



DR. FISCHER
Europe s.A.S.

A company of DR. FISCHER Group



Advanced UVC Disinfection Solutions

***UVC Medium Pressure, Low Pressure & Amalgam
by DR.FISCHER***



Discover DR. FISCHER's UVC solutions for air, surface and water treatment.
A comprehensive guide to Medium Pressure, Low Pressure & Amalgam
applications.

 www.dr-fischer-europe.com

DR.FISCHER UVC SOLUTIONS



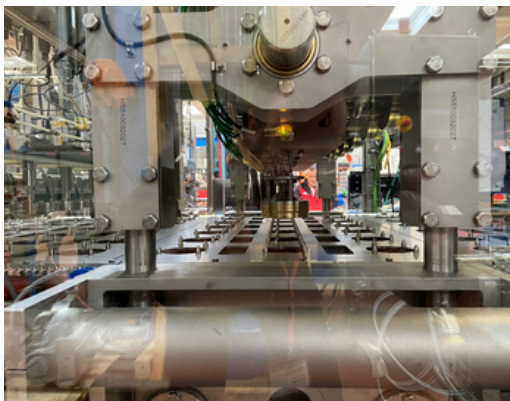
Empowering Safer Packaging Through Precision UVC Technology

In modern food, beverage, and pharmaceutical manufacturing, product safety and shelf-life extension are critical.

Traditional chemical disinfection methods can leave residues, slow down production speeds, and increase operational costs.

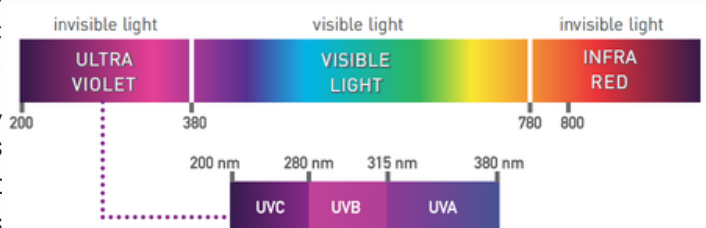
At **DR. FISCHER**, we deliver high-performance, chemical-free UVC disinfection solutions engineered for seamless integration into high-speed packaging lines.

Combining decades of lighting expertise with custom engineering made in Europe, our Low and Medium Pressure UVC systems guarantee maximum microbial reduction with zero compromises on efficiency.



Understanding the Power of UVC Light

Ultraviolet light is part of the electromagnetic spectrum, divided into UVA, UVB, and UVC bands. The UVC range (200nm to 280nm) possesses powerful germicidal properties, peaking near 254nm. When micro-organisms are exposed to UVC radiation, the light penetrates their cellular walls and disrupts their DNA and RNA structures.

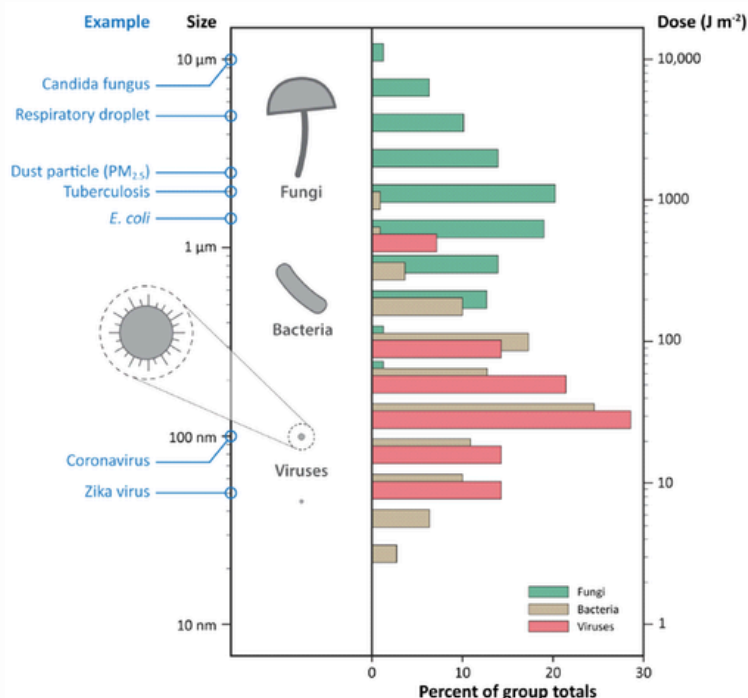
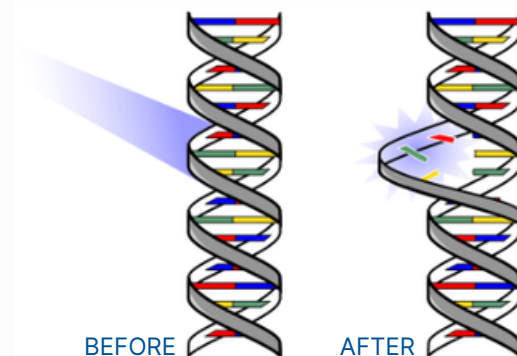




