INNOVATIVE AIR FILTRATION FOR AGRICULTURAL FACILITIES

Comprehensive Solutions that Prevent Disease Outbreaks and Safeguard Profitability

Parker

ENGINEERING YOUR SUCCESS.

Remaining Vigilant Against Airborne Disease Threats

In modern agriculture production settings, animals are raised in naturally or mechanically ventilated buildings with high population densities. Airborne diseases such as avian influenza, swine influenza, and porcine reproductive and respiratory syndrome (PRSS) can spread rapidly in confined spaces, leading to devastating consequences for animal health and production.

As a producer, you have the power to ensure the safety and well-being of your animals through proactive measures and careful animal science management practices.

Control measures

Agriculture facilities must maintain constant vigilance against transmittable diseases that pose a significant threat to poultry and livestock. Producers employ various methods to monitor for signs of illness and work closely with veterinarians to establish health management plans and provide necessary vaccine programs and treatments. Most producers also implement stringent biosecurity measures, including regular handwashing, cleaning and disinfection of equipment, and restricted visitor access. While effective against some diseases, these measures are not sufficient to prevent the introduction and spread of airborne viruses.

Avian influenza travels from farm to farm by air particles and through migratory movements.

Much like the highly pathogenic avian influenza (HPAI) outbreaks in 2015, the latest resurgence resulted in about 40 million animal losses and $2.5 to $3 billion in economic costs in 2022. Experts continue to track the longevity of the disease and its devastation into 2024.[1]

Research suggests fine particulate aerosol matter carries the virus from affected farms to neighboring farms, spreading the disease across states.[2] Additionally, migratory patterns of birds play a key role in viral dispersal.[3]

Long-distance disease transmission

Farm-to-farm disease transmission is not limited to direct contact with contaminated clothing, equipment, or vehicles. Respirable aerosol particles < 5 µm in diameter can remain infectious and be dispersed at distances greater than five miles over land under favorable weather conditions. Long-distance airborne spread of disease has been implicated in several outbreaks, including foot-and-mouth disease virus (FMDV) in swine, with the contagion traveling over 100 miles across water.

Prioritizing air filtration

Given the persistent threat of airborne pathogens and the major impact of disease on profitability and food supply, implementing quality air filtration technologies should be considered a vital means of protecting animal populations. Numerous emerging studies point to the effectiveness of air filters in reducing the incidence of disease. A recently published American Association of Swine Veterinarians commentary reports major reductions in PRRSV cases across 95% of facilities studied, where the installation of HEPA filters resulted in an almost complete elimination of the virus.[4]

With proper air filtration, facilities can safeguard the health of their poultry and livestock, ensure the sustainability of their operations, and maintain long-term profitability.

[1] Farahat, Ramadan Abdelmoez, et al. "The Resurgence of Avian Influenza and Human Infection: A Brief Outlook." New Microbes and New Infections, U.S. National Library of Medicine, 30 Mar. 2023

[2] Zhao, Yang, et al. "Airborne Transmission May Have Played a Role in the Spread of 2015 Highly Pathogenic Avian Influenza Outbreaks in the United States." Scientific Reports, U.S. National Library of Medicine, Aug. 13, 2019.

[3] Fourment, Mathieu, et al. "The Impact of Migratory Flyways on the Spread of Avian Influenza Virus in North America - BMC Ecology and Evolution." BioMed Central, BioMed Central, 25 May 2017.

[4] Desrosiers, Robert, and Vincent Cousin. "Air Filtration to Prevent Porcine Reproductive and Respiratory Syndrome Virus Infection." Journal of Swine Health and Production, American Association of Swine Veterinarians, Aug. 5, 2022.

The Integral Role of Air Filters in Agricultural Facilities

Air filtration is critical in maintaining safe, hygienic environments in poultry houses and enclosed barns and shelters. When properly installed, quality air filters are highly effective at removing a wide range of particles from flowing air streams. They have become a common biosecurity practice, helping producers with a variety of goals:

Disease Prevention

Air filters provide an excellent first line of defense in trapping airborne particles that carry disease, preventing them from entering and circulating in buildings.

Improved Animal Health

Poor quality air can cause respiratory stress, making animals more susceptible to disease and reducing their growth rates. Air filters help maintain clean air conditions, keeping poultry and livestock healthier.

Increased Production

Optimal air quality can improve feed conversion and growth rates. Animals in better health are more efficient at converting feed into eggs, meat, or milk.

