

FLYER

UV IMMERSION LAMP

FOR INDUSTRIAL PHOTOCHEMISTRY

- PILOT SCALE
- PRODUCTION SCALE

MADE IN INDIA



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We thanks our partner for provided pictures and kind cooperation.

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Light Not Heat or how well-thought-out system can be used for photochemistry in R&D and Production



Application Examples: Customised Lab Scale and Pilot Scale Loop Photoreactor System

In synthesis, photochemistry is the method of choice. UV light can vastly speed up many chemical syntheses - or make them possible in the first place. Unlike with thermal excitation, light-induced reactions frequently take place at room temperature and are therefore less destructive. Sensitive molecules remain intact and there are fewer by-products.

Our product and competence in the domain of preparative photochemistry and photochemical environmental techniques.

We sell UV-radiation sources and standard photochemical reactors for immediate use to perform a great variety of preparative tasks at laboratory and pilot levels. UV-radiation sources and corresponding reactors may be adapted and optimized for specific procedures. ATEX/ IECEx certification of radiation for electrical powers of 2.5 to 40 kW are available on request.

In many countries there are already regulations governing the testing for photochemically induced degradation of pharmaceuticals and cosmetics. Akown delivers appropriate photoreactors. For units of production, we sell entire systems of irradiation, where parts may be taken from standard programs comprising a variety of dimensions and types of radiation sources. We neither construct nor sell photochemical reactors for production units as this task remaining entirely within the domain of competence and responsibility of the user. However, in cooperation with our partner uv-technik Speziallampen GmbH, we offer consulting services based on scientific and technical expertise.

Furthermore, we offer the possibility to analyse the reactor geometry of planned or existing production scale photoreactors utilizing professional flow-simulation along with physical radiation data to optimise photo-chemical processes.

(UVPI) Pilot Scale UV Immersion Lamp [Usually up to 2.5 kW]

Pilot reactors represent important intermediate steps in the upscaling of all laboratory reactors to an optimized and well operating production system. They may also be used for the production of limited amounts of chemical compounds. The UVPI immersion lamp series has been developed especially to be retrofitted onto existing vessels already available in the R&D lab. Furthermore, optional universal reactors, skid mounted on a mobile rack, are available.

Applications:

- Technical process development
- Production of smaller amounts of chemical compounds (kg d-1)

Specification:

01	UV lamp Type	Medium Pressure Mercury Vapour Lamp
02	Power	1.2-5 kW
03	Max Arc Length	500 mm
04	Mounting Flange	DN 100/120/150 (Schott), NW 100, NW 150, ASME B 16.5 NB 100/150
05	Cladding Tube 1 MOC	Quartz (UV grade, with special composition)
06	Cladding Tube 2 MOC	Quartz (UV grade, with special composition), Borosilicate 3.3
07	Max Immersion Length	1200 mm
08	Water Inlet- Outlet Connections	DN 15
09	N2 Inlet- Outlet Connections	¼ inch Swagelok tube fittings
10	Power Supply:	Ballast VTPS Or Electronic Power supply controller EPSA 80
12	Ex-Proof Version	Not Available



(UVPI SE) Production Scale UV Immersion Lamp [up to 40 kW]

The UVPI SE immersion lamp series represent the most powerful immersion lamp system available and can be certified up to 40 kW as per IECEx /ATEX directive for operation in hazardous areas.

Advantageous On account of the modular construction, UVPI SE immersion lamps are safe about future demands and can be adapted to changed process parameters. In addition to the robust and safe design, an optionally available third protection tube increases the operational safety of the equipment when necessary.

