Protect Your Herd, Protect Your Bottom Line: Air Filtration Solutions for Swine Facilities

FILTRATION FOR AIRBORNE DISEASES

Trusted Expertise. Proven Performance. Protection You Can Count On.

For decades, AAF International has been at the forefront of air filtration innovation, providing swine facilities with trusted solutions to protect against devastating airborne diseases like Porcine Reproductive and Respiratory Syndrome Virus (PRRSV). Our unmatched industry expertise, technical excellence, and proven track record make us the preferred partner for swine facility leaders who demand superior herd health and business resilience.

Preventing Costly PRRSV Outbreaks

A Persistent Threat to Swine Health and Profitability

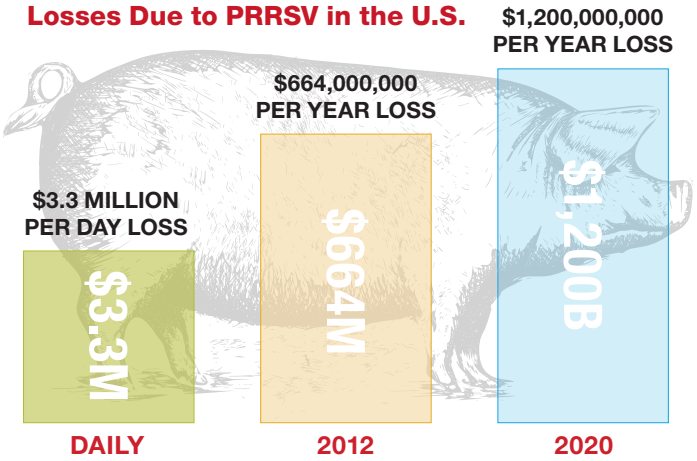
First detected in the U.S. in the late 1980s, PRRSV remains one of the most economically damaging swine diseases globally. While some progress has been made in managing losses in growing herds, PRRSV continues to wreak havoc on breeding operations, undermining productivity, increasing mortality, and inflating operating costs.

Assessing Your Risk

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. Research findings on the impact of the disease clarify the risk of substantial losses due to an outbreak.[1]

References:
1. *Dave Roepke, (2024, July 30). Growing Losses from PRRS Cost Pork Producers $1.2 Billion Per Year, New Study Shows. Iowa State University News Service*

Annual Cost of Productivity Losses Due to PRRSV in the U.S.



ONE PRRSV outbreak can cost more than 4-5 YEARS of filtration system operation

The Real Cost of a PRRSV Outbreak

In today's swine industry, airborne disease threats like PRRSV demand smarter, stronger biosecurity strategies. A single outbreak can cause losses that **exceed the cost of installing and operating a filtration system for four to five years**. The effects can be both immediate and long-lasting to both breeding and growing herds:

Breeding Herd Effects

- Reduced feed intake, fever, and cyanosis
- Increase in sow mortality and late-term abortions
- Higher rates of stillbirths and mummification
- Disrupted breeding cycles and semen quality
- Increase in pre-weaning mortality
- Elevated risk of secondary infections

Growing Herd Effects

- Increased mortality and chronic respiratory illness
- Slower, inconsistent growth
- Long-term impacts on herd performance

Preventing Costly PRRSV Outbreaks

Protecting Your Swine Herd: The Critical Role of Air Filtration Against PRRS

PRRS is a major challenge for swine producers worldwide, causing severe economic losses annually. While no single accredited statistic defines herd loss exactly, reputable studies like the National Animal Health Monitoring System (NAHMS) compared PRRS-negative to PRRS-positive farms and reported:[2]

- **3–10% higher pre-weaning mortality**
- **2–6% higher nursery mortality**
- **1–4% higher grow-finish mortality**

Proper air filtration plays a critical role in controlling PRRS. Advanced filtration systems help block airborne pathogens, significantly reducing infection risks and protecting herd health. Investing in quality air filtration not only prevents costly outbreaks but also ensures your pigs grow healthy and reach market weight efficiently.

Don't let PRRS erode your farm's profitability. Partner with AAF to implement air filtration systems that keep your pigs healthy and your business thriving.

References:
2. *The National Animal Health Monitoring System (NAHMS) studies, including the 2005–2006 PRRS data, are published and archived on the USDA's APHIS website. https://www.aphis.usda.gov/sites/default/files/swine2006_is_parti_highlights_1.pdf*

PRRS Outbreak Impact

3-10%
higher pre-weaning mortality

2-6%
higher nursery mortality

1-4%
higher grow-finish mortality

Air Filtration: Your First Line of Defense

Extensive research confirms what many in the industry have long recognized: air filtration dramatically reduces the indirect spread of PRRSV when integrated into a well-designed biosecurity program. While traditional ventilation systems regulate temperature and airflow, they fall short in filtering airborne threats.