The Science Behind UVC Disinfection

UVC disinfection with **Medium Pressure Mercury, Low Pressure and Amalgam 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 m³/h, certified by the microbiologic laboratory of the ISWA department of the University Stuttgart.



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

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/cm²) and **Log reductions** (from 2-5, depending on the configuration and the timing (0,2-2s)) were reached.

DR. FISCHER Advanced UVC Lamp Solutions

To meet the rigorous hygienic demands of modern high-speed packaging and surface disinfection,

DR. FISCHER manufactures a versatile portfolio of state-of-the-art UVC lamps tailored to your operational needs. For ultra-fast, high-throughput production lines, **DR. FISCHER Medium Pressure Technology** delivers intense, broad-spectrum UV output that ensures rapid microbial inactivation in fractions of a second. For continuous, highly energy-efficient processes, **DR. FISCHER Low Pressure & Amalgam Technologies** provide precise germicidal monochromatic emission at 254 nm combined with extended operational lifetime.



UV Medium Pressure Lamp



UV Low Pressure & Amalgam Lamp **2**

COMPARISON BETWEEN UVC TECHNOLOGIES

	Medium Pressure UV (MP)	Low Pressure (LP) Amalgam lamps
		
 BEST FIT	High line speeds , very short exposure times, compact UV stations	Moderate line speeds , energy sensitive applications, straightforward 254 nm disinfection
 UV SPECTRUM	Broad spectrum 200–400nm Potential additional photochemical effects	Narrow spectrum ~ 254nm Close to the peak of microbial DNA absorption
 UV INTENSITY PER LAMP	Very high	Low to moderate
 EXPOSURE TIME	Very short Ideal for exposure times of 0.2 to 2 sec	Longer Requires more lamps or greater distance
 SYSTEM FOOTPRINT	Compact Smaller equipment	Larger More space required
 ENERGY CONSUMPTION (for an equivalent germicidal dose)	Higher Higher intensity, but smaller system	Lower High energy efficiency
 NUMBER OF LAMPS	Fewer	More
 HEAT LOAD	Higher Thermal management may be required	Lower
 LAMP LIFETIME	Shorter Typically 1 000 to 3 000 h	Longer Typically 8 000 to 12 000 h
 TYPICAL PACKAGING APPLICATIONS	Cups and lids, closures, films and other packaging moving at high speed	Surfaces with sufficient exposure time, simpler geometries

TAILORED UVC SOLUTIONS ACROSS INDUSTRIES

Tailored UVC solutions engineered to **meet strict hygiene standards** across all industrial processes. From **water treatment** and high-speed **packaging decontamination** to **air purification** in cleanrooms and pharma laboratories, our chemical-free technology guarantees continuous microbial control.

WATER TREATMENT



- Drinking water
- Pharmaceutical Water



- Pools and spas (hotels, wellness center, home...)