Worker Health and Safety

Improved air quality doesn't just benefit animals. Reduced exposure to airborne contaminants can minimize respiratory and other health problems among farm workers. Recent human cases of avian influenza have been confirmed by the CDC, so the industry needs to do everything it can to reduce the risk of infection.

Environmental Protection

Airborne pollutants from agricultural facilities can contribute to air pollution and negatively impact local ecosystems. Effective air filters help reduce harmful emissions, helping producers comply with regulations and avoid potential fines for violations.

Reduced Dirt, Dust, and Odor

The intensive nature of animal production generates unavoidable dirt and dust, as well as urine and feces odor. Air filters help reduce these problems and generally makes a building cleaner and more comfortable.

Summer Surge of HPAI in Colorado: Nearly half of all commercial dairy farms affected

While not causing the deaths of many cattle, Colorado's 2024 avian influenza outbreak has disrupted the state's dairy industry, resulting in a significant loss of milk production.[5]

The Heavy Economic Toll of Diseases

Poultry and livestock diseases like the ongoing highly pathogenic avian influenza (HPAI) inflict a substantial economic toll on producers, impacting both direct and indirect costs. Direct costs include the immediate loss of animals, decreased production efficiency, and the expenses associated with veterinary care and disease containment measures. Indirect costs are equally significant, encompassing disruptions in the supply chain, reduced market access, and the long-term impact on consumer confidence and demand.

Outbreaks can lead to trade restrictions, resulting in substantial revenue losses for affected regions. Additionally, the necessity for enhanced biosecurity measures and vaccination programs adds to the financial burden. Overall, the economic repercussions of these diseases underscore the critical need for effective prevention and management strategies to safeguard farms.

All it takes is one costly outbreak from any number of common diseases to significantly impact your poultry or livestock population, production, and business.

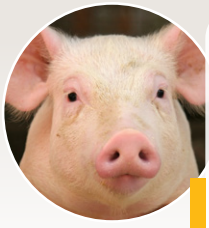
What you can't see can cost you.

Annual Losses from PRRSV

Porcine reproductive and respiratory syndrome (PRRSV) is one of the major swine diseases, causing **$664 million** in losses annually in the U.S.[6]

2022-2024 H5N1 Outbreak in Poultry

According to the CDC, over **82 million birds** in 48 U.S. states have been culled since 2022 due to the H5N1 virus.[7]

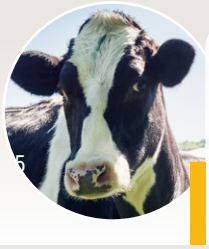


Potential Production Impact of a JEV Outbreak for Swine Producers

A recent Swine Health Information Center study predicts production losses of **$90,000 - $180,000 per year** for a 2,500-head sow farm experiencing a Japanese encephalitis virus (JEV) outbreak.[8]

Estimate of ASF Losses to the Pork Industry

Should the highly contagious African Swine Flu (ASF) become detected in the U.S., the USDA predicts **$15 billion** in losses to the pork industry based on a two-year scenario.[9]



H5N1 Losses Among Dairy Cows

The American Association of Bovine Practitioners estimates a 1,000-cow dairy can expect losses of **$100,000 - $200,000 in 2 to 3 weeks**, not including long-term impact from the disease or decreased herd size.[10]

The Fast Spread of Avian Influenza in Birds

Once introduced into a flock, avian influenza can **kill more than 90% of the poultry it infects**, with birds dying within **three to four days**.[11]

[5] Ingold, John. "Colorado Expands Testing for Bird Flu at Dairy Farms as State Hits 30 Cases in 30 Days." The Colorado Sun, 25 July 2024.

[6] Trevisan, Giovani, et al. "A Recombinant Porcine Reproductive and Respiratory Syndrome Virus Type 2 Field Strain Derived from Two PRRSV-2-Modified Live Virus Vaccines." Frontiers in Veterinary Science, U.S. National Library of Medicine, 28 Mar. 2023, www.ncbi.nlm.nih.gov

[7] Lempert, Phil. "How the 2024 Bird Flu Outbreak Is Impacting Our Food." Forbes, Forbes Magazine, 7 May 2024, www.forbes.com

[8] "Shic-Funded Economic Assessment Estimates Production Impact of JEV Outbreak in US Swine." Swine Health Information Center, 6 Mar. 2024, www.swinehealth.org

[9] "African Swine Fever: A Producer's Guide to the Federal Emergency Response Process." U.S. Department of Agriculture , Animal and Plant Health Inspection Service, www.aphis.usda.gov

[10] Larkin, Malinda. "$200m from Federal Government Aims to Stop Spread of H5N1 among Dairy Cows." American Veterinary Medical Association, 22 May 2024, www.avma.org

[11] Bieltz, Brandon. "What Is Avian Influenza and What Does It Mean for You, Farmers and Backyard Flocks?" Veterinary Medicine News, NC State University, 15 Mar. 2024, news.cvm.ncsu.edu

Why Parker?

