



## Cleanness is the sum of many factors – AN EASY-TO-CLEAN VENTILATION SYSTEM IS HERE TODAY

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*A good indoor climate makes the space more enjoyable, increases job productivity and reduces illness. A key factor affecting the indoor climate is the purity of the supply air. To ensure the availability of pure supply air, the ventilation system should be designed and built properly and cleaned at regular intervals.*

A key factor affecting the indoor climate is the purity of the supply air. The cleanness of the supply air is affected by the outside air, the air handling and the cleanness of the ventilation system. It is usually assumed that supply air is similar to outside air in terms of quality or even cleaner when filtered. This is not always the case, however, as the ventilation system can be a major source of contamination of supply air. In some cases, air gets dirtier in the ventilation system than it does in the room space.

A key aim of the entire building process should be to ensure that the supply air passing through the ventilation system is of high quality. High-quality supply air must not contain harmful matter from the ventilation system (e.g., microbes, bacteria, fibres), or odours or particulate impurities that will reduce amenity value.

### **The marks of a clean system**

The purpose of ventilation is to create good conditions for work and for living in. The attainment of this objective is made up of many factors, starting with the design stage and ending with actions performed during the utilization stage. If even one link in the chain fails, the result will be poor.

The dimensioning of ventilation has traditionally been based on the premise that the main sources of impurities in supply air and the reasons behind the need for ventilation are people and people's actions. Ventilation is intended either to eliminate or to alleviate these impurities, which originate indoors.

However, recent research has shown that the indoor climate quality is also affected by other factors, such as ventilation equipment, the materials used, and the purity of the supply air. According to studies, only a third of the supply air impurities derived from human activities, and the rest came from building materials and ventilation systems.

A clean ventilation system can be ensured by picking the right components for it. The products must be properly manufactured and packaged. Care must be taken in storage on the building site to make sure that dirt does not get into the system when it is installed. The ductwork should be cleaned of construction dust after installation and efforts must be made thereafter to keep it clean by means of filtering and regular cleaning.

In connection with air terminal devices and ductwork, to keep the system clean it is necessary to equip the products with protective plugs to prevent dust and dirt getting into the ducts during construction.

Cleanness while the system is operational depends on the proper use of the ventilation system. User and maintenance instructions are useful in this respect. Even when the ventilation system has been planned and built with care and is serviced regularly, it will have to be cleaned from time to time. For this reason, the ventilation ductwork and its components must be designed and manufactured in such a

way that they can be cleaned easily. Measurement and control equipment and their probes installed in the ductwork must not hinder cleaning.

### **The system consists of easily cleaned components**

A ventilation system consists of numerous various duct components and fittings. Many of these fittings need to be removed and serviced from time to time. It should be verified that every duct attachment is accessible and easy to clean.

A basic premise for designing ductwork is convenient cleanability. This aspect is also taken into account in the design and installation of the ductwork fittings. It is essential for cleaning work for there to be an adequate number of properly located inspection and cleaning hatches.

Airflow adjustment dampers are available on the market which can be fully opened for cleaning. The adjustment dampers have a lockable cleaning memory by which they can be put back in the same position after cleaning.

Attention has been given recently to the cleanability of air terminal devices and the balance box adjacent to them. It is easy to clean products nowadays: the measurement and control unit is detachable for cleaning. Air terminal devices are also openable for cleaning, at which time the room branch can be accessed from the diffuser for cleaning without having to install a cleaning hatch in the branch.

The design of the balance box allows for cleaning: there are no corners in it which would make cleaning difficult. Rounded corners make cleaning easy. Moreover, the sound insulation material is polyester fibre, so there is no risk of particles becoming detached.

Ventilation beams have been commonly used in high-class office buildings of late. The 'active beam' type, which combines cooling and ventilation, is the most often used beam solution. Active beams can be divided into two groups: freely installable and beams for installation in suspended ceilings.

In a closed beam solution installed in a suspended ceiling, air circulates only inside the device itself, so no air comes into it through the suspended ceiling. In both types of beam, the lower cover can be opened without tools to permit fast and convenient cleaning of the cooling coil.

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