- Process Water
- Industrial Water
- Wastewater



- Food & Beverage
- Food Processing Industry

SURFACE TREATMENT



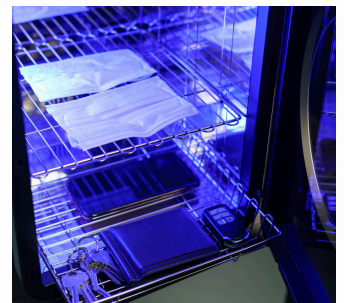
- Packaging
- Packaging Films



- Food Products
- Dairy Products



- Plastic bottle beverages



- Medical Devices
- Industrial Components

AIR TREATMENT



- HVAC Systems
- Odor Elimination
- Cleanrooms



- Food Storage



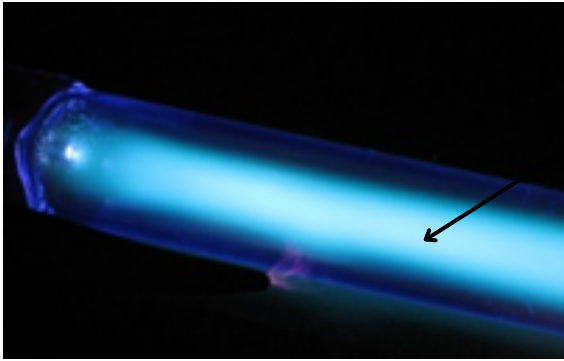
- Food processing areas



- Pharma & Biotech Laboratories



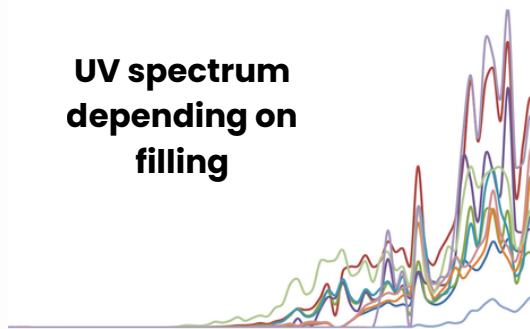
UVC MEDIUM PRESSURE TECHNOLOGY



Electric discharge

Triggered by a high potential difference generated by **the ballast** that ignites the plasma inside the lamp (Noble gas (Argon – Krypton) + other substances (Mercury vapor – Salts))

UV spectrum
depending on
filling

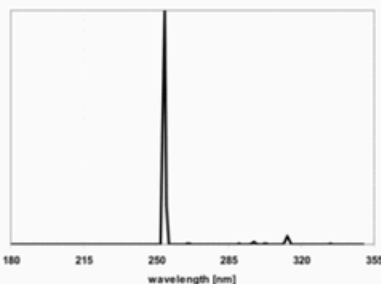


The ballast triggers the
lamp ignition and
manages the current and
voltage to produce the
required power level

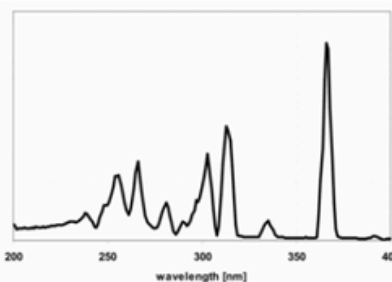


We produce high performance medium pressure lamps that reach **300 W/cm²** with up to **2500 mm** arc lengths

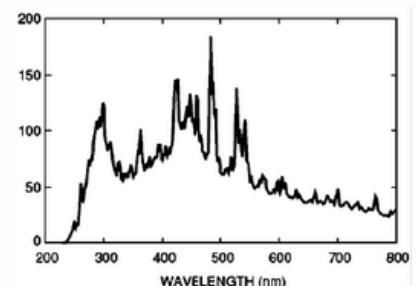
SPECTRUM COMPARISON AND IMPACT ON MICROORGANISMS CELLS



Low Pressure UV Mercury & Amalgam Lamp
254 nm peak



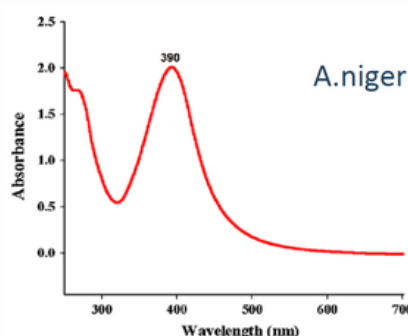
Medium Pressure UV Mercury Lamp
250 to 400 nm, peaks at 254, 356, 365nm



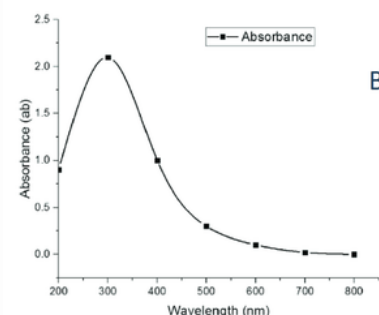
Pulsed light xenon lamp
Wide spectrum: 200nm to 1100nm

LIGHT IMPACT ON MICROORGANISMS AND TECHNOLOGY EFFICIENCY BY MICROBIAL CONTAMINATION

DNA and proteins of microorganisms absorb the light at specific wavelengths. This absorption conduces to **INACTIVATION** (no replication) or **DESTRUCTION** of the cells.

