

Heraeus



**No more unpleasant smell in your kitchen**  
**Efficient odor and grease reduction with UV**  
Heraeus Kitchen Control System for exhaust air treatment

# Odor reduction with Heraeus UV solutions

## Highly efficient and energy saving

The use of fats and oils, particularly in large kitchens, leads to unpleasant odours and deposits in canopies and ductworks. Grease filter remove only up to 95% of the fat carried along in the exhaust air flow. The remaining fat is deposited inside the hood or exhaust duct, creating a high fire risk, which no grease filter is able to eliminate completely.

Heraeus Noblelight, a manufacturer of special light sources, offers vacuum UV lamp solutions (VUV) for the secondary treatment of aerosols and aerosolates in kitchen exhaust hoods. Heraeus vacuum UV lamps in the wave-length range of 185 nm photolyse, neutralise and destroy the molecules of fats and odours.

At the same time, the vacuum UV radiation produces ozone from the oxygen in the air of the lamp. This subsequently decays into excited oxygen, which has a sustained oxidising effect in the ductwork, and keeps the duct clean, thereby minimising cleaning and service costs.

High-performance VUV lamp solutions from Heraeus Noblelight remain extremely effective even at ambient temperatures of up to 80 °C. Their long service life of up to 10,000 operating hours<sup>1</sup> minimises the service intervals. Instead of a cassette with 4-6 low-pressure emitters, only one single vacuum UV lamp is now required.

<sup>1</sup> 80% of the original UV output measured under laboratory conditions



### Process Benefits

- No danger of fire caused by grease deposits – the process offers the best possible fire protection for kitchen exhaust systems
- Because smell is reduced, an air circulation system with heat recovery is possible
- No, or at least very few, recurring cleaning costs
- Reduction of residual grease
- No emission problems, so that official regulations can be complied with or achieved
- Better hygiene through germ reduction
- Significant reduction in down time of kitchens because of very fast servicing

The Heraeus Kitchen Control System retrofit set is designed and produced to suit specific projects. The correct installation and commissioning of the system is in accordance with the requirements of DIN 18869-7 Appendix A, "Operation of UV systems for Aerosol and Aerosolate treatment".

### Recommended areas of application

Heraeus Noblelight offers complete sets and solutions for easy installation. VUV is a retrofit sets for easy installation in new or existing fume removal hoods in canteens and commercial kitchens and can be used in different areas of application:

- Canteens and restaurant kitchens
- Front cooking stations
- Mobile event cooking
- Grill stations
- Fast Food restaurants
- Fish and meat processing
- Bakeries
- Coffee roasters

### Advantages of the Heraeus Kitchen Control System

- **Space-saving:** 1 lamp instead of the common UV lamp cassette with 4–6 low pressure lamps
- **Long service life:** up to 10,000 h minimizes the service intervals
- **Extremely effective:** even at ambient temperatures of up to 80°C
- **Simple handling:** just 1 power supply and 2 spring clamps per lamp are required
- **Easy installation:** lamp is installed direct in the hood, power supply and control units are mounted externally
- **Independent systems:** by suitable reserve of the release contacts within the control system, two separate installations can be operated independently of each other.
- **Cleaning:** lamp could easily wiped down with a damp cloth
- **Safety:** No plug connections in the exhaust stream, which could cause voltage flash-overs
- **Reduces fire risk of ducts**

### What is supplied

The Kitchen control system comprises the components necessary for safe and reliable operation:

