

## PRESS REPORT

### Do's and Don'ts of Food Plant Air Quality and Control

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A high standard of air quality is vitally important in the food processing environment, making control of airborne microorganisms, fungi and other bioaerosol contaminants a critical action item on all food manufacturers' to-do lists. But how do you effectively institute preventive controls when the vehicle for potential contaminants is literally everywhere, on every surface and in every nook and cranny, from receiving dock to loading dock?

In one of its latest guidelines, the European Hygienic Engineering & Design Group (EHEDG) identifies hygienic air quality control as a top priority to promote good manufacturing practice to ensure that safe food is produced. Published in September 2016, EHEDG Doc. 47, *Guidelines on Air Handling Systems in the Food Industry - Air Quality Control for Building Ventilation* is a 56-page, fully referenced guideline produced by the EHEDG Working Group "Air Handling," chaired by Dr. Thomas Caesar of Freudenberg Filtration Technologies SE & Co, Germany. In addition to a number of informational images and illustrations to help users troubleshoot and ensure air handling unit (AHU) efficiencies, the guidelines also include a helpful checklist for the operation and maintenance of air handling systems in food processing facilities.

EHEDG Doc. 47 offers food producers a deep dive into the do's and don'ts of designing, selecting, installing and operating air handling systems to achieve high standards of building ventilation quality and hygiene. In this first edition, the guidelines focus on air handling systems installed for food factory building ventilation and air quality control. The aim is to provide food producers with a solid grounding in the fundamentals of air handling and the role of air handling systems in building ventilation to achieve optimal design and application in relation to product risk categories. Specifically, the guidelines cover the choice of systems, air filtration types, system concepts, construction, maintenance, sanitation, testing, commissioning, validation and system monitoring.

#### **Key Takeaways: The Do's and Don'ts**

The ability to control the properties of air, especially temperature, humidity and air cleanliness, as well as airflow throughout the food plant has a direct impact on the manufacturer's ability to manage and control the risks associated with airborne contaminants. Effective air handling control systems and protocols also can help the food producer realize desired cost-, production- and energy-saving efficiencies throughout processing, storage and packaging areas within the facility.

EHEDG Doc. 47 offers a number of key insights that highlight how food producers can attain these benefits and meet the air quality and hygienic requirements of the food manufacturing process. Key takeaway messages in the guideline include:

### ***DO Plan for Hygienic Design***

Building design and the air handling system design are closely linked to each other and should be planned and designed in an integral approach. It is essential that the planning and design of all elements of a food manufacturing site that have an impact on or contribute to hygiene are well balanced and based on a fully integrated, overall hygiene concept.

### ***DO Assess Risk and Use Hygiene Zones***

Airborne contamination may be reduced in several ways, depending on the facility layout, the type and risk levels of products manufactured and other factors. It is important at the outset to understand the risk category of the product to be manufactured in a controlled space. Where possible, manufacturing should be segregated into zones based on the level of hygiene (i.e., separate locations/factories or by separation of operations within the same factory). Contamination also can be controlled by enclosed systems, by partition, by air flow, by time with effective intermediate cleaning and, where appropriate, disinfection or other effective means.

### ***DO Install the Right Equipment for the Job***

Air handling unit components such as the fan and motor set, heating and cooling coils, filter frames, diffusers and dampers should be designed, manufactured and installed to ensure a long service life, especially when operating in damp and dusty environments. Air handling units, air filters and air filter stages have to be designed to minimize the carryover of microorganisms or inorganic and organic dusts to downstream components or into the space to which air is supplied, during operation or any maintenance activity such as filter installation, inspection or change. It is recommended that food producers work closely with their air handling equipment and component suppliers to ensure that these systems deliver optimal performance for the specific production environment.

### ***DO Focus on Effective Filtration***

Air filters are the critical factor in the maintenance of clean and hygienic conditions within air handling systems. It is an established fact that it is cost effective to install and service good quality air filtration with the use of at least two filter stages. Air filters should be examined periodically to ensure the filter performance is maintained and should be changed at the latest, if the permissible final pressure drop has been reached or when technical and/or hygiene deficiencies are observed.

### ***DON'T Forget to Check the H<sub>2</sub>O***

All water-carrying parts and permanently wet parts of humidifiers and heat exchangers require periodic inspection, cleaning, and disinfection, if necessary. For example, water supplied to a humidifier must comply with World Health Organization drinking water guidelines, and other water quality requirements also may apply such as in cases in which extract air may affect the supply air.

### ***DON'T Bypass Cleaning and Maintenance Basics***

It is necessary to inspect the air handling system regularly and to maintain it properly. Regular cleaning, disinfecting and hygiene procedures are essential for the hygiene operation of air handling systems. It is critically important to understand the impact of cleaning chemicals, detergents and disinfectants on air handling units, particularly with respect to corrosion or ineffective removal of organic and inorganic contaminants from air ducts, evaporators, motors, filter housings, etc. To meet the hygiene requirements and to avoid corrosion, the cleaning regimes should be adjusted according to the defined hygienic requirements. Again, the food producer should work closely with cleaning chemical and treatment professionals to ensure that cleaning products are suitable for their facilities' air handling systems.

### ***DO Create an Air Quality Manual***

Air handling equipment is usually located in ceiling voids away from the daily operations of the food factory. With this in mind and the often infrequent attention to such equipment, it is important to document the air handling specification and scope of operation and maintenance to ensure best practice and to maintain operating performance. A manual of documents can be referred to as an Air Quality Manual.

### **Achieving Airtight Hygiene**

EHEDG Doc. 47's comprehensive review of air quality controls for building ventilation is a solid basis for implementing airtight hygiene in the food processing plant. The guidelines emphasize the importance of strategic hygiene planning when it comes to air handling units and systems, particularly since maintenance and cleaning activities can cause downtime for production lines. Implementing measurable air handling systems and monitoring protocols will not only help ensure that food is produced to the highest standards of food safety but will assist food manufacturers in achieving efficiencies that positively impact the bottom line.

For more information about the EHEDG Doc. 47 guideline, please visit [www.ehedg.org](http://www.ehedg.org).