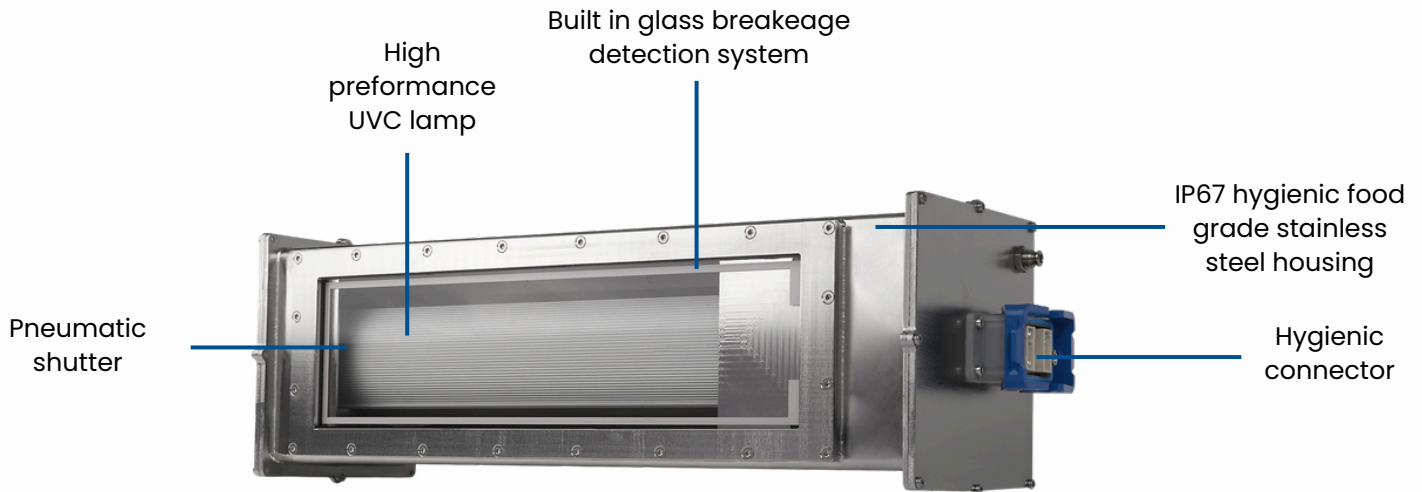


A. niger

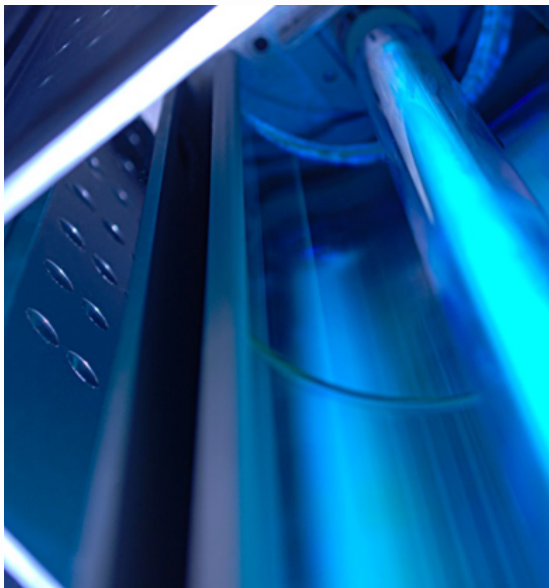


B. subtilis

OUR MEDIUM PRESSURE UVC SOLUTION

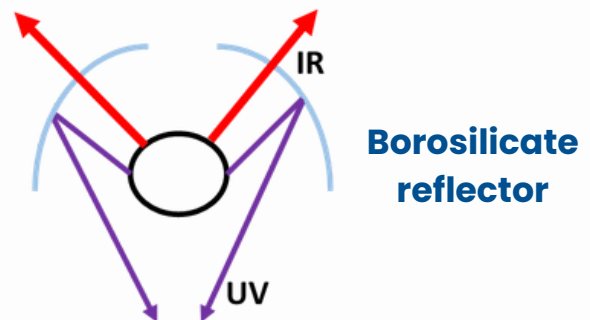


DR.FISCHER HIGH PERFORMANCE REFLECTOR



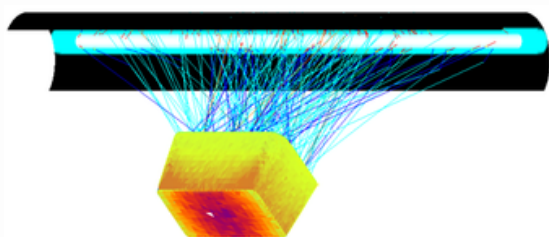
The borosilicate multi-coated reflector with multilayer deposition **reflects UV rays** while transmitting the IR rays, and therefore **reducing the heat**

The high performance reflector ensures **great savings** in terms of the cooling of the lamp, and therefore **optimizing the overall efficiency** of the system: electrical consumption, reliability and running costs



Borosilicate reflector

CUSTOM MADE REFLECTOR DESIGN



We offer custom reflector design to maximize efficiency and suit the customer application. We have two main reflector models:

