

Agriculture

Animal Science

Extensive Studies Show:

- The **annual cost of productivity losses** due to Porcine Reproductive and Respiratory Syndrome Virus (PRRSV) in the U.S. national breeding and growing pig herds is **\$664 million, up from \$560 million in 2005**, equating to a **loss of \$1.8 million per day** by the U.S. pork industry
- An additional **\$477.8 million is estimated to be lost each year** on outbreak related costs, including animal care and biosecurity
- Acute PRRS outbreaks in four breeding herds in Illinois **cost an estimated \$100, \$170, \$428, and \$510 respectively per breeding female**, based on decreases in the production of weaned pigs and increased treatment costs
- A four-month outbreak in a 250-sow herd in Minnesota **cost an estimated \$59,000, \$236 per breeding female**, for one year following the outbreak
- A feeder pig operation with an endemic PRRSV infection in the nursery reported a **70% loss in profits** due to a reduction of over \$5.00 per pig attributed to the nursery stage alone, based on decreased growth rates, increased feed conversion, and increased mortality

Source: *Journal of Swine Health and Production* (2013); Hoefling DC. Overview and history of SIRS. *Proc Ann Meet Livest Conserv Inst.* 1992;239-242; Polson DD, Marsh WE, Ding YZ, Christianson WT. Financial impact of porcine epidemic abortion and respiratory syndrome (PEARS). *Proc IPVS. The Hague, the Netherlands.* 1992;132; Kerkaert BR, Pijon C, Dial G. Financial impact of chronic PRRS. *Proc Allen D. Leman Swine Conf.* 1994;217-218.



Preventing Costly PRRS Outbreaks

The pandemic PRRSV was first recognized in the United States in the late 1980s. Despite more than 25 years of intensive research and efforts to combat the virus, it remains a significant threat to sow farms in the U.S. and abroad. While productivity losses resulting from the impact of the disease on growing herds have been reduced over the past decade, this progress is offset by significantly increased losses in breeding herds.

While a PRRS outbreak is not the only risk a sow farm has to consider when allocating capital for operations, it is one that should be given serious consideration, based on its potential to significantly impact production and costs. The likelihood of sustaining such losses due to an outbreak of PRRS is increased if your operation is located within a five mile radius of other sow farms. The virulent virus can travel airborne for five miles or more, and its ability to constantly change creates the potential for genetic evolution of the strain.

Ensure Maximum Protection and Efficiency from Your Air Filtration System

When you are ready to invest in an air filtration system to protect your herd and your bottom line from the ravages of PRRSV, adhere to the following requirements to ensure maximum protection and efficiency:

- Choose filters with a low resistance to airflow, which reduces the number of filters needed, eliminating or decreasing the need for additional filter housings and building extensions; lowers energy consumption and labor costs; and reduces waste
- Ensure buildings are airtight
- Accurately monitor differential pressure between the interior and exterior of your building
- Ensure filter brackets are airtight upon installation
- Choose filters with the recommended level of filtration for your facility and level of risk
- Follow manufacturer recommendations for replacing filters
- Install an efficient backdraft damper

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It Pays to Invest in Air Filtration

While cost is always a significant consideration, you must consider whether your operation can afford not to invest in an air filtration system. A single outbreak of PRRS can cost two times more than investing in a filtration system, or the equivalent of operating the system for four to five years. The bottom line is that if your decision prevents one severe outbreak, it has paid for itself.

The cost of equipping your facility with filters varies based upon the configuration, age, and maintenance history of your building and equipment, with newer facilities generally requiring less of an investment to filter.

Air Filtration Is Your Front Line Defense Against PRRSV

Trials conducted by the University of Minnesota Swine Disease Eradication Center found that the risk of the indirect spread of PRRSV can be reduced with a comprehensive biosecurity program that includes air filtration. Unfortunately, most ventilation systems in swine facilities are typically designed to supply fresh air and control the inside temperature, not to provide air filtration. However, an effective air filtration system traps the airborne virus and its contaminants, preventing them from entering a facility and spreading throughout.

PRRS is a major concern not only for sow farms, but for cattle, dairy, and poultry farms as well. Air filtration prevents airborne pathogens, including PRRSV, from entering and spreading throughout a farm, preventing costly outbreaks of a broad range of diseases that impact both animal health and production, and operating costs.

At AAF Flanders, we understand the threat that sow and other animal farming operations face from the virulent and costly PRRS virus, as well as other pathogens with the potential to have a significant impact on your herd, production levels, and operating costs. Our goal is to provide you with comprehensive information for assessing your risk, and filtration investment strategies to reduce your risk and the projected return on your investment. AAF Flanders offers air filtration solutions and climate control options to meet the unique needs of your farming operation, protecting animal health, and profitability.

Filtration Solutions

Pleated Filters

The AAF Flanders pleated filters line provides the industry's broadest selection of high performance, high capacity filters, including specialty and standard capacity options. Pleated filters can be used as prefilters to protect and extend the life of higher efficiency, more expensive final filters. In many applications, they are the only filter used in an HVAC system.



PerfectPleat® HC M8
(see page 122)

Box Filters

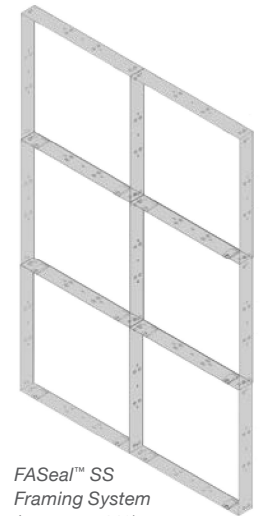
These rigid, extended surface filters are ideal for use in all high efficiency applications. The supported pleat filters provide strength and integrity in high flow, turbulent, and variable airflow conditions. These filters are designed to remove airborne biological contaminants in critical areas.



