

**UV** clean

## Ultraviolet Light for Air Treatment Disinfection and Oxidation

# Ultraviolet Light for Air Treatment

## Disinfection and Oxidation



Clean, fresh air is the basis of life for plants, animals and people. Even in the industrial sector, environmental air of very low germ content is often a necessity, for example in the storage of raw materials and foodstuffs and during their processing and packaging. UV lamps are used very successfully in these applications, for disinfection in air intake ducting and store rooms and to ensure air of very low germ content in production areas.

In commercial kitchens, grease deposits in cooker hoods and exhaust ducting create high cleaning costs, intense smells and an increased danger of fire. Treatment with high energy UV radiation can offer an economical and ecological alternative to tedious cleaning exhaust ducting.

Moreover, air contamination by aerosols, volatile organic compounds and odours, pollute the environment and has a detrimental affect upon health. Short wave VUV radiation (Vacuum UV radiation=185 nm) produces ozone from the oxygen in the ambient air so that this is activated for the oxidation process. UV oxidation breaks down pollutants in the exhaust air.

Disinfection and oxidation with UV light is a versatile, environmental-friendly technology, which can be used for the treatment of air, surfaces and water. As a UV specialist with years of expertise and experience, Heraeus Noblelight is your partner for special lighting solutions in UV disinfection and UV oxidation.

### Parameters of the polluted air

- Different micro-organisms and germ densities
- Different organic compounds (greases or odours)
- Pollutant concentration
- Air temperature
- Air throughput
- Air speed

For the treatment of the polluted air Heraeus offers various lamp technologies for commercial applications – and working with you, develops the optimum UV solution for your individual application in air treatment. Our radiation-intensive UV lamps, incorporating Amalgam technology, are market leaders – and not only because of their long operating life due to of our unique Longlife technology. Our special Longlife coating of the lamp tube is almost completely transparent even to the very short wave, ozone-generating UV radiation.

### Advantages of Heraeus UV Light

- High power lamp technology: optimised output of 254 nm UVC radiation (strongly disinfecting) and 185 nm VUV radiation (strongly ozone generating)
- Small footprint allows easy retrofitting in existing air treatment plants
- Easy handling

### High Economic Efficiency of Heraeus UV Light

- Unique Longlife coating: extraordinarily long operating life – even in the short VUV wave region
- Only a few lamps and accessories are required
- For compact systems
- No need for chemicals
- A low maintenance process
- Low capital- and operating costs



#### **UV Lamps for Providing Air of Very Low Germ Count**

UV radiation provides for healthy air which is low in germ count and improves the hygiene and storage conditions in the pharmaceutical industry and in the food processing industry. Here, micro-organisms in the air, such as viruses, bacteria, yeasts and fungi, can contaminate raw materials and spoil foodstuffs. UV light reliably reduces the germ count of the air. Short wave UV radiation is particularly strongly bactericidal. It is absorbed by the DNA of the micro-organisms and destroys its structure. In this way living cells are inactivated.

Polluted air can be disinfected in air intake ducts to provide long term reduction in the germ count level in processing- packaging- and storage areas. For this application, only the ozone-free UVC lamps are used, where special quartz glass filters out the ozone-generating radiation (VUV).

#### **UVC Lamps for Air Conditioning Systems**

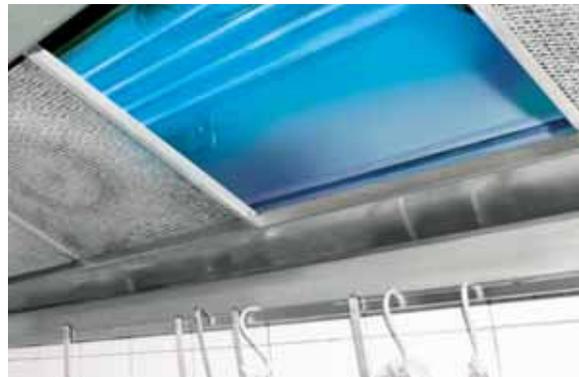
UV light is a gentle tool to disinfect water in water tanks in air conditioning plants which is used for humidifying the air. Chemicals are not required. UV light cares for clean air, which is low in germ count and not contaminated by bactericides.