- **UV Max**

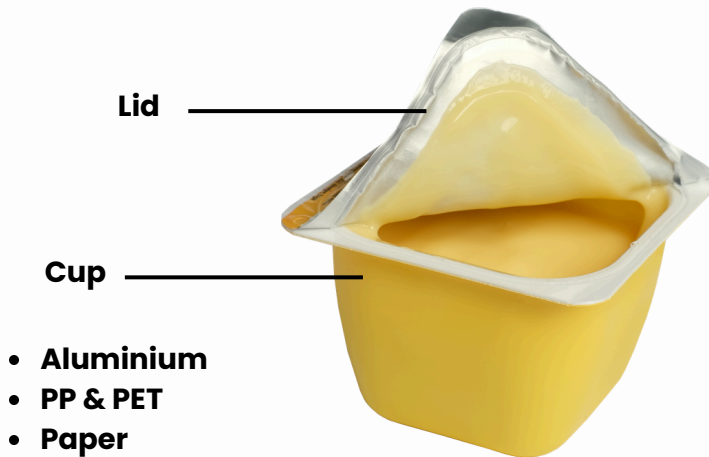
Used for standard/compact applications with **power up to 160W/cm**

- **UV Max Wide**

Used for wide and **high power applications up to 200W/cm**

MICROBIOLOGICAL PERFORMANCE

Laboratory Certification & Test Results



Microbiological qualification for guaranteed results



Aspergillus brasiliensis

Packaging	Log Reduction
Alu lid	> 4.5
Plastic/ paper lid	> 3
Plastic cup	> 2.5

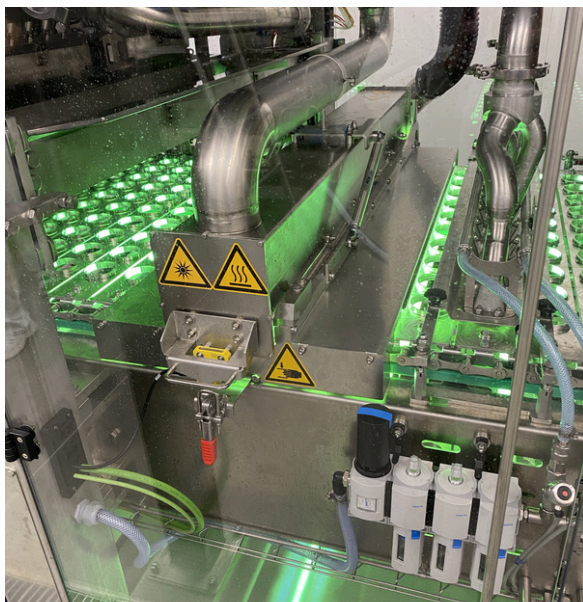


Bacillus atrophaeus

Packaging	Log Reduction
Alu lid	> 5
Plastic/ paper lid	> 4.5
Plastic cup	> 4

*The results above were performed in a certified microbiological laboratory with the **MP500 DR FISCHER UVC lamp**, average power of 100W/cm and exposure time of 900ms*

