO 9001 certified and Recent investments in manufacturing and supply chain have resulted in further improved quality assurance and smooth logistics. AAF has occupied an advantageous position in the region and has maintained the leading position in the filtration industry.

By 2006, the company entered Indian market by setting up its first manufacturing unit in Bengaluru, India. It is India's first and the only filtration company who installed auto scan test facility to test HEPA and ULPA filters as per EN1822:2009 international standards. The Bengaluru factory also has a cleanroom of ISO Class 100000.

AAF provides of solutions for:

- IAQ to protect people at healthcare facilities, airports, and commercial complexes
- Cleanroom filtration to protect processes
- Gas-phase products for gaseous contaminants like VOCs and corrosive/toxic gases
- Air Pollution Control – Dust collectors and smoke collectors
- Gas Turbines – Auxiliary equipment, filters, repairs, refurbishment, retrofit and upgrades

AAF is a company with an outstanding industry record. The company is providing clean air solutions for 100 years now. Superior industry knowledge and an outstanding team of air filtration professionals mean the customers receive top quality products and services at a competitive price. From inexpensive disposable panel filters to high efficiency extended surface filters with antimicrobial media, AAF markets the widest range of air filters available. AAF has developed and introduced most of the filter designs throughout the industry, including the mini-pleats, extended surface bag filters and PerfectPleat.



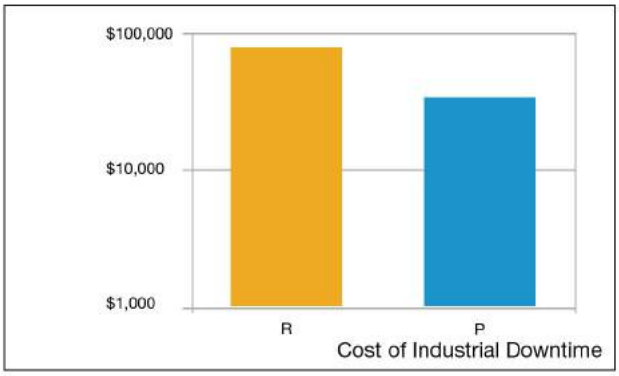
Corrosion Control—Control Rooms & Process Control Environments

AAF understands the need to provide gas-phase and particulate filtration systems for process control environments. Employing such systems can:

- Eliminate process shutdown due to control equipment failures
- Maintain high process efficiency
- Extend circuit board life and reduce replacement cost

Control Room

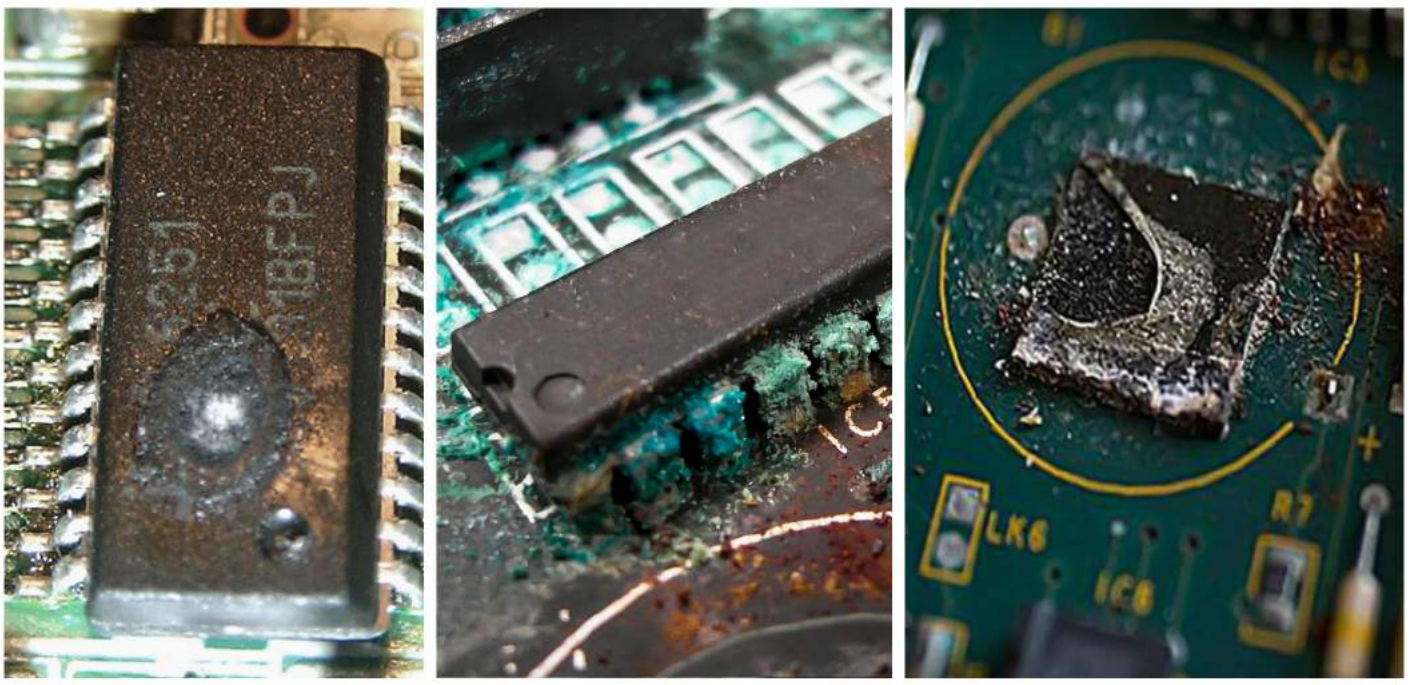
Control rooms are utilized by large-scale industrial plants to monitor and control plant operations. Examples of such plants are geothermal power plants, petrochemical refineries, and pulp and paper plants. The control room and network of control equipment are essential to plant operation and enable the plant to maintain the highest efficiency possible. If the control room malfunctions, it can cost a plant tens of thousands of dollars per hour (see Cost of Industrial Downtime chart).



Cost of Industrial Downtime

Corrosive gases in industrial environments (ammonia, chlorine, hydrogen sulfide, mercaptans, nitrogen oxides, sulfur oxides) can cause corrosion of control equipment circuitry, as shown in the circuit board picture on the right. Corrosion products form random circuit paths and nonconductive layers, which result in false signals and loss of process control.

In response to these problems, ISA (Instrumentation, Systems, and Automation Society) developed a standard to classify control rooms and process control environments—ISA 71.04. Most equipment manufacturers require that the control room environment meet the ISA G1—Mild classification to maintain a reliable communication network in industrial environments (see ISA classification scheme below). The only way to meet this requirement in many industrial environments is to protect the control room with gas-phase and particulate filtration.



Corrosion Formed on Circuit Board Components

Clean Air Technology

Optimize Your Environment

Protection of an industrial control room includes, at a minimum, pressurization with purified air. This prevents corrosive gases from infiltrating the control room and causing corrosion problems. Additionally, recirculation air may require cleaning, if the room is a high traffic area or there are other internal sources of contaminants.

Proper filter selection and maintenance is essential to keeping HVAC systems operating effectively and efficiently. There are multiple facets of the filter and the system it's installed in that must be taken into consideration. These considerations include system airspeed, fan efficiency, filter resistance, service life, efficiency, and cost.

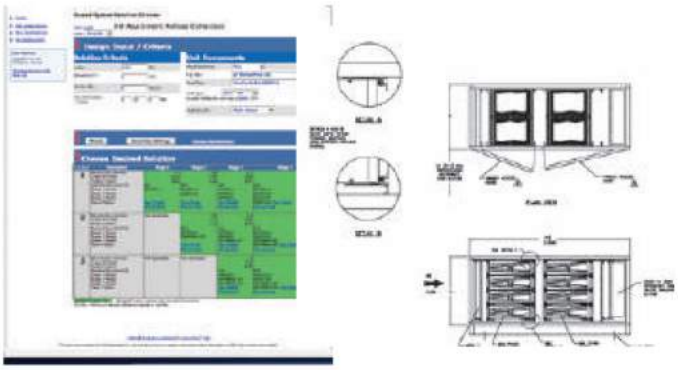
In considering the Total Cost of Ownership (TCO), it is important to keep in mind that in order to have a cost-effective building, planning maintenance is an important step in maintaining energy efficiency, minimizing costly downtime, and extending the lifespan of your equipment.

Comprehensive Purchase Perspective

Selecting the proper filtration for your HVAC system can help your facility to reduce spend, decrease risk, and save time. Control room and process control environment managers need the support of a trusted advisor who can perform Air Filtration Audits and Diagnostics to ensure that the most optimal effective solution is selected and installed in their air filtration systems.

SAAF™ Tech Tools

SAAF Tech Tools is a decision-sciences software for configuring clean air products to remove airborne gaseous contaminants. Using SAAF Tech Tools, AAF experts can enter application specific data or select from a list of predefined applications to configure the exact clean air solution required for our customers. Detailed information on contaminants, adsorbers, oxidants, and links to industry information relevant to specific applications is also readily available.



TCO Diagnostic®

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 you 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 to operate your system 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.

ANSI/ISA-71.04-2013: Environmental Conditions for Process Measurement and Control Systetms: Airborne Contaminants

Control Room Equipment Reliability as per ISA Standard 71.04-2013

The purpose of this standard is to classify airborne contaminants that may affect process measurement and control instruments. The classification system provides users and manufacturers of instruments with a means of specifying the type and concentration of airborne contaminants to which a specified instrument may be exposed.

Environmental classifications have been established according to the type of contaminant. Within each classification, severity levels have also been established. Parameter limit values are tabulated for each classification and severity level of the contaminant. The classification consists of a class contaminant letter followed by a severity identification numeral.

Two methods have been used for environmental characterization. One is a direct measure of selected gaseous air pollutants. The other, which can be termed "reactivity monitoring," provides a quantitative measure of the overall corrosion potential of an environment.

Pollution analysis may provide short-term estimates for specific sites. High values will confirm that a severe environment exists. The reverse, however, is not necessarily true. Industrial environments may contain a complex mixture of contaminants that interact to greatly accelerate (or retard) the corrosive action of individual gas species.

To avoid these practical difficulties, the nature of industrial environments is defined in terms of the rate at which they react with copper. As a direct measure of overall corrosion potential, reactivity monitoring involves the placement of specially prepared copper coupons in the operating environments. Copper has been selected as the coupon material because data exists which correlates copper film formation with reactive (corrosive) environments. It has proven to be particularly useful for environmental characterization. Analyses may consist of measurements of film thickness, film chemistry, or weight loss. Sensitivity of reported techniques is well within the range required for meaningful application data.