Only a precision-engineered filtration system can intercept and capture airborne pathogens before they infiltrate your herd. And without filtration, your operation is **20 times more likely to experience a PRRSV outbreak.**[3]

Without filtration, swine operations are

20x more likely to experience a PRRSV outbreak

Filtration Done Right: What to Look For

AAF International systems are designed for maximum efficiency and operational ease. To ensure peak protection and long-term performance, insist on the following:

- **Low resistance filters** that reduce and minimize energy costs
- **Airtight filter grids and brackets** to eliminate bypass risks
- **Accurate differential pressure monitoring** between indoor and outdoor environments
- **Properly rated filters** for your facility's specific layout and risk profile
- **Consistent filter replacement schedules** aligned with manufacturer guidelines

References:
3. *Havas, K. A., Brands, L., Cochrane, R., Spronk, G. D., Nerem, J., & Dee, S. A. (2023). An assessment of enhanced biosecurity interventions and their impact on porcine reproductive and respiratory syndrome virus outbreaks within a managed group of farrow-to-wean farms, 2020–2021. https://pmc.ncbi.nlm.nih.gov/articles/PMC9879578*

Mitigating PRRS Outbreaks

Study Confirms the Power of Air Filtration Systems

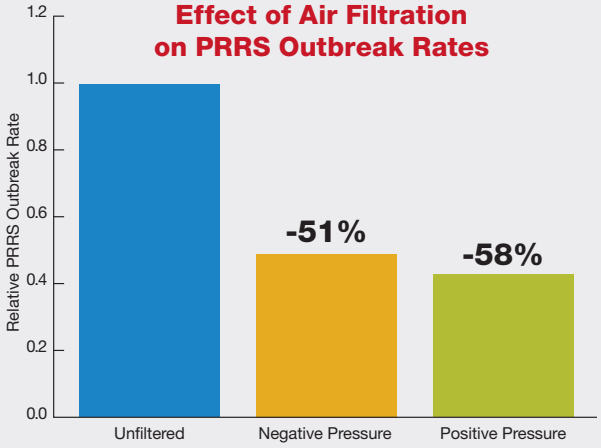
American Air Filter sponsored an independent, third-party study conducted by the University of Minnesota to evaluate how air filtration systems, specifically positive and negative pressure ventilation, affect the occurrence of Porcine Reproductive and Respiratory Syndrome (PRRS) in U.S. sow farms.[4]

Using data from more than 400 breeding herds collected between 2009 and 2024, the researchers found that farms using negative and positive pressure filtration systems had significantly fewer PRRS outbreaks compared to unfiltered farms, with reductions of 51% and 58% respectively.

The study controlled for regional factors such as pig density and proximity to other farms, providing robust evidence that air filtration, regardless of pressure type, can substantially mitigate PRRS risks. These findings offer critical insight for producers aiming to enhance biosecurity and animal health through strategic ventilation system investments.

References:
4. *Yue, X., Kikuti, M., Melini, C. M., & Corzo, C. A. (n.d.). Estimating the effects of negative and positive pressure systems on PRRS occurrence. Department of Veterinary Population Medicine, University of Minnesota.*

Effect of Air Filtration on PRRS Outbreak Rates



Negative Pressure Filtration: Maintains lower air pressure inside a facility compared to outside, ensuring that all incoming air is pulled through filters to prevent the entry of airborne contaminants.

Positive Pressure Filtration: Maintains higher air pressure inside a facility than outside, forcing filtered air out through openings and preventing unfiltered outside air from entering.

The Escalating Cost of PRRS: $1.2 Billion in Annual Losses and Growing

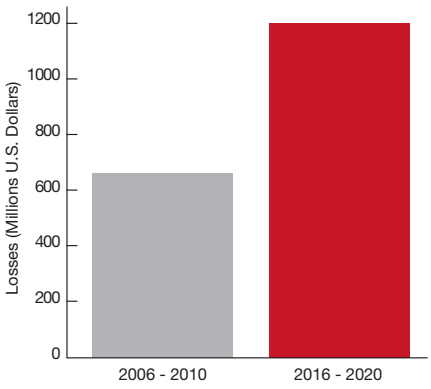
A new study from Iowa State University reveals that Porcine Reproductive and Respiratory Syndrome (PRRS) has caused an average of **$1.2 billion in annual production losses** in the U.S. pork industry from 2016 to 2020. This represents an **80% increase** compared to the estimated $664 million in yearly losses from 2006 to 2010. Notably, this increase is not due to changes in market conditions, but rather a higher percentage of herds affected and greater productivity loss in those herds.[5]

The study highlights that **68% of the losses now come from growing pig herds**, up from 55% in the previous decade, suggesting a shift in how PRRS affects herd segments. This may be driven by emerging virus variants and changes in sow immunization strategies.

