



**DR. FISCHER**  
Group

Brochure

## UVC medium pressure disinfection system



a  
cooperation  
with

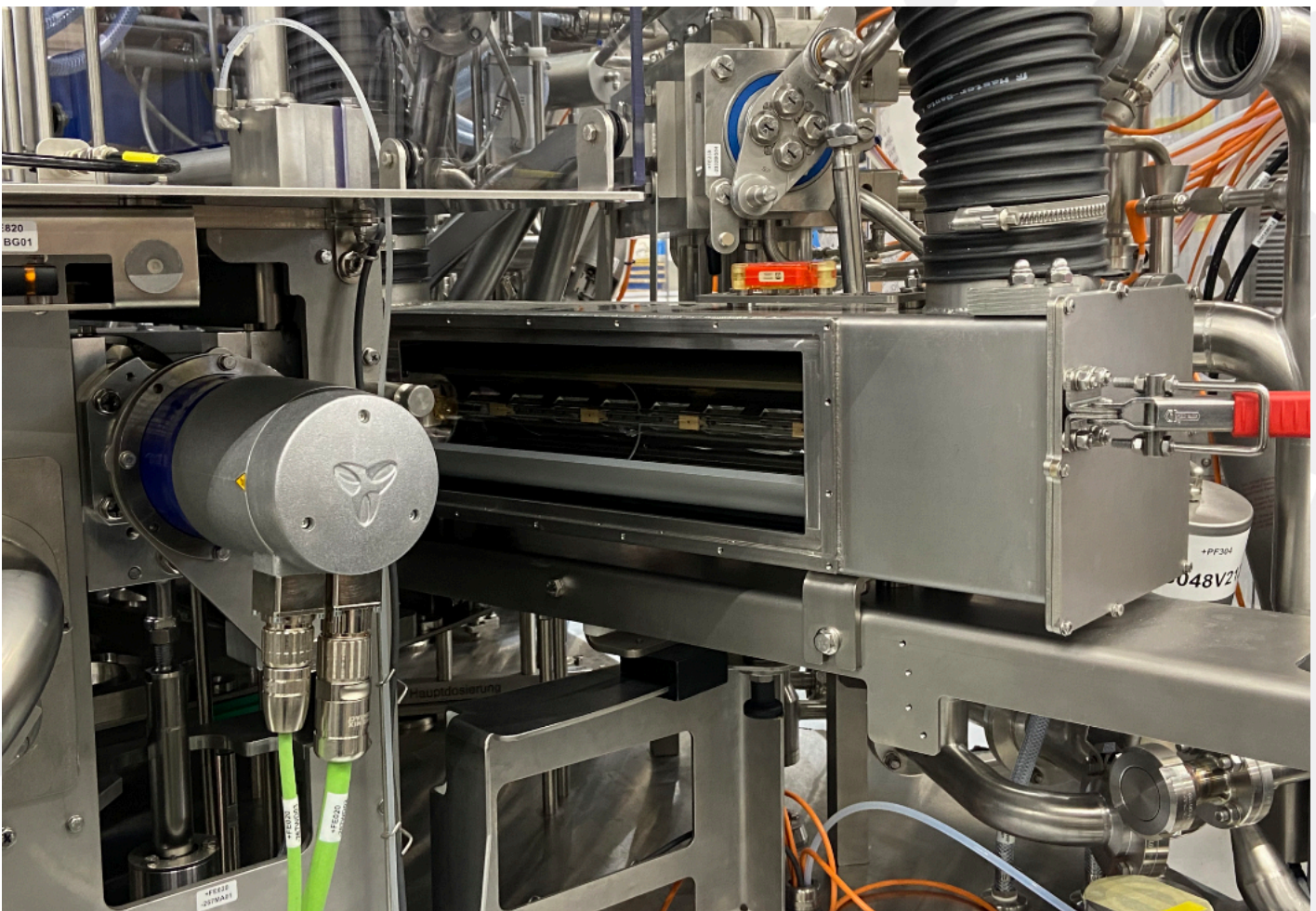
UV RAY





## Key-Facts - UVC medium pressure disinfection system

- Compact and cost efficient UVC system to disinfect the surfaces of packaging materials
- Very high disinfection rate for germs even with disinfection times of only 0,5-2 seconds
- Improved disinfection rates for packaging materials and improved lifetime stability of the UVC
- Higher disinfection dose and less heat due to dichroitic glass reflector
- Less heat load on shutter, since shutter and reflector are independent from each other
- Improved design of the hygienic housing with innovative sealing of the quartz glass window and a new long life breakage detector
- Reduced noise level due to high system efficiency and a dimmed fan
- Electronics and mechanics proven since decades in printing machines