Severity			G1	G2	G3	GX
Copper reactivity			Mild	Moderate	Harsh	Severe
Corrosion layer	(Thickness in Angstroms)		<300	<1000	<2000	>2000
Contaminant			ppb	ppb	ppb	ppb
Group A	Hydrogen Sulphide	H_2S	<3	<10	<50	>50
	Sulphur Dioxide and Trioxide	SO_2/SO_3	<10	<100	<300	>300
	Chlorine	Cl_2	<1	<2	<10	>10
	Oxides of Nitrogen	NOX	<50	<125	<1250	>1250
Group B	Hydrogen fluoride	HF	<1	<2	<10	>10
	Ammonia	NH_3	<500	<10000	<25000	>25000
	Ozone	O_3	<2	<25	<100	>1000

Four levels of corrosion severity are established in the above table. Concentration levels of some gases that contribute to these reactivity rates are also cited.

Gas-Phase 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.

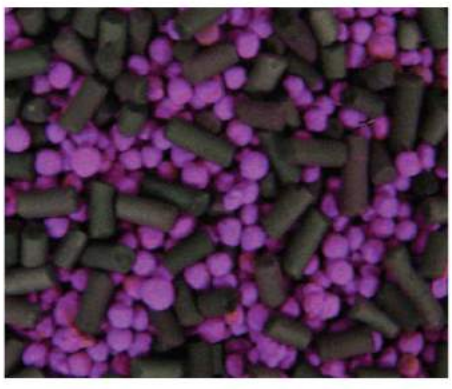
No other company offers this combination of experience, expertise, innovation, and capability to combat airborne contaminants, particulate and/or gaseous, and deliver the best clean air solutions.

The 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 (ASHRAE TC 9.9 Guideline)
- Comprehensive, industry leading software – SAAF Tech Tools analyzes applications, develops solutions, configures equipment and media, and delivers a complete technical proposal.
- Full line of gas-phase equipment, including side access housings, air purification systems and machine intake filter systems.

SAAFOxidant

SAAFCarb



SAAFBlend

SAAF™ Side Access Housings

MULTI-STAGE TOTAL CLEAN AIR SYSTEMS

SAAF Side Access Housings are designed to support SAAF chemical media cassette filters, prefilters and after-filters, and high efficiency particulate filters all in one self-contained unit for the removal of gas contaminants and airborne particulate. The housings are available in many different combinations and sizes to meet a wide range of applications. SAAF Side Access Housings are a state-of-the-art solution for total air cleaning.

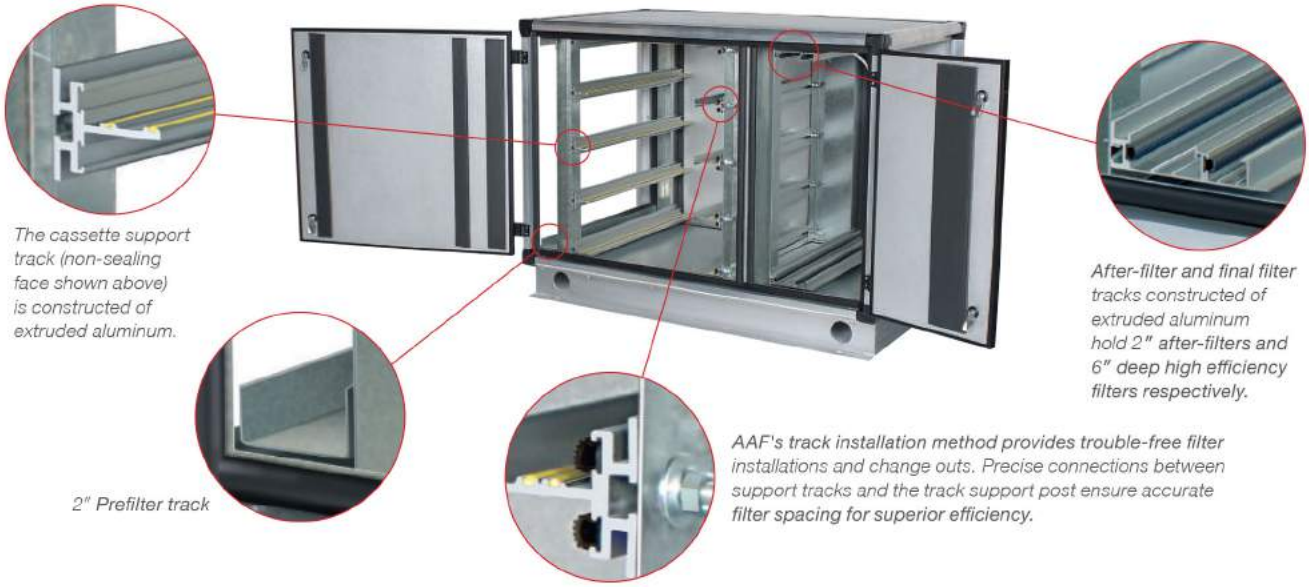
- Combines particulate filters, gas-phase cassettes, and high efficiency filters to create total clean air solutions; removes both airborne particulate and gaseous contaminants
- Patent-pending SAAF™ Seal provides the best seal available and superior filtration efficiency
- Available with internal fan; wide range of sizes and combinations of housings and filter banks
- Insulated double-wall construction
- Allows easy installation, operation, and maintenance in a totally self-contained system

Sealing System Prevents Filter Bypass

AAF's patent-pending filter sealing system prevents bypass of unfiltered air. Cassettes and filters are locked in place by a combination of cassette notches and cassette locator bars. Designed to maintain optimal positioning of the cassettes, the locator bar compresses the cassette into the sealing gasket. This unique system is completely effective and ensures exceptional filter efficiency.

Built for Strength

SAAF Side Access Housings are constructed of stainless steel, aluminum, or painted steel for maximum protection and durability. Double walled panels and doors provide whisper quiet operation.



The cassette support track (non-sealing face shown above) is constructed of extruded aluminum.

2" Prefilter track

After-filter and final filter tracks constructed of extruded aluminum hold 2" after-filters and 6" deep high efficiency filters respectively.

AAF's track installation method provides trouble-free filter installations and change outs. Precise connections between support tracks and the track support post ensure accurate filter spacing for superior efficiency.

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Prefilters and After-filters

MEGApleat M8 filters are ideal MERV 8 prefilters used to prevent the buildup of lint and dust on the face of the cassette and high efficiency filters. Models available in 1″, 2″, and 4″.

High Efficiency Final Filters

SAAF Side Access Housings will accommodate a high efficiency final filter bank to ensure that filtered air meets the highest levels of efficiency.

Product Model Designations

The SAAF Side Access Housings model is designated as follows:

SAH - 202 – 2P – MD – F – MD – 2P – 6F

- Side Access Housing
- *Is nominally 2′ high x 2′ wide*
- *Supports a 2″ deep particulate prefilter, if required*
- *First gas-phase chemical filter bank, supports Type MD cassettes*
- Fan
- *Supports a 6″ deep particulate final filter, if required*
- *Supports a 2″ deep particulate after-filter, if required*
- *Second gas-phase chemical filter bank, supports Type MD cassettes*

Chemical Media Cassettes

Designed to hold SAAF chemical media cassette filters: SAAF™ Cassettes perform and operate at the optimum filtration efficiency Medium Duty, Heavy Duty and Cleanroom Grade.

Product Information

Model	Nominal Dimensions H Ft	Nominal Dimensions W Ft	Cassette Selection: SAAF HD Airflow @ 250 FPM Velocity	Cassette Selection: SAAF MD Airflow @ 500 FPM Velocity	Cassette Selection: SAAF CG Airflow @ 500 FPM Velocity
102	1	2	500	1,000	1,000
104	1	4	1,000	2,000	2,000
202	2	2	1,000	2,000	2,000
204	2	4	2,000	4,000	4,000
206	2	6	3,000	6,000	6,000
302	3	2	1,500	3,000	3,000
304	3	4	3,000	6,000	6,000
306	3	6	4,500	9,000	9,000
402	4	2	2,000	4,000	4,000
404	4	4	4,000	8,000	8,000
406	4	6	6,000	12,000	12,000
408	4	8	8,000	16,000	16,000
410	4	10	10,000	20,000	20,000
504	5	4	5,000	10,000	10,000
506	5	6	7,500	15,000	15,000
508	5	8	10,000	20,000	20,000
510	5	10	12,500	25,000	25,000
604	6	4	6,000	12,000	12,000
606	6	6	9,000	18,000	18,000
608	6	8	12,000	24,000	24,000
610	6	10	15,000	30,000	30,000

SAAF™ Recirculation Unit and Pressurization

STAND-ALONE TOTAL CLEAN AIR SYSTEMS

- Recirculate and clean the air in a controlled environment; suitable for in-room use or sheltered outdoor installation.
- Combines particulate filters, gas-phase cassettes, and high efficiency filters to create total clean air solutions; removes both airborne particulate and gaseous contaminants.
- Patent-pending SAAF Seal provides the best seal available and superior filtration efficiency.
- Designed with internal variable speed fan (electronically commutated) and media combinations to meet your specific application requirements.
- Insulated double-wall construction provides whisper-quiet operation.
- Easy installation, operation, and maintenance in a totally self-contained system.
- Sliding Fan Tray Design provides easy access and servicing of fan.

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- Hinged Instrument Panel provides easy access and servicing of gauges, disconnect, and speed control.
- Return Air Grilles for Pressurization and Recirculation Units are single deflection grilles with dampers to provide control of recirculation air.
- Supply Air Grilles are double deflection to provide maximum control of air pattern for spread and deflection in two planes.

Patent-pending Sealing System Prevents Filter Bypass

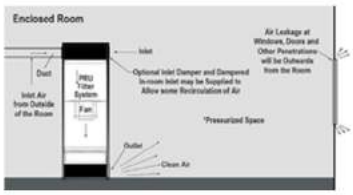
SAAF Air Purification Systems are uniquely designed to hold and securely seal SAAF Cassettes. AAF's patent-pending SAAF Seal High Integrity Sealing System prevents bypass of unfiltered air. Cassettes and filters are locked in place by a combination of cassette notches and cassette locator bars. Designed to maintain optimal positioning of the cassettes, the locator bar compresses the cassette into the sealing gasket. This unique system is completely effective and ensures exceptional filter efficiency.

