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## Odour-free kitchen exhaust air

### UV rays neutralize the airflow

Odour-polluted kitchen exhaust air can cause a lot of trouble in urban areas and ultimately lead to the withdrawal of the caterer's operating licence. An increasing number of ventilation equipment manufacturers recommends the installation of UV systems for the removal of odorous matter from the airflow. These systems comprise special UV tubes that are installed in kitchen extractor hoods or ventilating ceilings downstream of the grease separators. Thanks to the ozone generated by the tubes, the UV radiation can neutralize the organic odorous matter such as grease particles and aromatic compounds through oxidation (also called cold combustion).

UV systems are particularly suitable for kitchens where high-fat and deep-fried meals are prepared such as in china and fast food restaurants or for large-scale kitchens producing fish and meat dishes. An efficient removal of grease and odorous matter is only ensured, however, if an effective pre-separation takes place before. The Swabian manufacturer of ventilation equipment Rentschler Reven-Lüftungssysteme GmbH points out that advertising typically conceals this pre-condition. The ozone generation of a UV system is far to low to neutralize odours in unfiltered exhaust air.

Therefore, industry has developed combined separators for grease mist and odorous matter removal that ensure a highly efficient pre-separation and are suitable for installation in horizontally running ducts. The three-stage version has proven its worth in the execution of this task. It comprises a mechanical cyclone separator to capture finest grease mists as well as a UV system and a stainless steel catalyst for the highly efficient elimination of odours. The separating power of some makes can be adjusted in several steps, a feature that increases the service life of the combined equipment.

Thanks to the use of amalgam instead of the typical mercury and a synthetic quartz in the tubes, the UV systems offered on the market become more and more efficient and generate higher amounts of ozone. They may operate up to 20,000 hours before you have to remove the tubes and clean them. When selecting the appropriate tubes, designers should take DIN 18869-7 (dealing with large-scale kitchen equipment) into account.

Quite a few manufacturers maintain that their UV systems remove grease and oil by cold combustion or even convert these pollutants into ashes. These statements are incorrect because the fact that grease deposits in the ducts are avoided is rather due to the high operating temperatures of the UV tubes which provide for the evaporation of aerosols and reduce the tubes' service lives.

It is neither recommendable to use systems with UV-C tubes because the radiation at a wave length of about 260 nm is germicidal but the tubes do not generate ozone. The oxidation of odorous matter can only be achieved with the help of ozone, however, and requires a UV radiation with wave lengths below 200 nm. UV-C systems are used in hospitals for instance to disinfect surgical instruments but they are not suitable for odour neutralization in kitchen exhaust air.

Proposed illustration:



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The multi-stage duct separator (on the right) removes residual grease matter from the exhaust air and eliminates odour.

Photo: Reven

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