# DR. FISCHER Group





## The DR. FISCHER Group - Competence, Innovation, Service

The DR. FISCHER Group is one of the international leading providers of lamps, luminaires and UV/IR systems. The various companies of the Group complement each other with their individual expertise and together form a competent, innovative and fair partner for customers worldwide. The group employs more than 330 people.

The DR. FISCHER Group started 20 years ago as the result of the merge of three family companies: DR. FISCHER Speziallampenfabrik GmbH, Kegler Lichttechnik GmbH and Kandem Leuchten GmbH. Each individual company, with their specific fields, is a perfect complement to the others. This makes it possible to fulfill customer's wishes and requirements precisely, fast and in a solution-oriented way. The greatest strengths of the group is in offering tailor made special applications and specific solutions.

The product portfolio includes signal lamps for streets, railways, air and waterways; special lamps for medicine and research; household lamps for ovens, cooker hoods and refrigerators; ultraviolet (UV) medium pressure lamps for printing, curing; infrared halogen lamps and complete system solutions for disinfection, heating and warming including LED based solutions.

More information:  
[www.dr-fischer-group.com](http://www.dr-fischer-group.com)

 **DR. FISCHER**  
Speziallampenfabrik GmbH

Ein Unternehmen der Dr. Fischer Gruppe

 **DR. FISCHER**  
Speziallampen Vertriebs GmbH

Ein Unternehmen der Dr. Fischer Gruppe

 **DR. FISCHER**  
Europe S.A.S.

A company of Dr. Fischer Group

 **DR. FISCHER**  
LED GmbH

Ein Unternehmen der Dr. Fischer Gruppe

 **KEGLER**  
Lichttechnik GmbH

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 **ALPIGNANO LAMPS** s.r.l.

 **KANDEM**



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*We are certified for quality and environmental management.*



*Pont-à-Mousson (France) is the headquarters of DR. FISCHER Europe S.A.S., the R&D and production center of infrared halogen, UV medium pressure and high-voltage lamps and complete system solutions including LED.*



*The headquarter of the complete DR. FISCHER Group is located in Diez, Germany. This is the main production center for Kandem Luminaires, LED Solutions and low-voltage lamps for general Lighting.*



*Alpignano lamps s.r.l., in Italy, produces special lamps for the domestic application.*



## The Pont-à-Mousson factory: Decades of experiences in development and production of UV and IR lamps, LED solutions and complete systems

The manufacturing of lamps started in 1886 in Pagny-sur-Moselle, France with Fabius Henrion launching the first production of incandescent lamps.

In 1981, Philips built a new factory in Pont-à-Mousson (10 km away) which became "Philips Eclairage" in 1985.

In 1989, the assembly of infrared halogen lamps began in Pont-à-Mousson in a new dedicated area. From this time, Philips Eclairage started developing innovative products like the internationally famous HeLeN range.

In 2010, the DR. FISCHER Group, took over the complete site of Philips Pont-à-Mousson. By this acquisition, the company strengthened its halogen production with high-speed machines. It now offers one of

the biggest infrared and UV portfolios with marketing/sales and distribution services. This means, that one of the worldwide biggest centers of competence and production for infrared and UV lamps and complete systems is located in France, between Metz and Nancy.

DR. FISCHER Group also integrated in Pont-à-Mousson all competencies necessary for the production of complete systems with an own metal-shop with modern, fully automated, Trumpf laser cutting, bending and painting machines – from research over development, quality and production to marketing and sales.

This unique synergy of the latest technology, experienced and motivated employees, tried and trusted procedures, flexibility and many years of experience in

creating specific solutions together with the customer make us the ideal partner in seeking future applications and solutions.