Clean Contaminated Air From Within or Outside

SAAF Air Purification Systems are designed to support SAAF chemical media cassette filters, prefilters and after-filters, and high efficiency particulate filters in one self-contained stand-alone unit. The units are designed for optimal removal of gaseous and particulate contaminants from outdoor and indoor air.

SAAF™ Recirculating Unit draws contaminated air from a room; cleans the air; and then returns the cleaned air back into the room.

SAAF™ Pressurization and Recirculation Unit draws air from both outside and inside the room. The unit cleans the mixture of outdoor and indoor air and discharges it back into the room, causing a positive pressure. This positive pressure forces air to leave the room, preventing infiltration of outside contaminants



Prefilters High Efficiency Final Filters

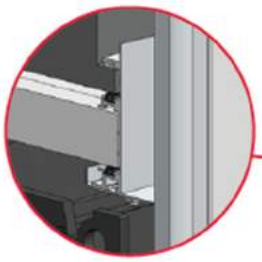
MEGApleat® M8 filters are ideal MERV 8 prefilters used to prevent the buildup of lint and dust on the face of the SAAF cassettes and high efficiency filters.

VariCel® 2+HC extended surface pleated final filters (MERV 15, 14, and 11) are the perfect choice for high efficiency particulate removal. VariCel 2+HC filters boast a compact 6″-deep filter design while maintaining the same media area and performance as 12″-deep filters. *Brochures AFP-1-243, AFP-1-180*

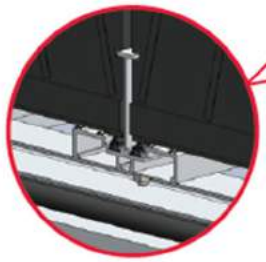
Chemical Media Cassettes

SAAF Air Purification Systems are designed to hold SAAF Heavy Duty chemical media cassette filters.

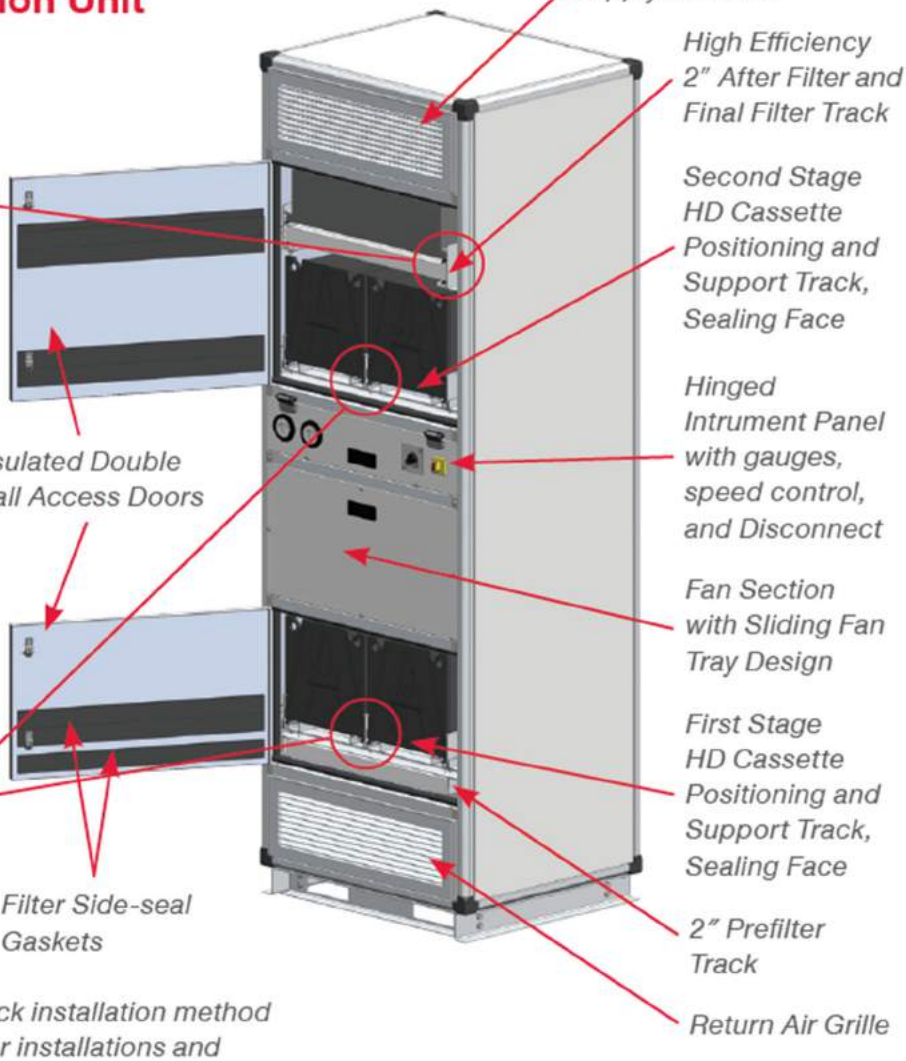
SAAF Recirculation Unit



After-filter and final-filter tracks are constructed of extruded aluminum and hold 2″ after-filters and 1″ header-style high efficiency filters respectively.



AAF's "quick release" track installation method provides trouble-free filter installations and changeouts. Precise connections between support tracks and the track support post ensure accurate filter spacing for superior efficiency.



The cassette support track is constructed of extruded aluminum.

Product Model Designations

The SAAF models are designated as follows:

Model	Configuration	Intakes	Prefilter	Cassette Stage 1	Fan Section	Cassette Stage 2	After Filter and Final Filter	Discharge
PRU	– 500VU	– OAFC – RGD	– 2P	– HD	– F	– HD	– 2P – 4F	– SG

Model	PRU	=	Pressurization and Recirculation Unit with outside air/recirculated air combination (Up to 50% of total flow as outdoor air)
	RU	=	Recirculation Unit for air purification of the required space.
Configuration – **Airflow**	Sizes	=	500, 1000 , 1500, 2000, 4000
Configuration – **Type**	H	=	Horizontal
	V	=	Verticle
Configuration – **Airflow Direction**	U	=	Upflow (bottom intake)
	D	=	Downflow (top air intake)
Intakes *for PRU Units only*	OAFC	=	Outside Air Flanged Collar
	OARC	=	Outside Air Round Collar
	RG	=	Return Grille
	RGD	=	Return Grille with manual damper for adjustment of return air intake.

Prefilter	2P	=	MEGApleat M8, 2″
Cassette Stage 1	HD	=	SAAF Heavy Duty Chemical Media Cassette
Fan Section	F	=	Electronically Commutated (EC) plenum fan (Std)
Cassette Stage 2	HD	=	SAAF Heavy Duty Chemical Media Cassette
After Filter/ Final Filter	2P	=	MEGApleat M8, 2″
	4P	=	VariCel 2+HC Single Header MERV15, 4″
Dicharge	SG	=	Supply Grille, double deflection
	SAFC	=	Supply Air Flanged Collar
	SARC	=	Supply Air Round Collar

SAAF™ Deep Bed Scrubber

DEEP BED TOTAL CLEAN AIR SYSTEMS

- Combines particulate and gas-phase technologies for an AAF Flanders Total Filtration Solution
- Provides highest "chemical media-to-air" ratio for heavily polluted environments that require air quality guarantees and optimal cost of ownership
- Available with internal fan: wide range of sizes and combination of AAF Flanders Filtration technologies
- Offers the best flexibility and control to adapt to changes in the environment

Typical Applications

TSAAF Deep Bed Scrubbers are used in mission critical and industrial applications around the world. Suitable for the most challenging applications where heavy particulate and airborne molecular contaminant loading is anticipated, our SAAF Deep Bed Scrubber is ideal for high concentration applications such as:

- Pulp & Paper
- Oil and Gas
- Wastewater Operations
- Garbage Depots
- Incineration Plants
- Wet Wells
- Process Areas
- Emergency Safe Rooms
- Data Centers
- Other Highly Polluted Environments

Features

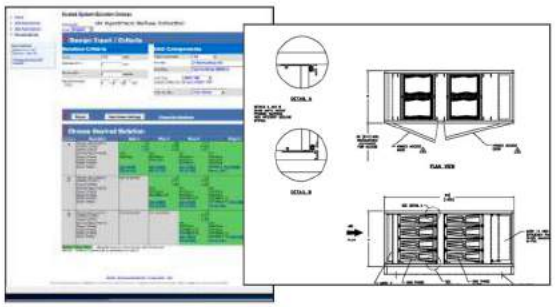
- Painted CRS or Stainless Steel construction
- Incorporates AAF Flanders' particulate filtration technologies
- Internal or external mounted, energy efficient, corrosion resistant, direct-drive or belt-drive blower
- Structural Skid Base for easy installation
- Bulk media filling ports and clean out gates
- Optional pre-wired control panel w/ VFD
- Optional redundant fans

SAAF™ Technical Services

The SAAF Technical Services Group has the instrumentation and training to perform comprehensive evaluations and environmental assessments. All tests are carried out and correlated to applicable industry standards. Evaluations are performed to target specific contaminants and provide recommendations and product solutions.

SAAF™ Tech Tools

AAF exclusive SAAF Tech Tools is the filtration industry's most sophisticated and complete decision-sciences software for configuring clean air products to remove airborne gaseous contaminants. Extremely flexible, SAAF Tech Tools provides extensive customization and multiple solutions. SAAF Tech Tools makes detailed information on contaminants, adsorbers, oxidants, as well as links to industry information relevant to specific applications, available at your fingertips.



Select and compare media and equipment solutions using SAAF ™ Tech Tools.

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AAF Innovation and Engineering

AAF technologies and innovations have steered the air filtration industry for the past nine decades. From its modest beginning in 1921, when the first air filtration technology was developed by our founder, William Reed, the company today employs more than 100 engineers and has sales offices worldwide. We hire design and product development engineers who understand the importance of global design validity, the benefits of easy product use, the protection of natural resources, and the need to provide a product experience that enriches human existence.

AAF Service and Commitment

AAF is committed to an exceptional end-user product experience. AAF Flanders is the only air filter company with a direct force of factory trained representatives. AAF sales, service, and technical employees provide backup and product support around the globe. All of this makes it easy to work with AAF.