Setting industry standards with cutting-edge technology and decades of filtration innovation.

For over 50 years, Parker has been improving the quality of air around the world with trusted products that define excellence. Our strong relationships with agricultural producers have enabled us to understand their unique air quality challenges and tailor filtration solutions to meet their requirements. You can expect to stay at the forefront of technological advancements, continuously innovating to deliver the highest levels of quality, efficiency, and value for our agricultural customers who produce food essential for human survival.

Greater Energy Savings

Parker's high-efficiency air filters are engineered to optimize airflow while effectively trapping more contaminants, including dust, pollen, and pathogens, thereby reducing the workload on HVAC systems. By preventing these particles from circulating in the air, our filters help improve energy efficiency, reducing energy consumption and lowering utility costs.

Longer Service Life

Meticulously crafted from high-quality synthetic media and complemented by durable construction, HVAC filters withstand the rigorous demands of agricultural environments. Our proprietary E-Pleat® technology makes our filters superior by design, ensuring longer service life and reducing the frequency of filter replacements, maintenance costs, and downtime.

Ease of Installation

Parker's advanced air filters feature user-friendly features like intuitive mounting, slide-in designs, pre-installed gaskets, and clear labeling. Their lightweight and compact builds facilitate quick installation, making them easier to maneuver and fit into tight or elevated spaces. Each filter frame is precision-crafted, ensuring a snug fit and optimal performance once installed.

Unparalleled Support

Our partnership approach includes access to filtration experts with specialized knowledge to provide unparalleled support every step of the way. Whether you have questions about filter specifications, need a customized filtration solution, or require technical assistance, we are committed to delivering personalized service to address all your filtration challenges.

CLEANER AIR IS AHEAD!

You'll find Parker's air filtration products on local farms and commercial production facilities across the globe.

There are approximately 600,000 Log 9 or Pur Ag® V-Bank air filters in use in agricultural buildings today.

DID YOU KNOW?

Up to **40% of U.S. pig farms** break with PRRSV every year.

Preventing and Controlling Poultry and Swine Diseases:

It pays to invest when defending your flocks and herds.

Global demand for poultry and livestock products has been rising for several decades, and economists expect this trend to continue. To match pace with consumption, producers must keep large populations of animals as healthy as possible. Maintaining a clean environment is crucial with so many animals in close quarters. Running a top-notch operation also means understanding the various diseases that can impact your animals and minimizing risk.

Common Poultry Diseases

Avian Influenza – Also known as bird flu, is highly contagious and can cause severe illness and death in poultry, impacting production significantly.

Virulent Newcastle Disease – Spreads rapidly and can lead to respiratory distress, nervous system issues, and high mortality rates.

Japanese Encephalitis Virus (JED) – Primarily spread by mosquitos, affects birds and can lead to neurological symptoms and death.

Common Swine Diseases

Porcine Reproductive and Respiratory Syndrome (PRRS) – Causes severe respiratory issues and reproductive failures, leading to reduced productivity.

Swine Influenza – Similar to human flu, spreads quickly and can weaken your herd, making them susceptible to other infections.

African Swine Fever – Particularly devastating, with a high mortality rate and no effective vaccine currently available.

CASE STUDY HIGHLIGHT

Air Filter Upgrade Significantly Reduces Poultry Mortality

Sites: Poultry farms in the Middle East

Challenge: Keeping large flocks housed in close quarters healthy amidst threat of disease and environmental factors

Solution: pathogen barrier final ventilation filters

Results:

- Bird mortality decreased by 18%
- Weight increased by 1.18 grams
- Layer performance increased from 209 to 300

FILTER FACT

Non-filtered sites are **8X** more likely to have a PRRS outbreak than filtered sites.