### More information:

[www.dr-fischer-group.com](http://www.dr-fischer-group.com)

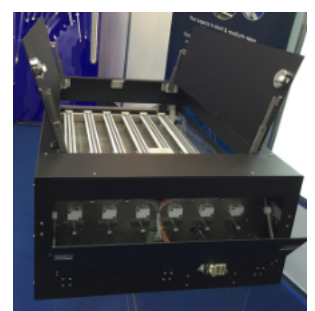
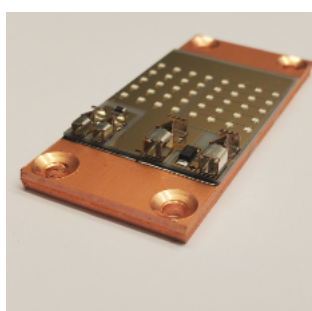
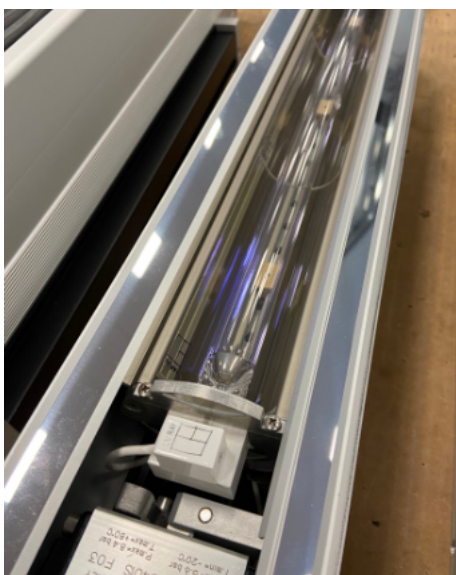


### Our values:

- Strong support of our customers with customized and innovative solutions and systems
- Providing high quality products

### Our commitment

- Supporting our customers with the best solutions
- Offering a reliable after-sales service







# UV Ray





## Over 20 years know-how in UV dryers for industry and printing

UV Ray is the major Italian manufacturer specialized in the production of highly efficient UV drying systems, characterized by low energy consumption and easy maintenance.

Efficient, long-lasting and above all, highly manageable, the UV Ray systems are the right answer for printing and industrial curing solutions for any sector, for every challenge.

Experience and knowledge allow solutions to be designed from the customer's point of view, in line with their priorities and ideas; technology and innovation create products and systems that are capable of anticipating and exceeding their expectations.

The high quality and versatility of their systems, enable them to work closely with industrial partners on an international scale, in order to meet specific needs and find individual solutions.



### Unique Systems

UV Ray creates unique UV polymerization systems. For over twenty years UV Ray has developed superior know-how, cultivating ideas, innovation and expertise. It has always applied an advanced way of thinking, oriented towards research and development, open to every application and solution.

### UV Ray creates unique UV polymerization systems

Today it is a leader in producing customised systems, thanks to its commitment and extensive experience, enabling the company to grow in an increasingly competitive and complex market.



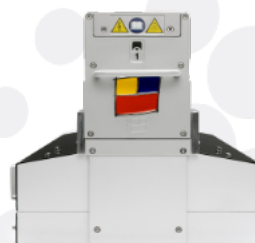
## UV Ray & DR. FISCHER Group

Since Dr. Fischer became lamp supplier for UV Ray, the cooperation has grown far beyond this. Today Dr. Fischer supports UV Ray worldwide in the sales of its printing and curing equipment in many countries like Germany, France, Austria and French and German spoken Swiss. Besides this,

both companies have developed together with their customers new solutions like the UVC system we present you here. Worldwide exclusively distributed by Dr. Fischer.

The electronics, cooling and mechanics of the system are proven over decades of years in printing machines.