SAAF™ Machine Intake Filter

MULTI-STAGE TOTAL CLEAN AIR SYSTEMS

- Specifically designed for machine air intakes within hostile air quality environments, such as industrial manufacturing facilities, mining, smelting, petrochemical, and pulp and paper processing.
- Combines decades of AAF air filtration expertise in gas turbine and complex machine air intakes.
- Incorporates AAF low pressure drop, enhanced performance air filtration technologies for high efficiency, high-capacity, maintenance-effective solutions.
- Patent-pending SAAF™ Seal provides the best seal available and superior filtration efficiency.

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Air Intake Filtration Reduces Machine Operating Costs!

SAAF Machine Intake Filter solutions are designed to scrub air prior to the intake of any machine that compresses air or uses air for cooling. By limiting corrosion and fouling of sensitive internal components, machine life and performance are increased and maintenance costs are reduced.

The adverse effect of contaminated ambient air drawn into machine air intakes is well documented.

Airborne particulates and gases drawn into machine air intakes, with poorly cleaned air, will cause machine reliability problems. Typical examples are:

- Contaminated air is known to cause premature failure of DC windings in motors in paper mill environments.
- Air compressors often have intercoolers constructed of copper and housings from cast iron. These metals will corrode quickly when exposed to environments such as those that are typical at petrochemical refineries, steel mills, mines, smelters, and other industrial plants.

SAAF Machine Intake Filter is a complete air filtration solution for machine air intakes. The particulate filters are chosen to provide high capacity, high efficiency particulate removal in the most polluted environments. The SAAF Cassettes included efficiently remove corrosive gases from the airstream.

AAF's patent-pending filter sealing system prevents bypass of unfiltered air. The air delivered into the machine is thoroughly cleaned and will enable the machine to function at high efficiency and with longer maintenance cycles.

Sealing System Prevents Filter Bypass

AAF's patent-pending filter sealing system prevents bypass of unfiltered air. Cassettes and filters are locked in place by a combination of cassette notches and cassette locator bars.

Revolutionary High Efficiency Gas-phase Filter Sealing System Designed to maintain optimal positioning of the cassettes, the locator bar compresses the cassettes into the sealing gasket. This unique system is completely effective and ensures exceptional filter efficiency.

High Capacity Prefilters

MEGApleat M8 filters are ideal MERV 8 prefilters used to prevent the buildup of lint and dust on the face of the SAAF cassettes and high efficiency filters.

Brochures AFP-1-180

High Efficiency Final Filters

Accomodates a high efficiency machinery air intake grade particulate filter, such as DuraVee® XL and VariCel® M-Pak, in the final filter bank to ensure that filtered air meets the highest levels of efficiency.

Brochures AFP-1-161

SAAF™ Chemical Media Cassettes

Designed to hold SAAF chemical media cassette filters: Medium Duty and Heavy Duty.

Brochure: GPF-1-108, and GPF-1-109

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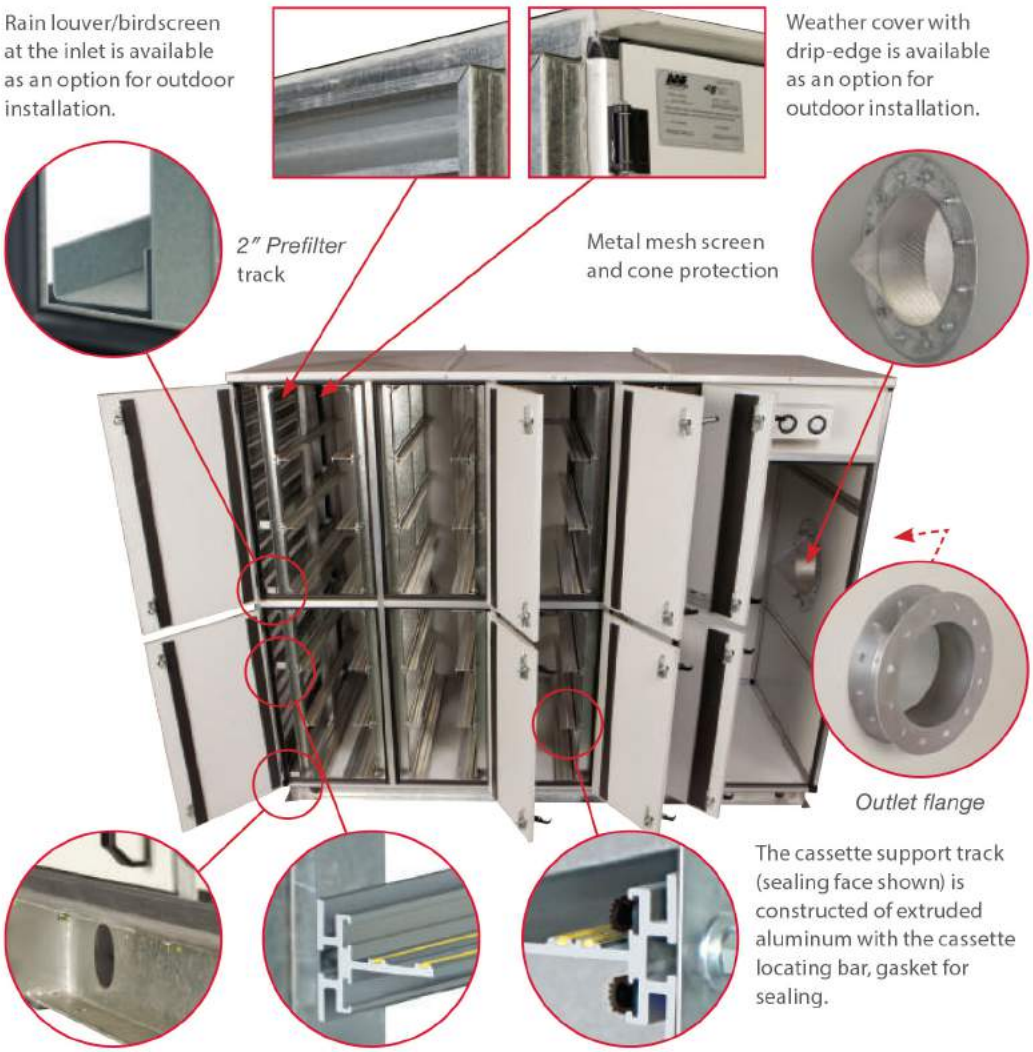


Product Model Designations

The SAAF Front Access Housing model is designated as follows:

MIF - 604 – RL/BS – 12P – HD – HD – HD – 2P – 12F – P/MF

Machine Intake Filter

Nominally 6′ high x 4′ wide

Rain louver/birdscreen at air intake

Multiple options of prefiltration specifically designed for machine air intakes. The number in "12P", "2P", and "12F" denotes the *nominal depth of the filter in inches.*

First gas-phase chemical *filter bank supports HD type cassettes. (MD type cassettes* can be used as an alternative).

Second gas-phase chemical filter bank supports HD type cassettes.

Third gas-phase chemical filter bank supports HD type cassettes.

Plenum with metal mesh outlet screen and machine *intake matching flange*

Machine intake filter grade high efficiency, low pressure drop filtration pass

Machine intake filter grade afterfilter option

SAAF™ Cassette Medium Duty

1-INCH V-BANK, 18-INCH DEEP GAS FILTRATION CASSETTE

SAAF Cassette Medium Duty is the best 1" V-bank, 18"- deep gas filtration cassette in the industry. AAF Flanders designs, manufactures, and performs quality control compliance on cassettes under ISO 9001:2000 and other applicable global quality certifications.

- Form and fit unlike any other 18"-deep, 1" gas filtration cassette
- Improved fit and sealing, even when deployed in older cassette holding systems
- Enhanced media utilization design
- No-glue design eliminates problems from spills, off-gassing, bypass, and leakages
- Patented cassette design and manufacturing process. Patents covered under US 7,588,629 B2.
- Filled cassettes are UL Classified

High Tech Features

The SAAF Cassette Medium Duty is constructed from High Impact Polystyrene (HIPS) and comes prefilled with SAAF chemical media. High technology design tools were employed to validate the design and confirm better performance. Computational Fluid Dynamics (CFD) modeling and performance tests confirm optimal design.

The resulting design and construction surpasses any competitor's cassettes in the market, while allowing users a truly better design with value-enhancing features. The design retrofits easily and performs better than older legacy cassettes in existing installations.

Efficiency and Performance

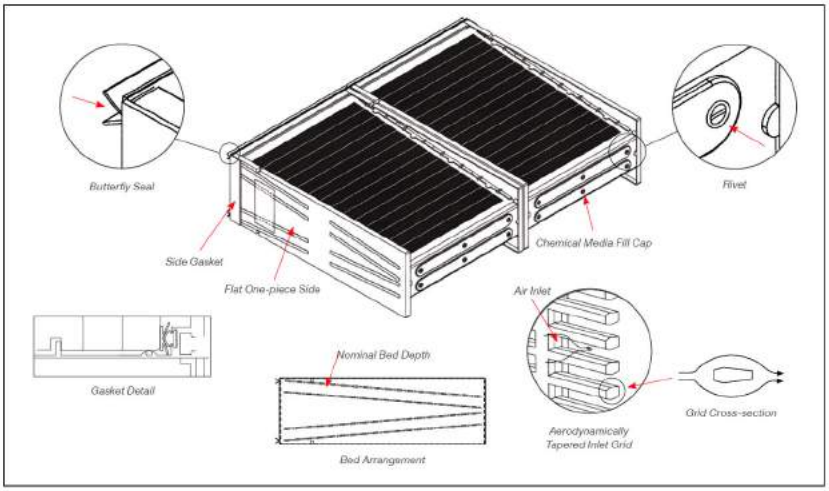
Most legacy cassette manufacturers state that their cassettes operate at >90% removal efficiencies. In reality, these efficiencies are not cassette efficiencies.

In an installation, removal efficiency is dependent on the precise sealing of the chemical media delivery mechanism, i.e., the cassette with the cassette holding mechanism. Due to looser manufacturing tolerances, testing of most legacy cassettes shows removal efficiencies as low as 65%.

High Tech Features

SAAF Cassettes perform and operate at optimum gas filtration efficiency, due to various patent pending features.

SAAF-V: Patented enhanced media utilization design eliminates the "nose cavity" typically created by legacy cassettes. Nose cavities "cocoon" up to 30% of the chemical media, keeping it isolated from airflow contact at all times during the life of the cassette. SAAF Cassettes are the only cassettes that utilize 92% of all chemical media in the cassette – outperforming legacy cassettes by 25%.