A Chemical-Free Alternative for High-Speed Lines

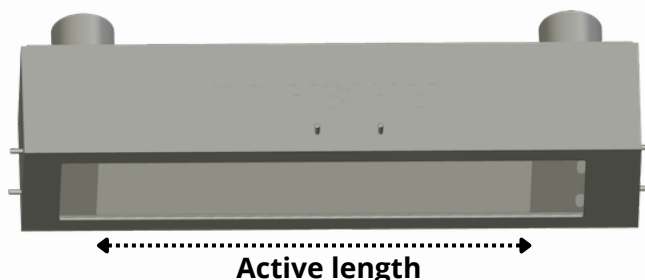
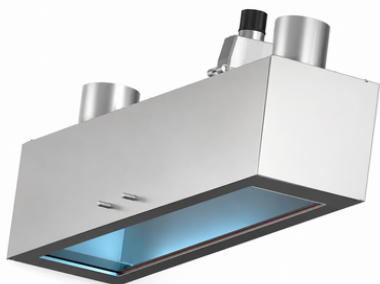


This technology provides a **compact, cost-effective, and highly efficient alternative** to conventional chemical disinfection methods.

Requiring no chemical consumables, it **reduces operating costs, simplifies maintenance**, and **eliminates chemical residues** while delivering rapid, high-intensity microbial inactivation.

This makes it particularly well suited for packaging applications such as lid disinfection, where our UV systems can achieve **greater than 4.5-log reduction of *Aspergillus brasiliensis***, helping manufacturers meet stringent hygiene requirements while maintaining high production speeds.

THE MEDIUM PRESSURE PRODUCT RANGE & ACCESSORIES



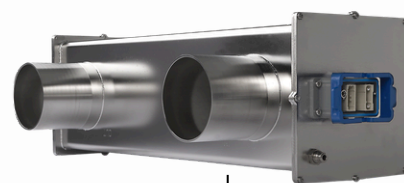
Reflector model	Max. Power	Maximum area width	Active length/ Window opening (mm)					
UV Max	160 W/cm	100mm	250	300	350	380	450	500
UV Max Wide	200 W/cm	300mm	250	300	350	380	450	500
			550	600	650	750	900	1000
			1100	1200	1500			



Stainless steel electrical cabinet with custom integration



Air cooling system with automatic speed regulation depending on temperature and power



Custom made system fixation depending on customer specifications



In-house manufacturing at our French factory in Pont-à-Mousson



UVC LOW PRESSURE & AMALGAM TECHNOLOGY



Low pressure discharge is generated at a optimized vapor pressure, producing an intense monochromatic UV emission. The lamp plasma consists of noble gas combined with high-purity mercury vapor.

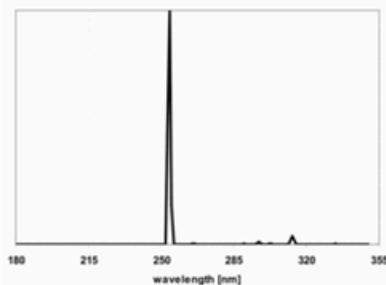
High-performance **Low Pressure & Amalgam UVC Lamps** deliver maximum power efficiency and long operational lifetime for continuous disinfection processes.

Along with our UVC lamps, we supply a **custom-designed stainless steel electric cabinet** equipped with high-performance ballasts and control electronics.

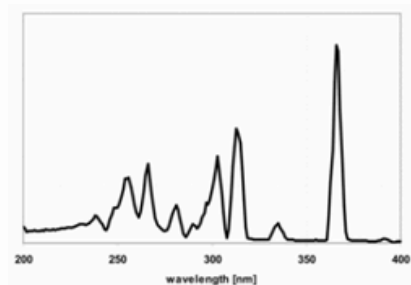
Using the right ballast is crucial for **UV low pressure mercury lamps**. It regulates the current, guarantees stable operation, and prevents power fluctuations that could damage the lamp.