**UV Ray and Dr. Fischer – a perfect cooperation for the UVC packaging disinfection**





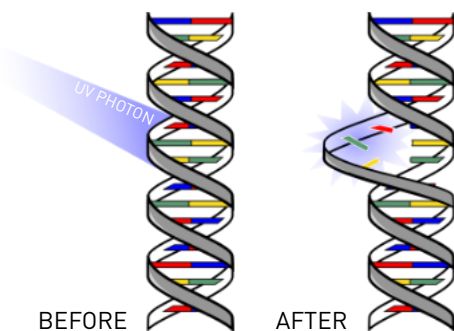
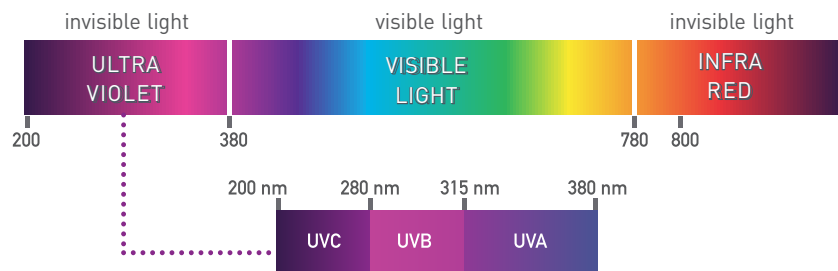


# UVC Disinfection

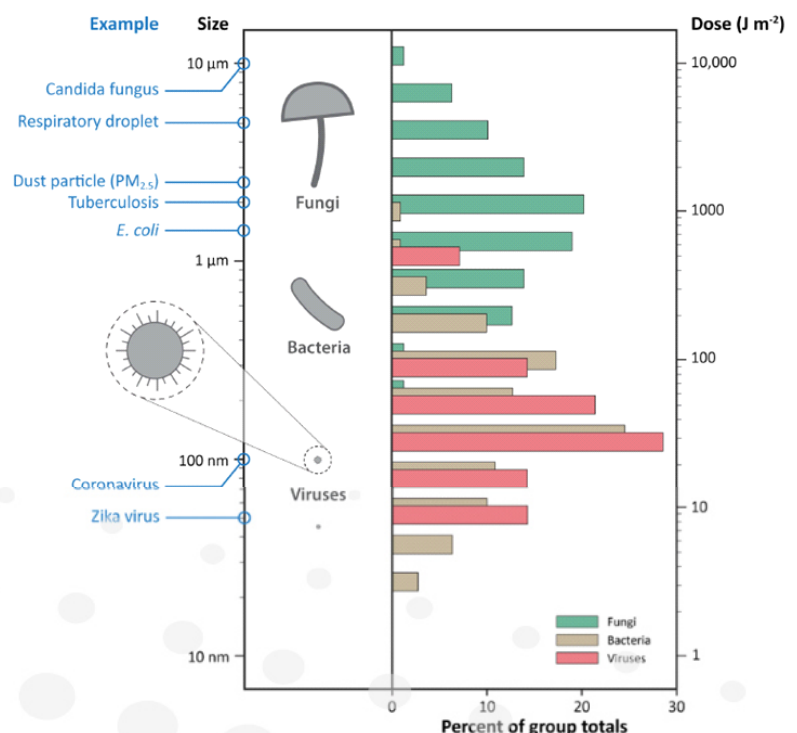


## DR. FISCHER UVC solutions

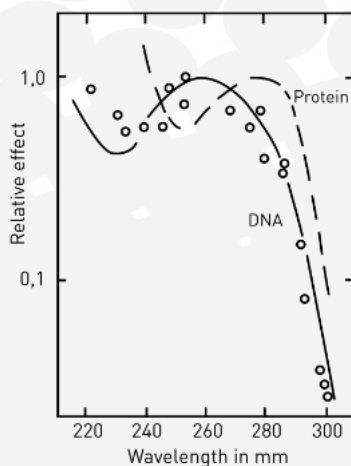
UVC disinfection with low and medium pressure mercury lamps is used since many decades to reduce successfully germs in air, water and on surfaces, destroying their DNA. Dr. Fischer has developed lamps and systems for all these applications since more than one decade. Room air disinfection units from Dr. Fischer can destroy the Corona virus up to 99,9% in one pass through for an air flow of 600 m<sup>3</sup>/h, certified by the microbiologic laboratory of the ISWA department of the University Stuttgart.



The new disinfection unit presented here has been tested in several microbiologic labs (including the Fraunhofer Institute IVV) for all kind of germs (aspergillus brasiliensis & carbonarius, bacterius atrophaeus) and packaging materials from PP, PET to paper and aluminum for different lid sizes and many different cups. Very high UVC doses (from 200 to 2.000 mJ/cm<sup>2</sup>) and Log reductions (from 2-5, depending on the configuration and the timing [0,2-2s]) were reached.