SAAF-T-Snap: Patented design provides a high pressure, no-glue snap assembly. This rigid construction excludes harmful glues, solvents, or Methyl Ethyl Ketone (MEK) from the manufacturing process. The SAAF-T-Snap design, unlike legacy cassettes, has no see-through holes in the solid end plates. This allows for better structural integrity and eliminates gas by-pass problems. The entire SAAF Chemical Media in the cassette can be used specifically to

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SAAF-T: Butterfly Seal and SAAF-T-Groove – Designs provide near absolute sealing, even in existing retrofit applications.

Applications

SAAF Cassette Medium Duty is used for gas removal applications in:

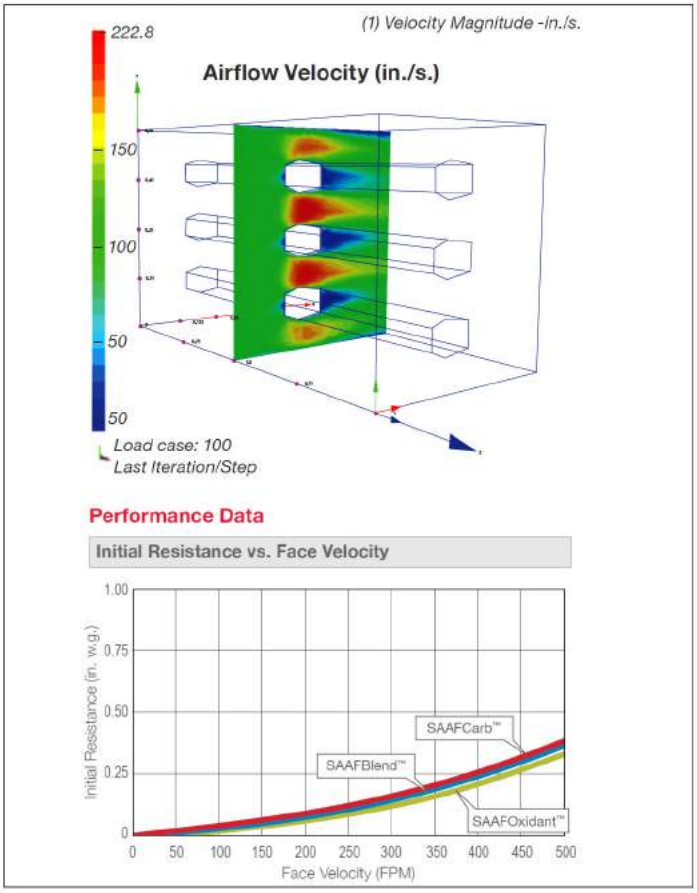
- Energy savings related applications.
- Odor control applications at wastewater treatment plants.
- Odor control for exhaust air streams.
- Removal of corrosive contaminants for computer rooms and data centers.
- Outdoor air purification for cleanroom or pharmaceutical airflows.
- Higher contaminant concentration in institutional or commercial establishments for improved indoor air quality.
- Air purification in museums, archives, or historical facilities.

General Specifications and Application Parameters

Nominal Size: 6 x 24 x 18 inches (One cassette is made up of two halves for easy lifting)
Airflow: Designed for 500 FPM (2.5 m/s) face velocity or 500 CFM (850 m3/h) airflow per cassette
Pressure Drop: 0.31 in. w.g. @ 500 FPM (77 Pa @ 2.5 m/s) face
Construction: 100% recyclable/incinerable HIPS plastic
UL Rating: UL Classified in accordance with UL Standard 900 and ULC-S111*
Chemical Filter Bed Depth: 1″ (25 mm) nominal
Chemical Media Capacity 0.5 cubic feet (0.014 m3)
Contains Chemical Media: Various (as stated in submittal or as approved)
Humidity Range: 5% – 99% RH
Temperature: -4°F to 125°F

** Consult AAF Flanders sales representative for media/module combinations.*

SAAF-T-Seal: Patent pending plastic rivets secure the solid fill caps at multiple points and secure against bursts or leaks in normal usage. Older legacy cassettes use stickers, labels, or low friction end caps that have high instances of failure and chemical media spillage.
SAAF-T-Track: System utilizes the **SAAF-T-Groove** feature and provides a compression fit that eliminates bypass. The solid top and bottom rail system on SAAF Cassettes eliminates yet another bypass zone.
Cassette-To-Cassette Mating Seals: Smooth mating end panels with no penetrations or outward turned flanges allow excellent cassette-to-cassette sealing.
SAAF-T-Screens: Patented design and precision engineering allow optimized apertures for better media retention and better energy efficiency through improved aerodynamics and reduced pressure drop.



Performance Data

Disposal and Recycle Instructions

1. Remove the cassette after use.
2. Empty out the SAAF chemical media by removing the SAAF-T-Seal rivets.
3. Depending on the SAAF chemical media in use, the media may be sent to a regular landfill or disposed of according to applicable local, state, and federal regulations.
4. The empty cassette can then be sent for plastic recycling or for incineration.
5. The empty cassette is completely incinerable/recyclable.

SAAF™ Cassette Heavy Duty

3-INCH V-BANK, 12-INCH DEEP GAS FILTRATION CASSETTE

SAAF™ Cassette Heavy Duty is the best 3" V-bank, 12"-deep gas filtration cassette in the industry.
AAF designs, manufactures, and performs QC compliance on these cassettes under ISO 9001:2000 and other applicable global quality certifications.

- Form and fit unlike any other 12"-deep, 3" gas filtration cassette
- Improved fit and sealing, even when deployed in older cassette holding systems
- Enhanced media utilization design
- No-glue design eliminates problems from spills, off-gassing, bypass, and leakages
- Patented cassette design and manufacturing process. Patents covered under US 7,588,629 B2.
- Filled cassettes are UL Classified

High Tech Features

The SAAF Cassette Heavy Duty is constructed from High Impact Polystyrene (HIPS) and comes prefilled with SAAF chemical media. High technology design tools were employed to validate the design and confirm better performance. Computational Fluid Dynamics (CFD) modeling and performance tests confirm optimal design.

The resulting design and construction surpasses any competitor's cassettes in the market, while allowing users a truly better design with value-enhancing features. The design retrofits easily and performs better than older legacy cassettes in existing installations.

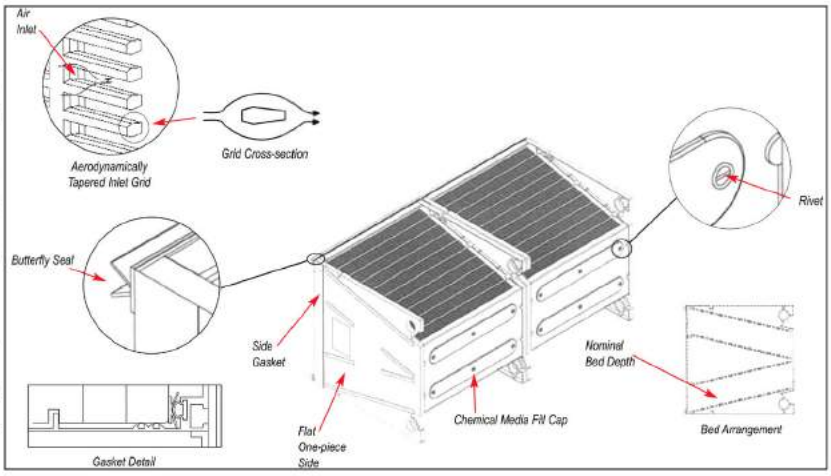
Efficiency and Performance

Most legacy cassette manufacturers state that their cassettes operate at >90% removal efficiencies. In reality, these efficiencies are not cassette efficiencies.

In an installation, removal efficiency is dependent on the precise sealing of the chemical media delivery mechanism, i.e., the cassette with the cassette holding mechanism. Due to looser manufacturing tolerances, testing of most legacy cassettes shows removal efficiencies as low as 65%.

High Tech Features

SAAF Cassettes perform and operate at optimum gas filtration efficiency, due to various patent pending features.
SAAF-V: Patented enhanced media utilization design eliminates the "nose cavity" typically created by legacy cassettes. Nose cavities "cocoon" up to 30% of the chemical media, keeping it isolated from airflow contact at all times during the life of the cassette. SAAF Cassettes are the only cassettes that utilize 92% of all chemical media in the cassette – outperforming legacy cassettes by 25%.



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SAAF-T: Butterfly Seal and SAAF-T-Groove – Designs provide near absolute sealing, even in existing retrofit applications.

Applications

SAAF Cassette Heavy Duty is used for gas removal applications in:

- Odor control applications at wastewater treatment plants
- Odor control for exhaust airstreams
- Odor control for exhaust air streams.
- Purification of pressurization air for corrosion control
- Outdoor air purification for cleanroom or pharmaceutical airflows.
- Higher concentration airflows in institutional or commercial establishments
- Airflows in museums, archives, or historical facilities
- Energy savings related applications

General Specifications and Application Parameters

Nominal Size: 12 x 24 x 12 inches (One cassette is made up of two halves for easy lifting)
Airflow: Designed for 250FPM (2.5 m/s) face velocity or 500 CFM (850 m3/h) airflow per cassette
Pressure Drop: 0.73 in. w.g. @ 250 FPM (181 Pa @ 1.25 m/s) face velocity
Construction: 100% recyclable/incinerable HIPS plastic
UL Rating: UL Classified in accordance with UL Standard 900 and ULC-S111*
Chemical Filter Bed Depth: 3″ (75 mm) nominal
Chemical Media Capacity: 1.0 cubic feet (0.028 m3)
Contains Chemical Media: Various (as stated in submittal or as approved)
Humidity Range: 5% – 99% RH
Temperature: -4°F to 125°F