VariCel® VXL
(see page 132)

FASeal™ SS Framing System

Clip-free and easy to install, the FASeal SS framing system is designed specifically for the unique requirements of your operation. With an interlocking design that allows a combination of frames to form a grid, it provides the ability to build-up modular filter banks of prefilters and final filters that will hold in place in horizontal applications. These frames are durable and corrosion resistant, creating a lasting, airtight seal to prevent the entry of pathogens into your facility.



FASeal™ SS Framing System
(see page 146)

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Cannabis

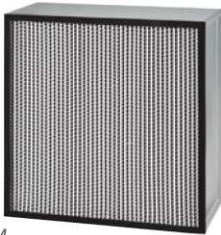
Our Experience in this Industry Reveals a Need for:

- Quality air to improve crop yield
- Odor control
- Air filtration to ensure regulatory compliance

Filtration Solutions



VariSorb® HC
(see page 227)



MEGAcel® I eFRM
(see page 161)



SAAF™ Cassettes
(see page 213)



Improving Indoor Air Quality and Preventing Contamination

Cannabis has a very complex chemistry due to the large number of its constituents and the interaction of those constituents with one another. These constituents primarily include mono- and sesquiterpenes, sugars, hydrocarbons, steroids, flavonoids, nitrogen compounds, amino acids, and terpenophenolic cannabinoids. Many of these are odorous, with terpenes and terpenoids being the primary offenders.

While nuisance odors are most prevalent with cannabis cultivation, other sources of cannabis odors include test labs, extraction rooms, warehouses, and dispensaries. Proper air filtration will not only eliminate these odors, but also provide a better environment for growing plants, reduce impurities when testing products, and provide cleaner air for personnel and customers.

Controlling Airborne Particulates and Odor

Filtration is recommended for the following cannabis applications:

- Outdoor Air for Grow Rooms
 - Particulate filtration to remove outdoor particulate matter such as pollen, bacteria, dirt, and dust
 - Gas-phase filtration to remove outdoor contaminants such as ozone, VOCs, and acid gases
- Indoor Air for Grow Rooms, Extraction, and Dispensaries
 - Gas-phase filtration to remove plant odors
 - Gas-phase filtration to remove butane or ethanol vapor from cannabis oil extraction
- Exhaust Air for Grow Rooms and Warehouses
 - Particulate filtration to remove indoor particulate matter
 - Gas-phase filtration to remove plant odors

Filtration Solutions

The recommended products for these applications are as follows and can be found in the Product Section of this Guide:

Particulate Filtration	Good	Better	Best	Gas-Phase Filtration	Good	Better	Best
Outdoor Air for Grow Rooms	VariCel® VXL M13	VariCel® VXL M15	MEGAcel® I	Outdoor Air for Grow Rooms	VariSorb® XL	VariSorb® HC	SAAF™ Cassette
Indoor Air for Grow Rooms and Dispensaries	VariCel® M11	VariCel® VXL M14	VariCel® VXL M15	Indoor Air for Grow Rooms, Extraction and Dispenserie	VariCel® RF/C	VariSorb® XL	VariSorb® HC
Indoor Air for Oil Extraction	VariCel® VXL M14	VariCel® VXL M15	MEGAcel® I				
Exhaust Air for Grow Rooms and Warehouses	VariCel® VXL M13	VariCel® VXL M15	MEGAcel® I	Exhaust Air for Grow Rooms and Warehouses	VariSorb® XL	VariSorb® HC	SAAF™ Cassette

Agriculture

Farming and Tobacco

Protect Your Product and Customers

The air inside one of these facilities can contain:

- Mold, spores, pollen
- Milling dust
- Bacteria and byproducts
- Volatile Organic Compounds (VOCs) used in processing agricultural raw materials
- Fumigants

Filtration Solutions



VariCe® VXL
(see page 132)



AAF™ Cassettes
(see page 213)



Prevention of Cross-Contamination

Filtration is vital in preventing cross-contamination, ensuring consistent and superior quality products, and protecting people and process equipment. Cross-contamination can lead to production downtime and product loss, both of which impact the yield and profitability of farmers. Having a well-sealed environment is the first step to preventing cross-contamination, and having superior filtration is key to maintaining the integrity of the process.

Toxic Fumigant

A unique niche in the agricultural production arena is tobacco harvesting, storage, drying, and packaging. The types of fumigation, the storage times and limits, and the throughput are very specific for tobacco crops. Methyl bromide is commonly used to fumigate the tobacco product as it is being dried and stored. Since this is a highly toxic fumigant, gaseous contaminant remediation is necessary.

AAF Flanders' gas-phase filtration media is ideally suited for remediation of methyl bromide and the other specialized fumigants used in the tobacco industry. Additionally, high efficiency filtration, coupled with antimicrobial treatment, is needed when moving and storing tobacco products.

Optimize Your Environment

Air filtration, as it pertains to the growing and refining of grain and crops, is very important for both particulate and gaseous contaminant remediation. With regard to grains and other agricultural products, particulate filtration is of substantial importance. Air filtration systems in facilities that deal with these products must handle relatively large volumes of air with various sizes of particulates that need to be removed.

A thorough air filter audit of your HVAC Systems is the first step that AAF Flanders 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 improve air quality, energy savings, and operational flexibility while reducing total cost of ownership.

Source: *Building air quality, a guide for building owners and facility managers*, Environmental Protection Agency, 1991