Dose for UV germicidal irradiation (at 254 nm) for various microorganisms (Lighting Answers: UV disinfection products)



UV absorption spectrum of the DNA and protein (according CIE 155:2003, picture 3)



UV medium pressure lamp





# The UVC System





## The UVC cassette



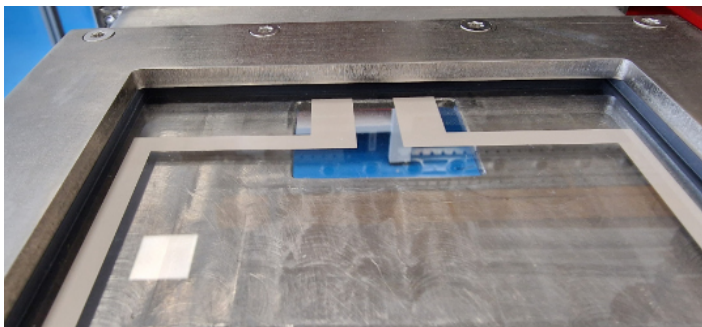
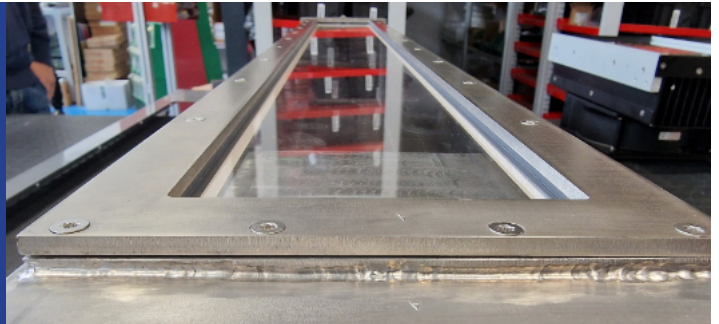
- Stainless steel food grade AISI 304
- Proven lamp head technology from UV printing systems
- Low ozone UV lamps from Dr. Fischer with a lifetime of 2.000 hours up to 160 W/cm and standard arc lengths of 380, 500, 600, 750, 900, 1.000, 1.100, 1.200 up to 1.450 mm available
- Almost any length on request
- Flexible cooling configurations for air inlet + outlet for linear and rotary packaging machines
- Optional different optics available
- To avoid overheating, lamp glass reflector and shutter of the UVC system are 2 separate independent parts
- Lifetime guarantee for glass reflectors of 4.000 hours or 12 months, whatever comes first, in practice up to several years
- Easy and fast lamp exchange for simple maintenance
- Integrated, pneumatic shutter, independent of the UV glass reflector to avoid heating up. Close and open in less than 0,5 seconds in case of machine stop
- Compact design allows the adaptation of the system to a big variety of designs for lid, cup and foil disinfection





## Quartz glass window with innovative sealing and breakage detector

Highly UV transmissive quartz glass window for highest UVC emission



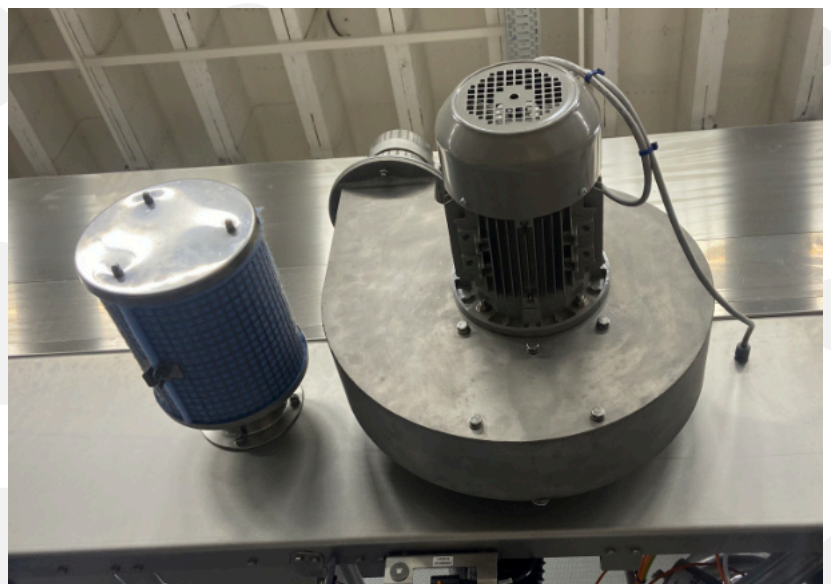
Electrical conductive, high temperature and long life breakage detector