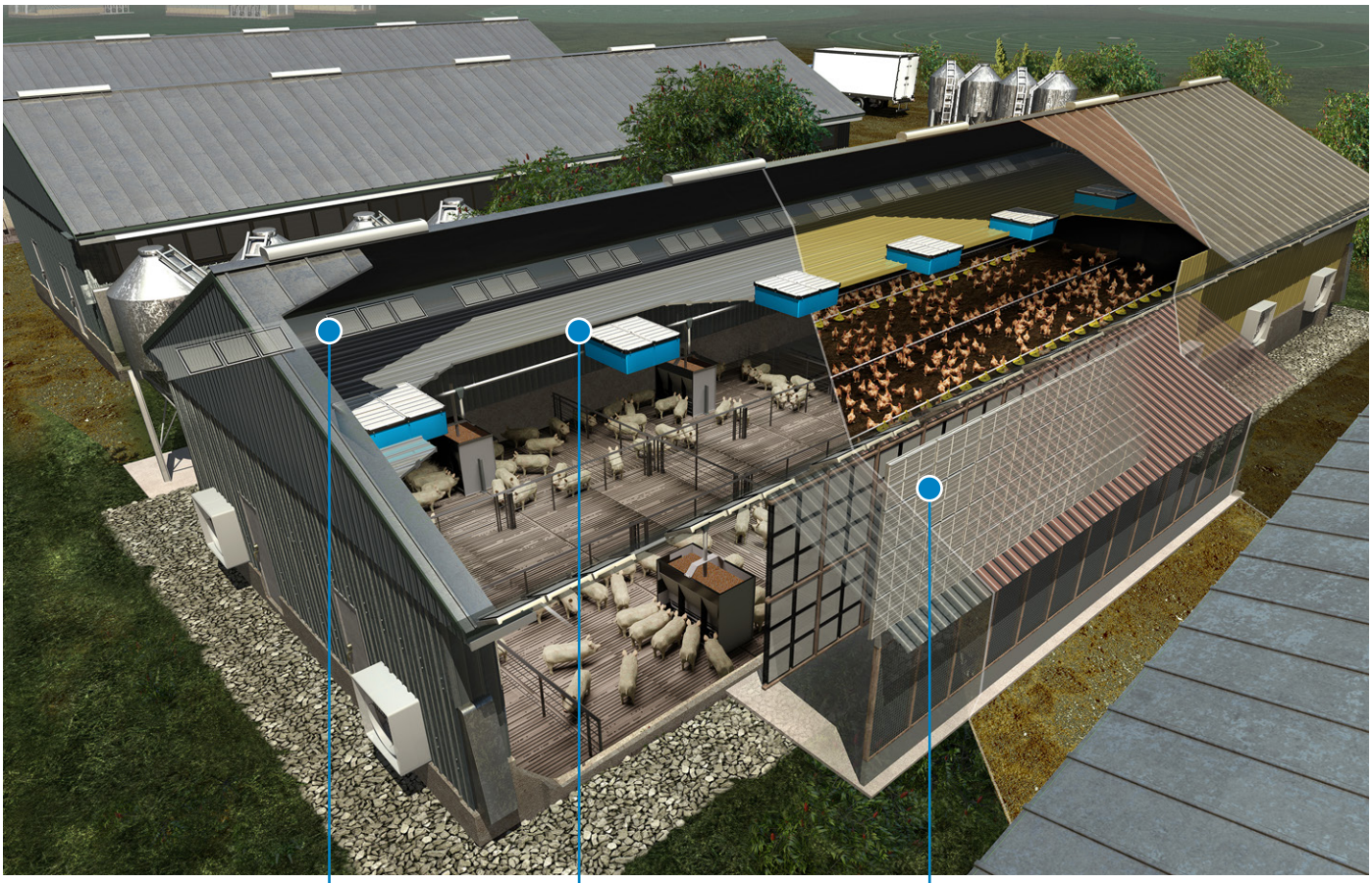
If you have a 5,000-sow farm, your potential loss would be **$1 million** based on $200 per sow.[12]

[12] Carmen, Alonso, et al. "Epidemiological Study of Air Filtration Systems for Preventing PRRSV Infection in Large Sow Herds." Preventive Veterinary Medicine, Elsevier, 17 July 2013, www.sciencedirect.com

Parker's Complete Air Filtration Solutions:

Helping you vastly improve air quality throughout your facilities.

The Parker HVAC Filtration Division offers advanced filtration solutions designed to meet the toughest demands of poultry and livestock facilities. Our air filters are thoughtfully designed for multiple applications and engineered for consistent and reliable performance. With a range of sizes and configurations, filters can be seamlessly integrated into different ventilation areas, contributing to the overall success and sustainability of your operations.