SPECTRUM COMPARISON AND IMPACT ON MICROORGANISMS CELLS



Low Pressure UV Mercury & Amalgam Lamp
254 nm peak

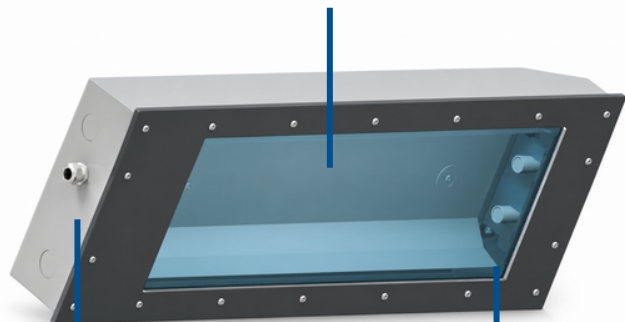


Medium Pressure UV Mercury Lamp
250 to 400 nm, peaks at 254, 356, 365nm

- **Targeted Emission:** Monochromatic 254nm peak for maximum bacterial and viral inactivation.
- **Thermal Protection:** Lower operating temperatures preserve heat-sensitive packaging films.
- **Efficiency & Lifespan:** Superior energy conversion with significantly extended lamp lifetime.

OUR LOW PRESSURE & AMALGAM UVC SOLUTION

Low pressure or Amalgam UV lamp
12 000 operating hours



Stainless-steel IP55
or IP67 design

Quartz glass plate with
breakage detection
option

Compact design

**Low energy consumption and
low maintenance system**

**Low capex and simple
installation**

**Included stainless-steel
cabinet and air cooling
system**

THE PRODUCT RANGE & ACCESSORIES

	DRF-LP36	DRF-LP61	DRF-LP86	DRF-LP131
Radiation area (window size mm)	367 × 111	617 × 111	867 × 111	1315 × 111
UVC Irradiation (mW/cm ²)	67	67	67	67

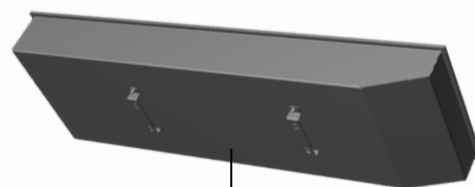
Custom made design is available on demand



Stainless steel electrical
cabinet with custom
integration



Air cooling system with
automatic speed régulation
depending on temperature and
power



Compact Design for flexible
installation



**In-house manufacturing at our
French factory in Pont-à-Mousson**



IMPROVE EFFICIENCY WITHOUT CHEMICALS

UVC SYSTEMS : THE CHEMICAL-FREE SOLUTION

Traditional chemical processes (such as peracetic acid, hydrogen peroxide, or chlorine compounds) present inherent risks of residual contamination, water waste, and organoleptic alteration.

DR. FISCHER UVC solutions offer a clean, eco-friendly alternative that inactivates microorganisms instantly **without chemical agents**. By operating as a completely **dry physical process with no drying time required**, our technology accelerates line throughput to save you valuable time and operational costs, while preserving **product quality** and drastically reducing your plant's environmental footprint.

THE SUSTAINABLE & CHEMICAL-FREE ALTERNATIVE

0 seconds drying time required

- **No Contact Time Required:**

Inactivation occurs at the speed of light during line conveyance, eliminating drying or draining stages.



0% Chemical Residues

- **Zero Disinfection By-Products (DBPs):**

UVC light leaves no toxic chemical traces, chloramines, or oxidation byproducts on containers or product-contact surfaces.



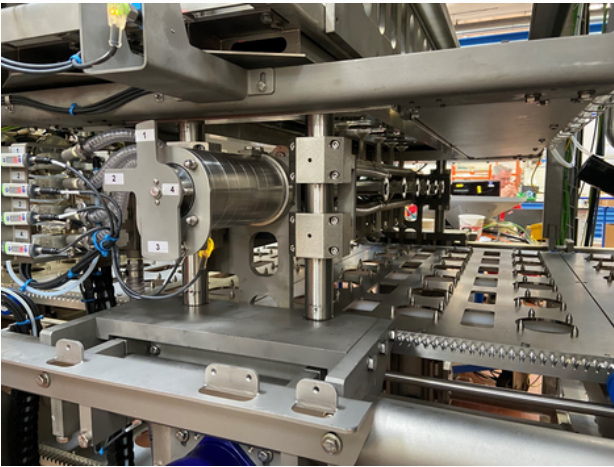
100 % Water free process

- **Sustainable & Water-Free:**

Eliminates chemical rinsing and drying stages, drastically reducing plant water consumption and avoiding hazardous liquid effluent treatment.