Injection molded sealing rings for a perfect IP67 sealing, tight even against aggressive cleaning agents with lowest surface tension, being used in dairy milk production



## The fans

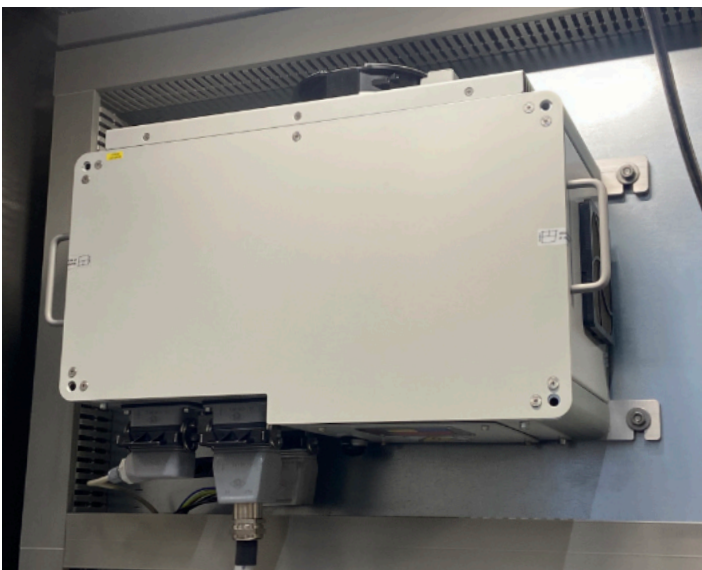
- UVC systems come with 2 different fans (0,75/1,5 kW) for 10/20 kW ballast
- All fans are food grade, stainless steel
- Fans are driven by lamp ballast (see next page)
- If needed, one ballast can drive 2 fans in case of difficult cooling configurations





## The ballasts

- Available up to 10 and 20 kW in CE and UL execution
- All in one design – including ignition and lamp driver, frequency converter/driver for the fan, safety switch, own (integrated) air cooling, controller for the complete UVC system including shutters and breakage detector, adaptable through a programmable master card to almost every control system like profinet, profibus,...
- For UV Boosts the UVC unit can be dimmed in milliseconds with the electronic ballast, stepless from 30-100%
- Automated standby mode at 30% in case of shutter closure
- Same ballast also drives and dims the air fan up and down related to the power densities and the temperature inside the UVC cassette to keep noise and energy consumption as low as possible
- Modular design of the ballast for an environmental friendly repair and maintenance with a remote controllable failure analysis
- As an option the ballasts can be equipped with an UPS for a safe shut down of the ballast in case of an emergency stop or an electrical interruption of the mains supply



Ballast 10 kW



Ballast 20 kW



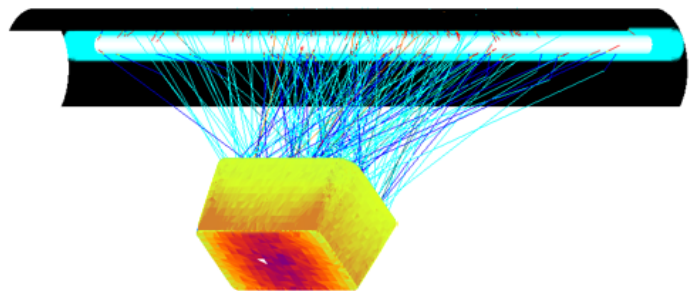
## The manual control panel

- Can be directly connected to the ballast to control the UVC unit manually and reads out all service parameters
- HMI connects via internet for remote support
- With this HMI all parameters of the UVC unit can be controlled as well as various parameters can be checked for service or remote operation/control