** Consult AAF Flanders sales representative for media/module combinations.*

SAAF-T-Seal: Patent pending plastic rivets secure the solid fill caps at multiple points and secure against bursts or leaks in normal usage. Older legacy cassettes use stickers, labels, or low friction end caps that have high instances of failure and chemical media spillage.
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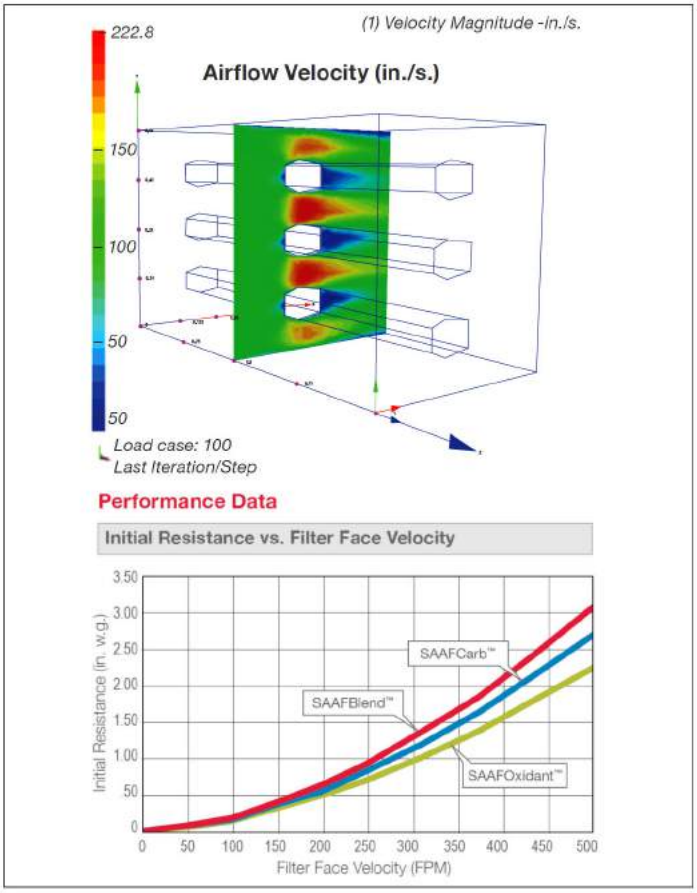

Performance Data

Initial Resistance vs. Filter Face Velocity

Disposal and Recycle Instructions

1. Remove the cassette after use.
2. Empty out the SAAF chemical media by removing the SAAF-T-Seal rivets.
3. Depending on the SAAF chemical media in use, the media may be sent to a regular landfill or disposed of according to applicable local, state, and federal regulations.
4. The empty cassette can then be sent for plastic recycling or for incineration.
5. The empty cassette is completely incinerable/recyclable.

SAAFCanister™ Delivery System

SAAFCANISTER™ CYLINDRICAL CARTRIDGES

The SAAFCanister™ delivery system consists of multiple individual canisters in metal or plastic execution, assembled into a galvanized sheetmetal holding frame to fit standard dimension filter sections in air handling units. SAAFCanisters™ come factory-ready for installation. No special tools are needed to replace a canister. The individual canister seals and holds in the frame due to its unique seal and bajonetstyle clamping mechanism.

- Sturdy construction
- Available in metal and plastic
- High ease of use
- Standard dimensions

Canisters

SAAFCanister™ is factory pre-filled with user-specific chemical media. Each canister is vibration filled to ensure that the media is uniformly packed. Each canister is then plastic bagged and carton packed.

Service

AAF International will be pleased to offer you a maintenance contract for your chemical filter system. This includes removal of the used elements, cleaning of the installation and installation of new elements. Disposal in accordance with regulations and/or refilling.

Holding Frames and SAAFCanister

Type	Material	Diameter (mm)	Length (mm)	Volume (l)
SCR18:RM	Galvanized steel	145	452	4,4
SCR18:RS	Stainless steel	145	452	4,4
SCR18:RP	HIPS	145	452	4,4
SCR24:RM	Galvanized steel	145	600	5,9
SCR24:RS	Stainless steel	145	600	5,9
SCR24:RP	HIPS	145	600	5,9

Type	Application	Target Contaminants
SAAFCarb	Airports, Pharma & Food	Hydrocarbons
SAAFCarb MA Plus	Industry	Mineral acids
SAAFCarb MB*	Industry	Ammonia, amines
SAAFCarb MS	Industry & Waste Water	H_2S, SO_2
SAAFOxidant	Museums & Libraries	H_2S, SO_X, NO_X, Formaldehyde
SAAFBlend GP	General Purpose	General Gas Removal

* Only in combination with stainless steel canister

Choice of Construction Materials

A wide range of construction materials is available for the canisters, including stainless steel, galvanized steel and high impact Polystyrene (HIPS). HIPS canisters can be entirely disposed-off as industrial waste. Refilling is not required. Metal canisters need to be emptied before the media can be discarded. Always follow the local, state or federal regulations.

Choice of Media

SAAFCanisters™ can be filled with a wide range of gas specific media or custom blends. These include standard SAAFCarb™ media or impregnated SAAFCarb™ media, SAAFOxidant™ and SAAFBlend ™. For details please refer to the back side of this leaflet.

Application Guide

Always use adequate prefiltration to avoid dust settling on the chemical media. This ensures optimized lifetime of the chemical filter system without increase of pressure drop. Pre-filtration should be a compact, pleated or mini-pleated filter cell.

Frame Size	Dimensions (mm) WxHxB	Nubmer of Canisters
SCRF16	610x610x70	16
SCRF12	508x610x70	12
SCRF8	305x610x70	8
SCRF4	305x305x70	4

* Engineered chemical media for special application upon request

Relative Humidity	< 70%
Temperature	< 55 °C

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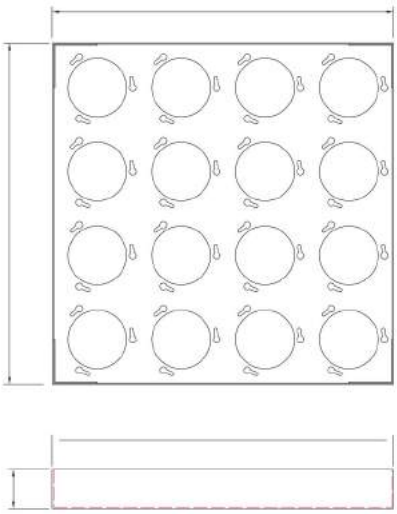
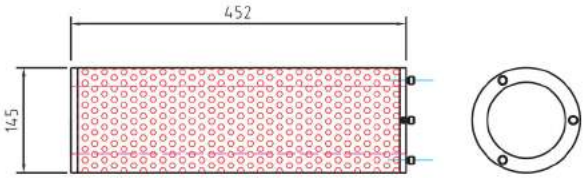
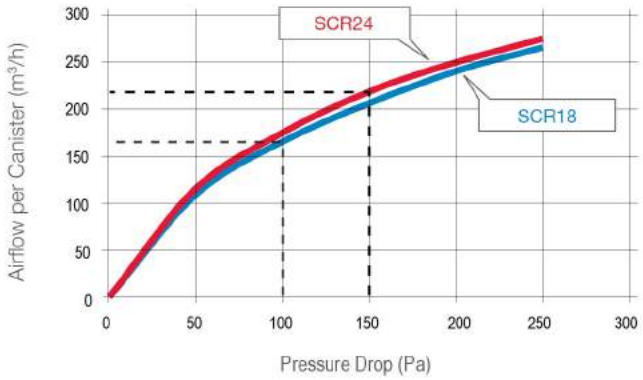




Performance Data

Pressure Drop vs Airflow



AmAir® C

LONG-LASTING GAS-PHASE AND PARTICULATE FILTERS

- Economical solution to many gaseous contaminant problems, including odors
- Available in pleats, panels, and pads
- Activated carbon, AAF proprietary activated alumina impregnated with potassium permanganate (AmAir/SAAFOxi filter), and 50/50 blend (AmAir/C+SAAFOxi filter)
- Effective on a wide variety of gaseous contaminants, including odors found in:

– Airports
– Health clubs
– Hotels/motels
– Manufacturing operations
– Schools
– Commercial buildings
– Hospitals
– IT data centers and server rooms
– Restaurants
– Shopping centers

- Odor removal and corrosion control protection
- Easy to install
- Directly interchangeable with standard air filters
- Disposable
- UL Classified

Odor Control with Particulate Filtration for Improved Indoor Air Quality

The effectiveness of any gas-phase filter corresponds to the density (weight per square foot) of activated carbon contained in the product. AmAir/C, AmAir/C+SAAFOxi, and AmAir/SAAFOxi filters are more effective than other odor control filters, because they contain more chemical media, using AAF SAAFWeb™ technology.

The AmAir/SAAFOxi and AmAir/C+SAAFOxi filters contain AAF Flanders' SAAFOxidant™, which is an exclusive formulation of activated alumina impregnated with potassium permanganate for the most effective gaseous contaminant chemisorption available.

Greater gas-phase media density solves your odor problems by removing odor concentrations and providing protection over a longer period of time. The true test of a gas-phase filter is how long it will continue to remove objectionable odors and other gaseous contaminants.

AmAir/C, AmAir/C+SAAFOxi, AmAir/SAAFOxi, and AmAir/CP filters deliver fresh air longer.

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Totally Unitized Construction Offers Superior Strength

AmAir/C, AmAir/C+SAAFOxi, and AmAir/SAAFOxi filters are contained in a frame constructed of high wet strength, moisture resistant beverage board. Two mating die cut boxes are bonded together, forming a double wall around the entire filter. The SAAFWeb media is bonded to the inside of the frame on all four edges to prevent leakage and increase rigidity. A metal retainer is inserted to provide additional support on 2″ thick panel filters.

Each filter is individually sealed in a poly bag to prevent adsorption of random gaseous contaminants prior to installation.

Panel Filters

AmAir/C-3 2″ panel filters are directly interchangeable with standard 2″ air filters. The AmAir/C-3 panel offers more carbon density per square foot than the 2⊠ pleated model.

Media Pads

AmAir/CP-3 media pads consist of a 1⊠ thick substrate impregnated with 300 grams of carbon per square foot, contained in a fine mesh netting to prevent spilling. Use AmAir/CP-3 pads in combination with particulate filters to add odor removal capability to any filtration system. The carbon.

AmAir®/C+SAAFOxi™ Multi-Purpose Blend

AmAir/C+SAAFOxi 50/50 blend filter (granular activated carbon and potassium permanganate) is recommended for applications such as loading docks near air-handling equipment (air intake), and where sulfur, aldehydes, and Volatile Organic Compound (VOC) control is desired.

Economical, Easy Odor Control

No expensive housings or duct work modifications are necessary. There are no trays to refill or exchange. Simply install the filters as you would standard air filters and dispose of them when they are no longer effective. Pleated Filters.