COMMIT TO SUSTAINABLE MANUFACTURING



Beyond chemical-free technology, **DR. FISCHER** is committed to supporting our industrial customers in achieving their **ESG (Environmental, Social, and Governance)** targets.

From European eco-designed manufacturing to energy-efficient system integration, our solutions **help lower your global carbon footprint and advance your sustainability goals** while ensuring the highest standards of operational safety.

Energy & Carbon Reduction	Operational Safety & EHS	Eco-Designed in Europe
High-output UVC lamps combined with optimized reflector geometry minimize energy consumption, supporting your decarbonization goals.	Eliminating chemical agents removes hazardous storage, handling, and off-gassing, creating a safer work environment for your operators.	Engineered and manufactured in France using durable, recyclable materials to ensure long product lifespans and reduced industrial waste.

CERTIFIED QUALITY & ENVIRONMENTAL STANDARDS



MAKING THE SWITCH TO UVC

ESSENTIAL TECHNICAL POINTS

Lamps contain mercury: is this dangerous for our products or operators?

Mercury is *hermetically sealed* within the quartz glass sleeve. For sensitive industrial environments, lamps are coated with a shatterproof *protective sleeve* (fluoropolymer) to retain glass debris and mercury in the event of accidental breakage.

Will UVC system integration require too much footprint?

UVC equipment *easily adapts* to spatial constraints thanks to compact enclosures or extra-flat modular ramps. They integrate directly *above or around existing conveyor* lines without altering your floor footprint.

How is UVC disinfection more eco-friendly than traditional methods?

It is a *100% physical process* that uses no chemical agents and leaves *zero toxic residues*. By eliminating rinsing stages, it drastically cuts water consumption and avoids hazardous liquid effluent discharges into the environment.

Do UVC systems maintain higher production speeds than traditional methods?

Yes. UVC disinfection occurs in real-time and on-the-fly as products pass through, requiring only *few seconds* of exposure. Unlike chemical processes, this dry physical method *eliminates drying and draining steps*, avoiding line downtime and maintaining maximum production throughput.

Which industries benefit most from UVC disinfection?

UVC technology is ideal for regulated sectors requiring *strict microbial control*. It is widely used in *food & beverage packaging* (containers, caps, films), *pharmaceutical aseptic decontamination via UV-activated peroxide*, and *industrial water treatment* to secure processes and ensure compliance.

How to select the right UVC technology for your target microorganisms?

Different *pathogens, bacteria, viruses, or mold spores* require specific UVC doses to achieve complete inactivation.

Explore our selection guide



SELECTION GUIDE BY MICROORGANISM

Products and Surfaces	Microorganism	Medium-pressure UV	Low-pressure & Amalgam UV
Products: Raw meat, eggs, fresh produce Surfaces: Cutting boards, skin, kitchen counters	Vegetative bacteria	 Very effective, often faster	 Very effective
Products: Dairy (yogurt, cheese), fermented meats/veggies Surfaces: Dairy processing equipment, intestines	Lactic acid bacteria	 Effective	 Effective
Products: Fruit skin, bakery dough, fruit juices, beer/wine Surfaces: Winery/brewery equipment, agricultural soil	Yeasts	 Effective	 Effective
Products: Bread, cheese, stored grains, nuts, berries Surfaces: Damp walls, HVAC ducts, packaging material	Molds	 Effective	 Effective
Products: Dry foods (rice, spices, flour), canned goods, honey Surfaces: Dust, agricultural soil, canning equipment	Bacterial spores (Bacillus cereus, Geobacillus stearothermophilus, Clostridium spp.)	 Better than Low Pressure, but still challenging	 Limited effectiveness
Products: Drinking water, shellfish, fresh produce Surfaces: High-touch areas (door handles, screens), medical tools	Viruses	 Effective	 Effective

DR.FISCHER Expertise

Whether you need to integrate UVC disinfection into a new high-speed line or retrofit existing equipment, our engineering team is here to support you.

From custom reflector design to certified microbiological performance, DR. FISCHER delivers high-efficiency UVC solutions engineered for your exact operational requirements.

All systems are **ISO 9001 & 14001** certified, ensuring rigorous quality control and environmental performance.



Contact us today to discuss your specifications and discover how our chemical-free systems can optimize your process.

Contact us



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