## Made for the disinfection of cups, lids and foils

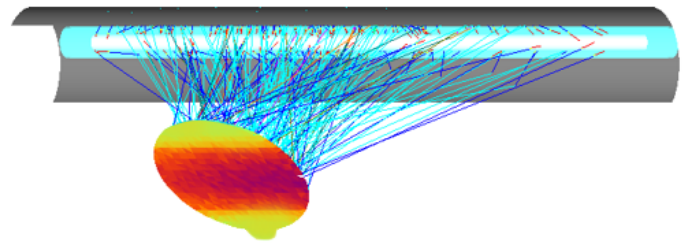
Raytracing of a typical curd cheese cup (220 ml, 100 x 70 x 50 mm<sup>3</sup>) in a distance of 20 mm from the quartz glass window of our UVC unit shows an excellent disinfection on bottom and walls of the cup:



Many different cups from 70, 150 up to 500 ml were disinfected in a distance of 20 mm of the UVC unit with different power levels and disinfection times, sprayed before with *aspergillus brasiliensis* and *bacterius atrophaeus*. Log reductions of 2 to 5 were achieved, depending on cup shape, timing and power level of the UVC unit.

## Perfect disinfection of lids

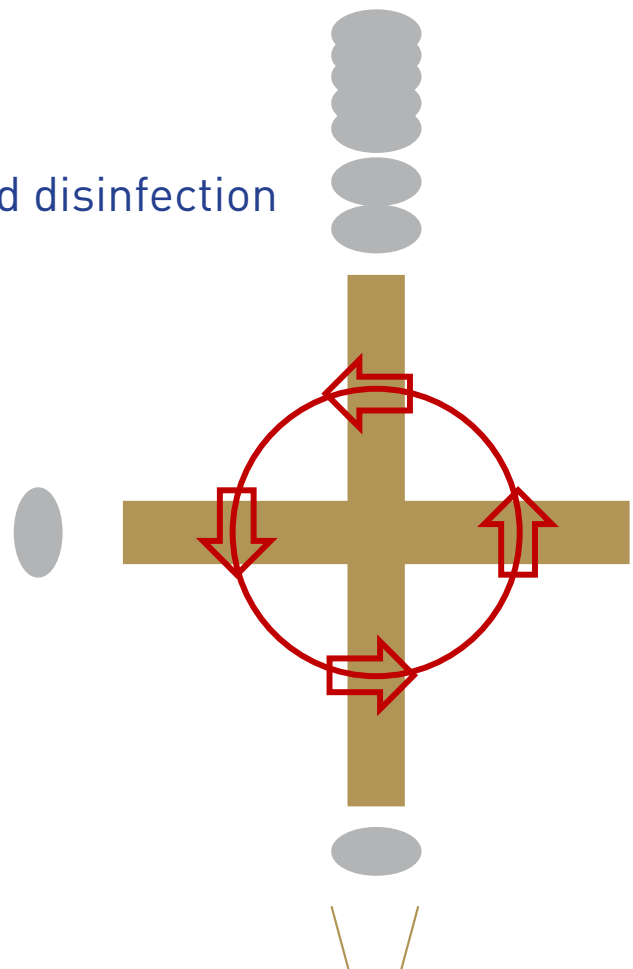
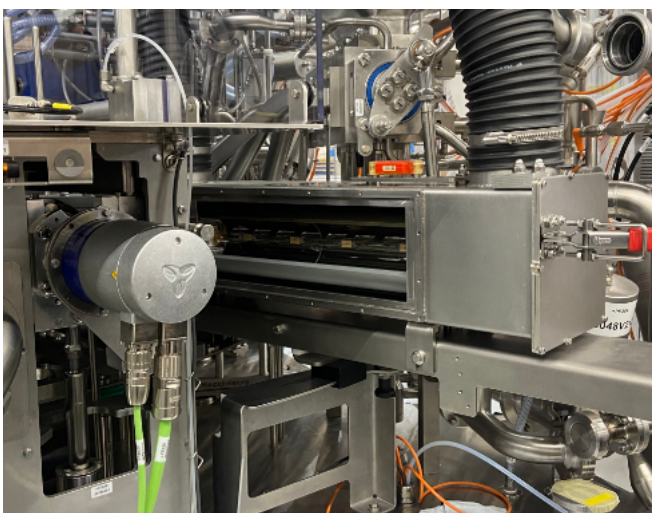
Raytracing for our UVC unit with exact lamp position and reflector shape in a distance of 40 mm from the quartz glass window for a typical lid with a diameter of 95 mm shows a perfect coverage of the lid:



Lids from sizes of a diameter of 95, 117 up to 130 mm and in materials of aluminum, PP, PET plus fibre composites were successfully disinfected and tested in microbiological labs with *aspergillus brasiliensis* or *carbonarius* and *bacterius atrophaeus*. The platines were treated in a distance of 40-80 mm from the UV unit between 800 and 1.800 ms, reaching Log reductions from 2,8 to >5, depending on the germ, timing and method.