Controlling PRRS remains a major challenge because the virus mutates rapidly, and current vaccines offer limited protection. Industry experts emphasize the need for **improved biosecurity**, such as stricter sanitation protocols and facility access control, as critical to minimizing outbreaks. Each operation must assess its unique risks and mitigation strategies to effectively protect herd health and profitability.

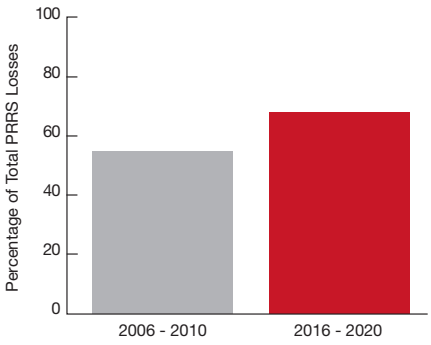
Annual PRRS Losses in U.S. Pork Industry

The rise in annual PRRS-related losses from 2006–2010 to 2016–2020



Growing Herds Share of PRRS Losses

Percentage of total PRRS loses attributed to Growing Herds over the two study periods



References:
5. *Holtkamp, D. J., & Osemeke, H. (2023). Economic impact of Porcine Reproductive and Respiratory Syndrome (PRRS) on U.S. swine production from 2016 to 2020. Presented at the International Pig Veterinary Society Congress, Leipzig, Germany. Iowa State University.*

CASE STUDY

2,400 Head Nursery:
Simple Filtration, Big Impact, Strong ROI

Located in a high-risk area in Southern Minnesota with 13,000 commercial pig spaces nearby, a 2,400-head nursery experienced five PRRS outbreaks its first eight turns*. To address the risk, a strategic decision was made to implement filtration using **AAF MERV 15** filters and minimal retrofitting: filter boxes above ceiling inlets, attic access improvements, and basic winterization. Despite avoiding more intensive upgrades typical of sow farms, the results were significant.[6]

Cost Overview

The estimated total cost over 8 years was **$90,680**, or just **$0.80 per pig**, covering both the **$75,000 installation** ($0.65/pig) and **annual prefilter maintenance** ($0.15/pig). This was based on 115,200 pigs over the 8 years (6 turns/year).

Cost Effectiveness from Disease Reduction

Filtration led to an estimated **40.2% drop in PRRS outbreaks**, preventing an estimated **46,310 infections**. This estimate is based on a pre-filtration break rate of **62.5%** (5 outbreaks in 8 turns) and adjusted using industry data showing farms experience **2.8× fewer breaks after filtering**. With a cost of **$1.96 per PRRS-negative pig**, the investment delivered strong returns, potentially generating **$2–$4 million in added income** from healthier pigs.

***A "turn"** refers to one full cycle of pigs entering the nursery, being raised to target weight, and then removed to make room for the next group

References:

6. *Swine Vet Center. (2023, March 31). Why Don't We Filter More Nurseries? SVC Producer Meeting.*

Filtration Impact

40.2%
drop in PRRS outbreaks

46,310
prevented infections

2.8x
fewer breaks

$2–$4 million
in added income

A Smart Investment with Immediate ROI

The question isn't whether you can afford an air filtration system, it's whether you can afford not to. The financial impact of a PRRSV outbreak can easily eclipse the cost of installing an air filtration system. With proven ROI, enhanced herd health, and fewer production disruptions, filtration is not a cost, it's an investment in your facility's future.

Comprehensive Protection Beyond PRRSV

PRRSV isn't the only threat. AAF's advanced filtration solutions also combat airborne transmission of:

- **Mycoplasma Hyopneumoniae (M-Hyo)** – the cause of Enzootic Pneumonia
- **Porcine Epidemic Diarrhea Virus (PEDv)**
- **Influenza A virus (IAV)**

Whether protecting boar studs, sow farms, or even nurseries, our systems safeguard your operation from multiple disease vectors, ensuring stable productivity and lower health management costs.

Solutions for Livestock Health & Facility Performance

Filtration for Healthier, More Profitable Swine Facilities

AAF delivers proven air filtration solutions engineered to protect herd health, minimize airborne disease risk, and optimize operational efficiency. Our products are built to perform in the demanding environments of modern swine production.