AmAir/C pleated panel filters are made with activated carbon, AmAir/SAAFOxi filters are made with AAF Flanders' proprietary activated alumina impregnated with potassium permanganate, and AmAir/C+SAAFOxi filters are made with a 50/50 blend of each media. All models are available in 1⊠, 2⊠, and 4⊠ depths, and are interchangeable with conventional particulate filters of the same size. They have a Minimum Efficiency Reporting
Value (MERV) of 7 when tested in accordance with ASHRAE Test Standard 52.2 and are classified in accordance with
UL Standard 900.
Simply replace your prefilters with AmAir/C, AmAir/C+SAAFOxi, or AmAir/SAAFOxi pleated panel filters and enjoy gaseous contaminant control and odor removal plus particulate filtration in a single product. No modifications to your current frames or latches are necessary.

Gaseous Filtration Solutions

SAAF™ Chemical Media

Protection of an industrial control room includes at a minimum pressurization with purified air. This prevents corrosive gases from infiltrating the control room and causing corrosion problems. Additionally, recirculation air may require cleaning if the room is a high traffic area or there are other internal sources of contaminants. The following diagram displays typical methods of accomplishing these filtration goals, as well as monitoring the condition of air inside the space.

SAAF™ Media for Control Room & Process Control Environment Applications

		ammonia	chlorine	hydrocarbons	hydrogen sulfide	mercaptans	nitrogen dioxide	sulfur dioxide	VOCs
	SAAFBlend™ GP		✔	✔	✔	✔	✔	✔	✔
	SAAFBlend™ GP SC		✔	✔	✔	✔	✔	✔	✔
	SAAFCard™		✔	✔		✔	✔		✔
	SAAFCard™ MA		✔		✔	✔	✔	✔	
	SAAFCard™ MA.HT		✔	✔	✔	✔	✔	✔	✔
	SAAFCard™ MB	✔							
	SAAFOxidant™				✔			✔	
	SAAFOxidant™ SC				✔			✔	

Chemical Media Remaining Life Analysis (RLA)

As a service to its customers, AAF offers remaining life testing services of chemical media. This information can be used to determine the characteristics of an existing filter system, system adequacy, filter replacement schedules, replacement filter ordering schedules, and filter inventory requirements.

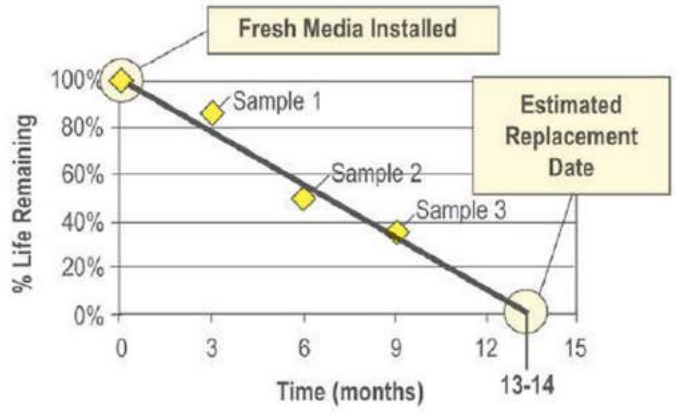
Media Sampling and Frequency

Media life analysis requires a sample of media to be sent to a SAAF Laboratory. This media is tested according to applicable industry or AAF internal methods to determine the remaining capacity of the media. The best way to estimate a media replacement date using media remaining life analysis is by trending the results over time. This requires the establishment of a media sampling schedule. One conservative method is to sample the media every quarter during the first year and develop a history of media life analysis.

Remaining Life Data Analysis

As an example, this graph displays 9 months of remaining life analysis results from a gas-phase filtration system. It shows that the end user installed fresh media at time zero. The end user sampled the media after 3 months of service. At the 3 month period, the media had 85% of its original life. The end user sampled the media again after 6 months of service. At the 6 month period, the media had 50% of its original life. The end user sampled the media again after 9 months of service. At the 9 month period, the media had 35% of its original life. Using this data to extrapolate a replacement date points to the 13–14 month period as the end of life. This information can be used to help end users budget for and schedule media replacement.

Example Media Remaining Life Analysis Trend



SAAFCarb™

ENGINEERED CHEMICAL MEDIA

- Quick and easy media changeovers
- Resists a wide range of impure gases
- Low pressure drop and high adsorptive capacity

Engineered Media

SAAFCarb engineered gas removal chemical media is designed to efficiently remove gaseous contaminants from airstreams.

Target contaminants include:
- Chlorine
- Nitrogen dioxide
- Volatile Organic Compounds (VOCs)

The SAAFCarb media is a pelletized activated carbon media that removes toxic and impure contaminants from the atmosphere. The activated carbon is produced using select grades of bituminous coal and steam activated for optimum adsorption capacity.

Adsorptive Process

The SAAFCarb media removes toxic and impure gases primarily by adsorption. In this process, the gases are held in the pellet pore volume by van der Wall's and other forces.

Adsorptive Process

SAAFCarb media undergoes the following quality control tests:
- Apparent Density
- CTC Activity
- Pellet Diameter
- Ball-pan Hardness
- Moisture Content

SAAFCarb™ MA

ENGINEERED CHEMICAL MEDIA

- Provides targeted contaminant removal capacity for acid gases
- Provides extended equipment protection with infrequent media changeovers
- Compatible for use in all carbon-based air filtration systems
- Low pressure drop and high adsorptive capacity

Engineered Media

SAAFCarb MA engineered gas removal chemical media is designed to efficiently remove specific gaseous contaminants from airstreams.

Target contaminants include:
- Hydrogen sulfide
- Sulfur oxide
- Nitrogen dioxide
- Volatile Organic Compounds (VOCs)

The SAAFCarb MA media is manufactured exclusively for acidic corrosive environments. The media consists of cylindrical, porous pellets. The pellets are composed of pelletized activated carbon, suitably impregnated for the removal of acid gases.

Chemisorptive Process

The SAAFCarb MA media chemisorptive process removes the impure gases by adsorption, absorption, and chemical reaction. In this process, the gas is trapped within the pellet where a chemical reaction changes the gases into harmless solids, thereby mitigating the possibility of desorption.

Quality Control

SAAFCarb MA media undergoes the following quality control tests:
- Apparent Density
- H2S Gas Capacity
- Pellet Diameter
- Ball-pan Hardness
- Moisture Content

SAAFCarb™ MA.HT

ENGINEERED CHEMICAL MEDIA

- Ideal for H2S removal
- Provides extended equipment protection with infrequent media changeovers
- Compatible for use in all carbon-based air filtration systems
- Low pressure drop and high adsorptive capacity

Engineered Media

SAAFCarb MA.HT engineered gas removal chemical media is designed to have a high capacity for H2S and to efficiently remove multiple gaseous contaminants from airstreams.

Target contaminants include:
- Hydrogen sulfide
- Chlorine
- Nitrogen dioxide
- Sulfur dioxide

SAAFCarb MA.HT is a high capacity, chemical media targeted for H2S removal. The media is composed of carbon and other proprietary ingredients specifically engineered to enhance H2S capacity and mitigate safety concerns associated with the use of metal oxide impregnated activated carbons, making it safe before and during use. SAAFCarb MA.HT is the most cost-effective choice for removal of H2S from an airstream.

Chemisorptive Process

The SAAFCarb MA.HT media removes the impure gases by adsorption, absorption, and chemical reaction. In the process, the reactive gases are trapped within the pellet where a chemical reaction changes the gases into harmless solids thereby mitigating the possibility of desorption.

Quality Control

SAAFCarb MA.HT media undergoes the following quality control tests:
- Apparent Density
- Ball-pan Hardness
- H2S Gas Capacity
- Moisture Content
- Pellet Diameter

SAAFCarb™ MB

ENGINEERED CHEMICAL MEDIA

- Specifically impregnated media
- Provides effective removal of ammonia gas

Engineered Media

SAAFCarb MB engineered gas removal chemical media is designed to efficiently remove specific gaseous contaminants from airstreams.

Target contaminant is ammonia.

The SAAFCarb MB media contains an acid impregnant to enhance the capacity for removal of ammonia and other basic gaseous compounds. The base material includes select grades of bituminous coal chosen for superior physical properties.

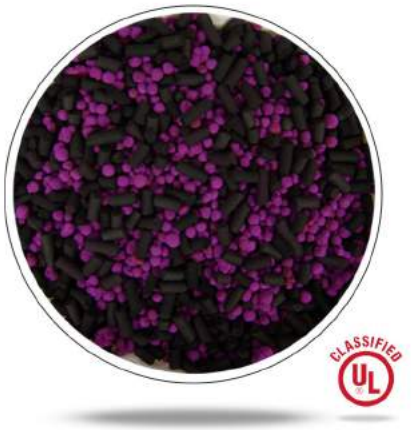
Chemisorptive Process

The SAAFCarb MB media chemisorptive process removes the impure gases by adsorption, absorption, and chemical reaction. In the process, the gas is trapped within the pellet where a chemical reaction changes the gases into harmless solids, thereby mitigating the possibility of desorption.

Quality Control

SAAFCarb MB media undergoes the following quality control tests:
- Apparent Density
- Ball-pan Hardness
- Moisture Content
- Pellet Diameter

SAAFBlend™ GP



GENERAL PURPOSE CHEMICAL MEDIA

- Targets reactive compounds and volatile organic compounds
- Accurate service life testing
- Composed of two UL Classified media – SAAFOxidant and SAAFCarb
- Suitable for use in commercial and industrial applications

Target contaminants include:

- Formaldehyde
- Hydrogen sulfide
- Nitric oxide
- Nitrogen dioxide
- Hydrocarbons (VOCs)
- Lower molecular weight aldehydes and organic acids
- Sulfur dioxide

Engineered Media

SAAFBlend GP engineered gas removal chemical media is designed to efficiently remove gaseous contaminantsfrom airstreams.

SAAFBlend GP is produced from an equal volumetric mix of SAAFOxidant™ and SAAFCarb™ media. Manufactured of spherical and porous pellets, SAAFOxidant engineered media is composed of a combination of activated alumina and other binders. Potassium permanganate is impregnated to this media

Chemisorptive Process

The SAAFOxidant media chemisorptive process removes the contaminant gases by adsorption, absorption, and chemical reaction. In this process the gas is trapped within the pellet where oxidation changes the gases into harmless solids, thereby mitigating the possibility of desorption.

combination in order to provide optimum adsorption, absorption, and oxidation of various gaseous contaminants. Potassium permanganate is applied uniformly during pellet formation and is distributed throughout the pellet volume. This process provides the maximum amount of impregnant for chemical reaction and optimal performance. SAAFCarb media is manufactured of pelletized activated carbon media, composed of high quality virgin substrates in order to provide optimum adsorption for various gaseous contaminants.