## Made for fully automated yoghurt lid disinfection

The lids are moved within a few hundred milliseconds and stop after this for 800-2000 ms depending on the lid and cup sizes.





## DR. FISCHER & You: an efficient partnership for improving your performance

We, DR. FISCHER, are more than a supplier of high-quality UV or IR lamps, UV+IR and LED systems. We commit to offer you a world class service in every aspect of our business. One of our key advantages is our innovative Research & Development Department. We develop lamps, measure and more than ever we improve existing systems and very often offer our demanding customers complete brand new solutions. DR. FISCHER can become your closest partner for your Ultraviolet or Infrared applications.

At DR. FISCHER we are experts in improvements of current systems and we show customers 3D simulations of systems which can easily ("Plug&Play") be installed into their machines for increasing their performance.

In fact, on request, we can evaluate the performance of our customer's systems.

- Based on the needs of our customers, we are able to provide advice on specific matters, such as a reflector

geometry optimization. The accuracy of the results is given by the use of specific measurement control systems.

- Measurements are conducted in a dark room to eliminate any disturbances. Lamp voltage, fluxmeter and temperature are under constant control during measurements.

We at DR. FISCHER know, that reducing time to market in the development of new systems is essential. The specific PH3D optical modeling software, based on an efficient 3D ray tracing method or thermal simulations, are used to optimize our customer's high performance UV/IR systems and solutions.

Using these tools, our modeling support activities can address two main topics:

- Improvement or upgrading of existing reflectors or systems
- System configuration issues, such as lamp specifications and arrangement, installed power, sizing, thermal simulations...

Our DR. FISCHER modeling support

allows our customers to predict system irradiance by simulation without the need for any tooling or prototyping. This enables predictive, quantitative results to be achieved at reasonable cost. The validity of modeling outputs is assured by regular calibration. Our R&D team always provides accurate quotations for each project you have.

Customers working with us will decrease their time-to-market and increase their system's efficiency and lifetime.

**For more information about our systems and technical support, please contact us!**

[info.europe@dr-fischer-group.com](mailto:info.europe@dr-fischer-group.com)

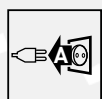


*"Innovation drives our future"*

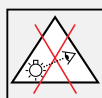
## Pictograms description



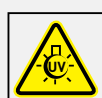
Preferably do not touch quartz with bare hands. If grease or chemical compound has been deposited on quartz, simply clean with an alcohol-soaked tissue before lighting.



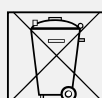
Disconnect installation from power supply before removing or installing a lamp.



Prolonged looking at the lamp during operation may result in damage to the eye.



Exposure to UV+IR can result in severe damage to the skin.



Mercury contents: recycling is needed

## Important Informations to follow

### WARNING

**Risk of electrical shock:** Turn off power before inspection, installation or removal. Use only in machines equipped with a safety cutoff switch.

**Risk of fire:** use only with control gear and luminaire designed for this product. Risk of UV/optical/IR radiation which may cause eye/skin injury (IEC 62471 Risk group 3). If glass bulb is broken turn power off and remove lamp. Use appropriate shielding or eye protection. Do not look at operating lamp or LEDs. Use only in an enclosed housing able to contain hot lamp parts, even during testing. High ozone-concentrations are harmful to humans and animals. Assure good air quality and suck out the air coming from the UVC disinfection system to the outside of the production hall.

### CAUTION

**Risk of burn:** Allow lamp to cool down before handling. Do not use lamp if glass bulb is scratched or broken. Wear gloves when handling broken lamps. Replace lamp quickly at end of life (marked change in color, flickering, failure to start). Do not handle the bulb with bare hands, otherwise clean with special tissue. Avoid skin contact with broken lamp parts.

### INFORMATION

Dispose of used lamps according to local regulations. DR. FISCHER can handle the recycling of lamps you send back. The manufacturer accepts no liability for injury or damage resulting from incorrect use. Keep for future reference.