As the global leader in air filtration, AAF International sets the standard in positive Indoor Air Quality. Our high MERV rating filters deliver superior particle capture with:

- **Dual-density, non-charged media** for consistent mechanical filtration
- **High moisture resistance** to withstand evaporative cooling environments
- **Long service life** for fewer replacements and reduced waste
- **Rugged construction** that holds up under demanding farm conditions

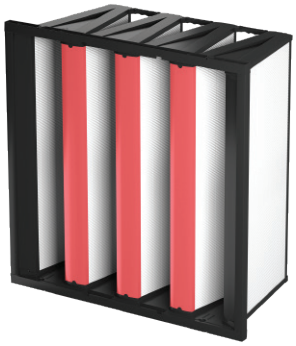
Every product we offer is engineered with your operation in mind: ***to protect your herd, your productivity, and your profitability.***

PerfectPleat® HC M8 – High-Capacity Pleated Filter for Energy Savings

The **PerfectPleat HC M8** is AAF's top-performing self-supported pleated filter, designed for durability, consistent airflow, and cost-effective operation. Its wire-free, synthetic media ensures safe handling, extended service life, and reduced energy consumption in agricultural environments.

Key Features:

- MERV 8 efficiency with mechanical (non-electrostatic) performance
- High dust-holding capacity for longer life and lower energy use
- DuraFlex™ media made from 100% virgin synthetic fibers
- Self-supporting pleats for full media utilization
- No wire backing—safe to handle, no rust risk
- Fully incinerable or compactable for eco-friendly disposal
- High-strength beverage board frame
- Available in 1", 2", and 4" depths
- UL 900 Classified; max operating temp: 150˚F (66˚C)
- Special sizes available



VariCel® VXL RC – High-Efficiency V-Bank Filter

The **VariCel VXL RC** combines best-in-class efficiency with a durable design to lower energy costs and extend filter life. Its optimized v-shape reduces resistance by up to 20%, while recessed pleats and a fully sealed frame ensure top performance in demanding swine environments.

Key Features:

- Most efficient v-bank filter in its class
- Offered in MERV 15/15A and 14/14A efficiencies
- 20% lower initial resistance for energy savings
- Industry-leading burst pressure: 25" WG
- Dual-density fiberglass media
- Fully sealed design with recessed pleats for close coupling
- Easy installation and maintenance
- High-strength beverage board frame
- Available in 1", 2", and 4" depths
- UL 900 Classified; max operating temp: 150˚F (66˚C)
- Special sizes available

Solutions for Livestock Health & Facility Performance

BioCel® VXLA – Rugged, High-Efficiency Filtration for Demanding Environments

Built for durability and performance, the **BioCel VXLA 17”** filter offers exceptional airflow and high-efficiency particle capture to protect your herd and reduce maintenance. Its robust, moisture-resistant design stands up to harsh farm conditions, including pest interference and heavy handling.

Key Features:

- MERV 15 and MERV 16 efficiency options
- 17” depth for increased airflow and filter life
- Rugged, moisture-resistant construction
- Easy to install and maintain
- Withstands rough handling and pest exposure
- Max operating temperature: 158°F

FASeal™ Frame – Simplified, Secure Filter Installation

Designed for efficiency and durability, the **FASeal Frame** streamlines filter installation in animal production systems. Its welded construction ensures a leak-free, corrosion-resistant housing, making it ideal for demanding environments like agricultural facilities. Integrated compression and pre-drilled mounting holes simplify installation.

Key Features:

- Fast installation with integrated clips, no separate clips needed
- Stainless steel spring clips won’t rust or detach
- Pre-drilled holes for easy installation
- Compatible with filters like VariCel VXL RC, BioCel VXLA, and PerfectPleat HC
- Available in 18-gauge stainless steel
- Holds single-header filters, or 2”/4” prefilters with or without headers
- Offered in 7 standard sizes

Partnering with You to Protect Herd Health and Profitability

At AAF International, we understand the critical threat that airborne pathogens, particularly PRRSV, pose to swine operations. We also recognize that every facility has unique challenges. That’s why we go beyond providing premium filtration products; we equip you with the expertise and data-driven guidance you need to assess your risk, build a sound filtration investment strategy, and calculate your projected return on investment.

Whether you’re proactively preventing an outbreak or responding to heightened biosecurity demands, AAF International delivers tailored air filtration solutions that align with your operational goals. As the global leader in air filtration and a trusted partner to swine producers worldwide, we’re committed to helping you protect your herd, optimize performance, and ensure long-term profitability.

Proven Expertise of AAF International

AAF International 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.

Contact your local AAF representative for a complete list of AAF Air Filtration Product Solutions.

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