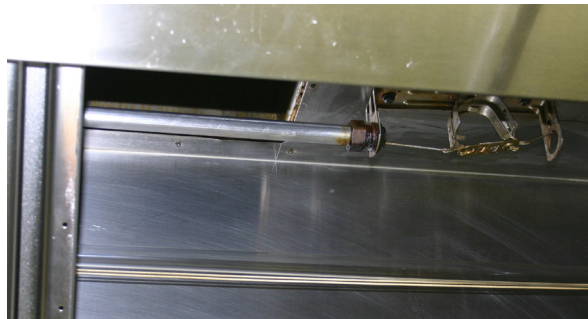
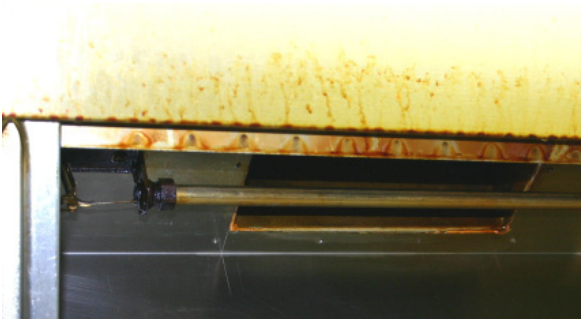
- VUV lamps for the specific application
- Stainless steel holders for fixing the emitters
- Air flow monitors and reed switches
- A sophisticated electronic control system, including a cabinet; IP 66-protected operating component



### Comparison: Kitchen Control System (KCS) and common lamp cassette

	Heraeus KCS 1.200	Common UV lamp cassette	Heraeus KCS 2.200	Common UV lamp cassette
<b>Flowrate</b>	1500 m <sup>3</sup> / h = 885 cfm	1500 m <sup>3</sup> / h = 885 cfm	2200 m <sup>3</sup> / h = 1300 cfm	2200 m <sup>3</sup> / h = 1300 cfm
<b>Number of lamps</b>	1	4	2	4
<b>Lamp length</b>	ca. 900 mm	ca. 900 mm	ca. 1550 mm	ca. 1600 mm
<b>Electrical power</b>	160 W	156 W (jeweils 39 W)	300 W	316 W (jeweils 79 W)
<b>VUV radiation generated</b>	14,4 W (9 %)	9,3 W (6 %)	27,0 W (9 %)	18,9 W (6 %)
<b>Service life</b>	10.000 h	5.000 h	10.000 h	5.000 h
<b>Ambient temperature</b>	20° – 80° C	20° – 45° C	20° – 80° C	20° – 45° C

Information supplied without guarantee

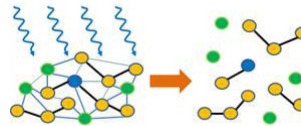


Kitchen hood exhaust air duct at Heraeus: before (left) and 3,000 h after (right) the installation of a Heraeus UV solution.

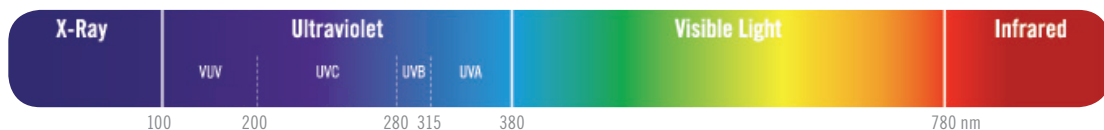
## Degration of odors, greases and VOCs

High-energy UV photons are able to disrupt problematic bonds by photocleavage and break them down into environmentally tolerable components. Vacuum UV radiation at a wavelength of 185 nm breaks down long-chain molecules by direct photolysis. This process can also be accelerated by the addition of oxidation agents such as ozone (O<sub>3</sub>) or hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>). Harmful materials in water and air are converted into harmless molecules.

This is the same process the nature uses to clean emissions from the atmosphere.



UV oxidation is used for example for breaking down fats and odours in kitchen extraction hoods, for the reduction of harmful materials in industrial waste air, for the cleaning of waste water and for surface cleaning.



## General and safety-related notes

UV lamps should be installed only by qualified specialist personnel. The number of UV lamps depends on exhaust air volumes, the type of cuisine (vegetable/animal, cooking/grilling) and the level of use of the kitchen (fat load/fat type). Canopies or grease filters fitted with UV lamps must be specially marked. Warning sign W 09 „Beware of optical rays“ in accordance with BGV A8 must be attached.

Please read our installation instructions! Standard DIN 18869-7, Annex A, regulates the operation of UV systems for aerosol and aerosolate treatment in kitchens and in the food-processing industry. Annex A 6.4 with notes about protection against UV radiation must be particularly heeded and observed.



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