SOFFIT FILTRATION

EAVE MOUNT

XTREME+PLUS®
MERV 8

Pur Ag® V-Bank Filter
MERV 15

Pur Ag® SlimBox Filter
MERV 16, Log 9

CEILING INLET FILTRATION

ATTIC HOUSING

XTREME+PLUS®
MERV 8

Pur Ag® V-Bank Filter
MERV 15

Pur Ag® SlimBox Filter
MERV 16, Log 9

TUNNEL FILTRATION

WALL-MOUNTED SIX-FILTER GRIDS

XTREME+PLUS®
MERV 8

Pur Ag® V-Bank Filter
MERV 15

Pur Ag® SlimBox Filter
MERV 16, Log 9

Discover the Parker Products Driving Success:

Multiple Designs and Efficiencies for Every Application.

Pur Ag® SlimBox

Log 9, 6″ Deep, MERV-16
Pathogen Barrier Final Filters

Parker's Pur Ag® SlimBox filters help producers reduce risk, improve air quality, and increase profits at their facilities. The patented filter is MERV 16-rated and 6″ deep with Log 9 viral efficiency that provides industry-leading airflow at low resistance. SlimBox filters feature 100% synthetic, moisture-resistant, gradient density media that will not support microbial growth. They install easily into the filter grid frame, eave housings, attic housings, or metal filter frame.

Standard sizes: 24″ x 24″ x 6″ and 20″ x 24″ x 6″

Applications:
Evaporating cooling systems
Attic filtration
Eave filtration

Additional advantages:

- Available with Log 9 viral efficiencies
- High-strength, mechanical locking structure reduces possibility of damage during handling or installation, further reducing the risk of airborne contamination
- Fully sealed media pack around the perimeter of the frame eliminates air bypass
- Proprietary, patented E-Pleat® technology delivers industry-leading, low airflow resistance and higher dust holding capacity than the V-Bank option
- Lightweight, compact construction simplifies replacement and lowers shipping costs
- All plastic construction; fully incinerable
- Factory-installed upstream and downstream gaskets ensure no viral particulate will bypass around the filter

Discover the Parker Products Driving Success:

Multiple Designs and Efficiencies for Every Application.

Pur Ag® V-Bank

12″ Deep, MERV-15
Pathogen Barrier Final Filters

By installing Parker's Pur Ag® V-Bank pathogen barrier final filters, you can trap airborne viruses before they enter your facilities. Designed specifically for agriculture buildings, Pur Ag V-Bank filters are MERV 15-rated and 12″ deep. PurAg V-Bank filters install easily into the filter grid frame, eave housings, attic housings, or metal filter frame. **Tested to ASHRAE 52.2**

Standard sizes: 24″ x 24″ x 12″ and 20″ x 24″ x 12″

Applications:
Evaporating cooling systems
Cool cell wall
Attic filtration
Eave filtration
Wall inlet filtration

Additional advantages:

- Factory-installed upstream and downstream gaskets ensure no viral particulate will bypass around the filter
- Media pack is fully sealed around the perimeter into the frame, eliminating air bypass
- Filter frame is designed with mechanical locking components to ensure durability during handling and product life
- V-Bank filter design offers energy savings with high air flow at low resistance
- Lightweight construction allows for easy handling, installation, and replacement into filter housings and grid systems
- All plastic construction; fully incinerable

XTREME+Plus®

MERV-8 Self-Supported Pleated Filters

Designed with extreme durability in mind, XTREME+Plus® MERV 8 standard and high-capacity filters offer the best self-supported pleat (SSP) performance on the market. XTREME+Plus achieves extremely low pressure drop and industry-leading dust holding capacity. Their robust construction will save time and money previously wasted on damaged wire-backed filters. With no metal that can warp or deform, a moisture-resistant beverage board frame, and 100% synthetic media, XTREME+Plus filters maintain their integrity even in wet or humid conditions.

Standard sizes: Multiple standard sizes available

Applications: Air handling and ventilation units

Additional advantages:

- 100% synthetic media is resistant to moisture, mold, and mechanical damage
- Self-supported media with no metal wire backing eliminates corrosion or deformation of metal
- Over 200 adhesion points between the media and the frame resist movement, bunching, and collapsing during operation, supporting a consistent low pressure drop
- Consistent pleat shape and spacing allows particulates to collect evenly over the entire surface
- Fully incinerable

XTREME+Plus filters are not recommended for use in high-temperature environments or applications with very high or turbulent airflow.

Filter with confidence. Partner with Parker today.

Reach out to Parker today and ask how our advanced filters can protect air quality – an ultimately – your animals from disease-causing viruses

We are here to help! **1 866 247 4827**

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