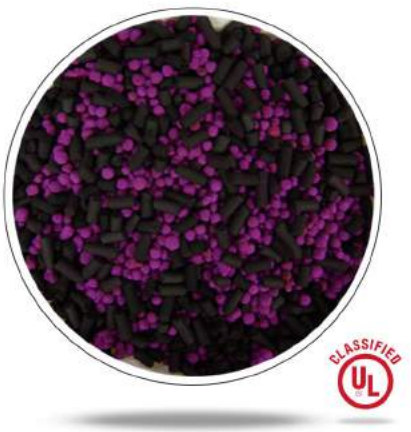
Adsorptive Process

The SAAFCarb media removes toxic and impure gases by physical adsorption. In this process, the gases remain on the surface of the pellet.

Quality Control

SAAFBlend GP media contains an equal volumetric mix of SAAFOxidant and SAAFCarb media. Each media undergoes respective quality control tests.

SAAFBlend™ GP SC



GENERAL PURPOSE CHEMICAL MEDIA

- Targets reactive compounds and volatile organic compounds
- Accurate service life testing
- Composed of two UL Classified media – SAAFOxidant and SAAFCarb
- Suitable for use in commercial and industrial applications

Target contaminants include:

- Formaldehyde
- Hydrogen sulfide
- Nitric oxide
- Nitrogen dioxide
- Hydrocarbons (VOCs)
- Lower molecular weight aldehydes and organic acids
- Sulfur dioxide

Contd.

Contd.

Engineered Media

SAAFBlend GP SC engineered gas removal chemical media is designed to efficiently remove gaseous contaminants from airstreams.

SAAFBlend GP SC is produced from an equal volumetric mix of SAAFOxidant™ SC and SAAFCarb™ media. Manufactured of spherical and porous pellets, SAAFOxidant SC engineered media is composed of a combination of activated alumina and other binders. Potassium permanganate is impregnated to this media combination in order to provide optimum adsorption, absorption, and oxidation of various gaseous contaminants. Potassium permanganate is applied uniformly during pellet formation and is distributed throughout the pellet volume. This process provides the maximum amount of impregnant for chemical reaction and optimal performance. SAAFCarb media is manufactured of pelletized activated carbon media, composed of high quality virgin substrates in order to provide optimum adsorption for various gaseous contaminants.

Adsorptive Process

The SAAFCarb media removes toxic and impure gases by physical adsorption. In this process, the gases remain on the surface of the pellet.

Chemisorptive Process

The SAAFOxidant SC media chemisorptive process removes the contaminant gases by adsorption, absorption, and chemical reaction. In this process the gas is trapped within the pellet where oxidation changes the gases into harmless solids, thereby mitigating the possibility of desorption.

Quality Control

SAAFBlend GP SC media contains an equal volumetric mix of SAAFOxidant SC and SAAFCarb media. Each media undergoes respective quality control tests.

SAAFOxidant™

ENGINEERED CHEMICAL MEDIA

- Non-flammable and non-toxic
- Accurate service life testing
- Does not support bacterial and fungal growth
- Removes and holds contaminants by chemical conversion
- Patent pending high capacity formulation
- UL Classified

Engineered Media

SAAFOxidant engineered gas removal chemical media is designed to efficiently remove gaseous contaminants from airstreams.

Target contaminants include:

- Formaldehyde
- Sulfur dioxide
- Nitric oxide
- Lower molecular weight aldehydes and organic acids

Chemisorptive Process

The SAAFOxidant chemisorptive process removes the contaminant gases by adsorption, absorption, and chemical reaction.

In this process the contaminant is trapped within the pellet where oxidation converts the contaminants into harmless compounds, thereby mitigating the possibility of desorption.

Manufactured as spherical, porous pellets, SAAFOxidant engineered media is composed of a combination of activated alumina, binders, and potassium permanganate. Potassium permanganate is applied uniformly during pellet formation and is distributed throughout the pellet volume to create a completely homogenous particle. This process provides the maximum amount of impregnant for chemical reaction and optimal performance.

Quality Control

SAAFOxidant media undergoes the following quality control tests:

- Apparent Density
- Moisture Content
- Potassium Permanganate Content
- Crush Strength
- Pellet Diameter

Air Quality Assessments

SAAF laboratories and tools allow clients to assess control room air quality, as well as evaluate the performance of the gas-phase filtration systems. These tools include Reactivity Monitoring Coupons to assess air reactivity over a 30 day period, and the Environmental Condition Monitor to assess air reactivity in real time. All tests are carried out and correlated to applicable industry

SAAF™ Reactivity Monitoring Coupon Report

Reactivity Monitoring Coupons (RMCs)

Reactivity Monitoring Coupons provide the ISA Classification of an environment or information on the performance of a gas-phase filtration system during a 30 day exposure. Results relate directly to the ISA 71.04 classifications of G1-Mild through GX-Severe. RMCs can indicate the presence of gas types, because different gas types will form different corrosion films. From these film types and the film thicknesses, the corrosive environment is classified and gas concentration ranges can be estimated. There are two types of coupons available, metal coated glass coupons and full metal coupons. The metal coated glass coupons are ideal for environments with lower concentrations of corrosive gases, while the full metal coupons are ideal for applications involving higher concentrations of corrosive gases (fresh air intakes at industrial facilities, industrial site surveys directly exposed to outdoor air).

SAAFShield® Detecting Unit,
SAAFShield® Reading Unit, and
SAAFShield® Communications Module

The SAAFShield® Detecting Unit utilizes quartz crystal microbalance to measure the corrosion of metal due to reactions with the environment.

SAAFShield® Technology

SAAFShield technology allows users to take immediate action to protect expensive electronics by monitoring corrosion in real time or on a periodic basis to determine equipment or material vulnerability to corrosion. The SAAFShield Detecting Unit works together with either the SAAFShield Reading Unit or the SAAFShield Communications Module to display and trend corrosion data over time, which allows users to evaluate operational procedures, environmental factors, or other items that occur at specific times, for their impact on sensitive materials.

SAAF Media Remaining Life Analysis (RLA)

RLA assists customers in estimating remaining media life, confirming media activity, optimizing media selection, and controlling costs with timely media replacement. Gas-phase filtration media include a wide range of materials. Virgin activated carbon, impregnated carbon, and impregnated alumnia are the most common. The life of each media depends on multiple factors such as particle size, activity level, contaminant concentrations, operating temperature, operating RH and more. AAF estimates the impact of these factors on media life by comparing used media properties to those of fresh media. AAF recommends sampling the media every three to six months during the first year to develop a history of media life analysis.


Detailed Example of AAF's Remaining Life Analysis Report

Sensor 360° Making the Invisible Visible:

An IoT Based Solution for IAQ Monitoring

AAF provides end to end monitoring solutions including indoor, outdoor & duct monitors. It connects with best-in-class mobile apps, web dashboards & TV displays to showcase indoor air quality in schools, offices, hotels, malls etc. It also supports BMS integration on request. The product has RESET certified Grade B commercial indoor air quality monitor accredited for use in RESET and WELL (International WELL Building Institute™) projects.

The device features accurate monitoring of PM2.5 PM10 CO2 TVOC Temp Humidity Monitor uses high quality laser sensors, calibrated individually against BAM (Beta Attenuation Monitor- the most advanced system for measuring ambient air quality). It has local memory options available which store the data for assigned days without Wi-Fi.

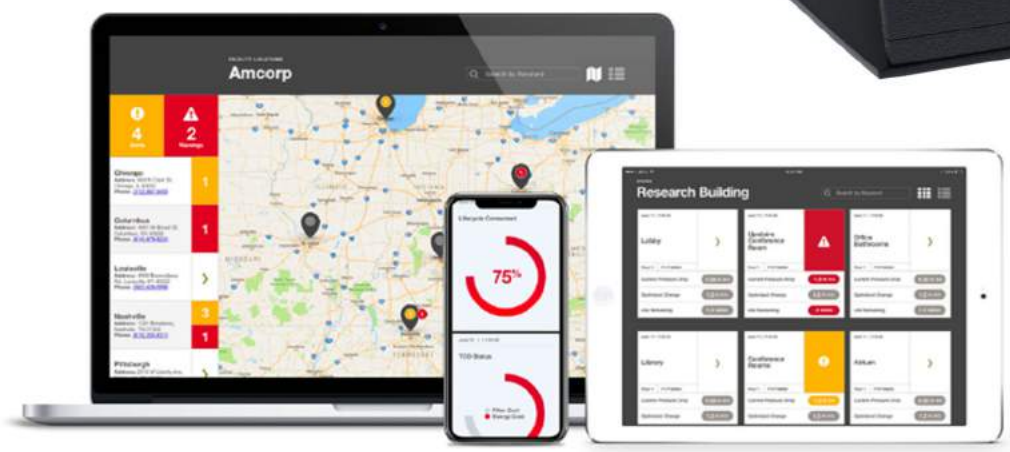
REAL-TIME DATA | VIEW DATA TRENDS | GET AIR QUALITY ALERTS

The monitor allows you to configure the frequency of measurement to once every minute, 5 minutes, 10 minutes and 20 minutes. The monitor can be connected to up to 5 Wi-Fi networks including your home, office or personal hotspot. Data trends can be viewed every hour, every day & every month. The device measures the performance changes of the air purifier, know when it is time to replace filters. Customize two PM and CO2 notification levels for your monitor via the app. Get real-time alerts when these levels are reached, so you take appropriate action such as use masks, turn on purifiers or your kitchen chimney.

Sensor 360

Sensor 360 is the first IoT (Internet of Things) patented technology platform that demonstrates the effectiveness of a building's filtration system by monitoring particulate levels. Additionally, by monitoring pressure drop, the facility manager can determine the changeout point for the building's filters that offers the best value and energy efficiency. It enables the customer to understand and plan their air filter performance and maintenance in an entirely new way.

- Predictive Insights at-a-glance for each AHU
- First IoT with Real-time filtration & TCO optimization
- Intelligent data to improve operational efficiency
- 24/7 visibility into enterprise wide performance



Proven Expertise of AAF

AAF offers the most comprehensive air filtration portfolio in the industry, including particulate and gas-phase filters, to provide a customized clean air solution. Each product is carefully designed, manufactured, and tested in full compliance with all applicable standards to meet the most challenging demands with the lowest Total Cost of Ownership.

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