#### **VUV Lamps for Breaking Down Grease**

Deposits are often found in the extraction hoods of commercial kitchens and in the connecting exhaust ducting. They are created by greases, oil vapours, emulsions or aerosols and may result in serious fire hazards. Ozone-generating lamps break down greases in the exhaust air. Grease deposits in cooker hoods and exhaust ducts are prevented. The fire hazard is minimised and fire protection measures can be reduced. In addition, there is no longer any need for expensive cleaning.

#### **VUV Lamps For Removing Odours**

Ozone-generating UV radiation also gets rid of odours, which arise in the exhausts of commercial kitchens, in odour-intensive food shops, such as the exhaust ducts of fish bars, in the food processing industry or in sewage treatment plants. This is especially important when the odorous exhaust impinges on the neighbouring residential areas. In some countries, such as in Sweden, there are laws governing exhaust air treatment to reduce odour pollution caused by restaurants. The treatment of exhaust air with VUV radiation is a simple way to prevent odour problems and to meet any official legislation – with only low capital costs.



#### **VUV Lamps For Scrubbing Industrial Exhaust Air**

During the use and manufacture of lacquers and other coating materials – for example in coating plants, printing works and in the automotive industry – solvents are released. Organic pollutants in the exhausted air in the chemical-, plastics- and rubber industries, as well as in wood or surface treatment, can create exhaust air problems.

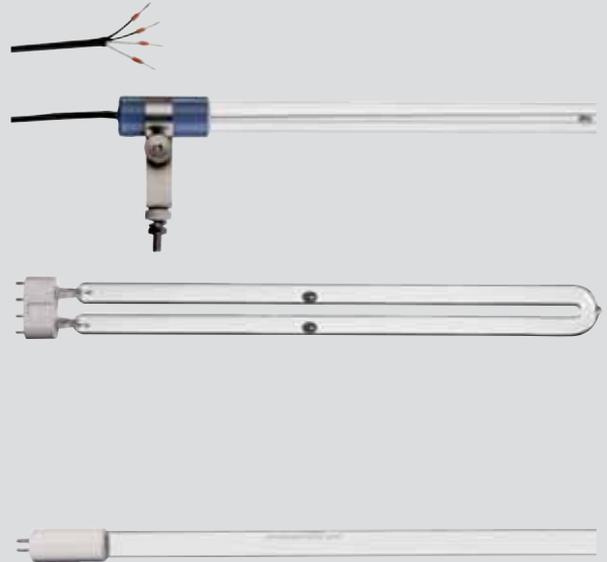
All these pollutants can be easily broken down by UV light. In most industrial countries, local air pollution has significantly reduced over the last decades as a result of clean air legislation. In Europe, for example, the EU Directive for VOCs (Volatile Organic Compounds) governs exhaust air treatment. This obliges even small companies to scrub their polluted or odorous exhaust air also with low concentrations before this is released to the environment.

### Amalgam lamps

Illuminated length	25–150 cm
Electrical power	50–400 W
UV emission, spectral wavelength	185 nm, 254 nm
Suitable ambient temperatures	max. 90 °C
Lifetime	16,000 h with max. decrease of 10–20% in UVC intensity

### Low pressure lamps

Illuminated length	10–150 cm
Electrical power	5–80 W
UV emission, spectral wavelength	185 nm, 254 nm
Suitable ambient temperatures	20–40 °C
Lifetime	9,000 h with max. decrease of 30% in UVC intensity



### Safety instructions

UV radiation can cause damage to skin and eyes. Consequently, the UVC lamps should be operated in accordance with strict safety guidelines. Do not look at UV radiation unless wearing suitable eye protection and cover up those parts of the body which are exposed to UV radiation. UV radiation at 185 nm and 254 nm can be screened by standard glass, transparent plastic, such as Makrolon®, and practically all opaque materials. When using ozone-producing lamps, measures should be taken to ensure that the MAK limits (limiting values of ozone concentration) are met.

### Note

The lamp operating life in hours and the power in watts were measured in the laboratory. The actual operating life depends on the operating conditions.

We reserve the right to make changes to illustrations and technical data in this brochure without prior notification. HNG-B117E 1000/WSP/0109

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