Applications

- Operation in the production scale
- Production of large amounts of chemical compounds (t d-1)

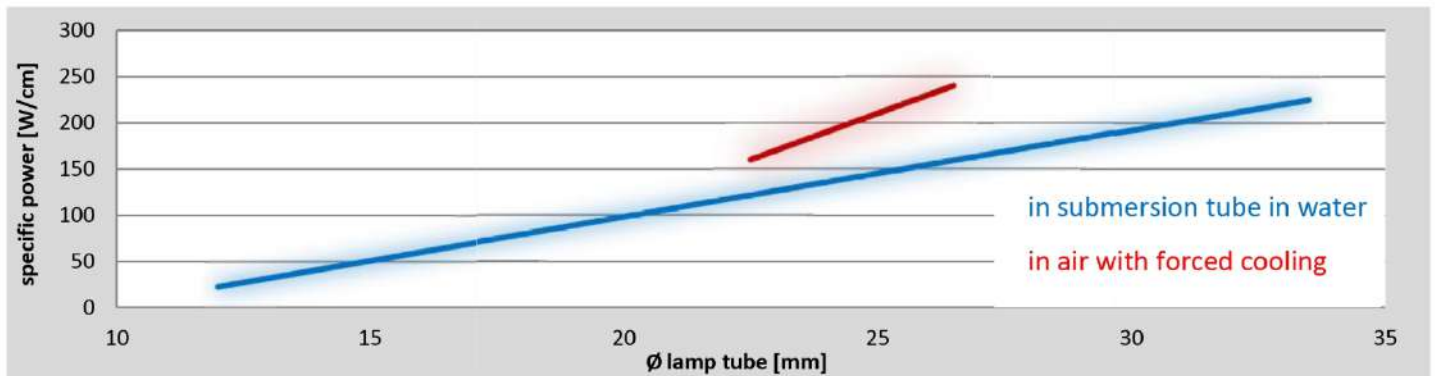
Specification:

01	UV lamp Type	Medium Pressure Mercury Vapour Lamp
02	Power	10 - 40 kW
03	Max Arc Length	2600 mm
04	Mounting Flange	DN 250 PN 6/ PN 10
05	Cladding Tube 1 MOC	Quartz (UV grade, with special composition)
06	Cladding Tube 2 MOC	Quartz (UV grade, with special composition)
07	Cladding Tube 3 MOC (Optional)	Borosilicate 3.3
08	Max Immersion Length	3000 mm
09	Water Inlet- Outlet Connections	DN 15/25
10	N2 Inlet- Outlet Connections	Inlet: ¼ inch Swagelok tube fittings Outlet: 1" Male NPT
11	Power Supply:	Ballast VTPS Or Electronic Power supply controller EUV 5
12	Ex-Proof Version	Available



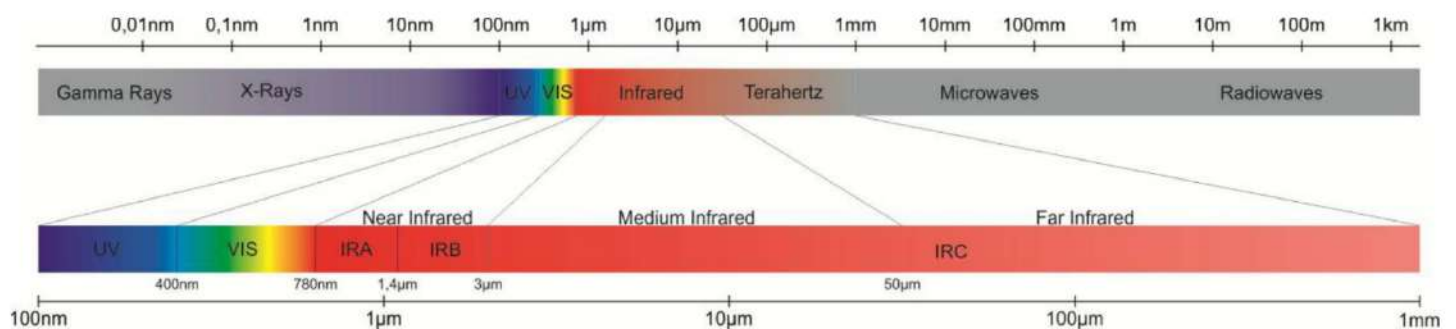
UV Medium Pressure Lamps

UV medium-pressure lamps are produced as linear lamps as standard. They consist of a sealed discharge tube made of quartz glass. The discharge vessel is filled with noble gases with a low pressure in the range of several millibar. Moreover, UV medium pressure lamps contain a small amount of mercury and dopants, such as iron, gallium or other elements. During operation, a plasma is generated in the lamps which emits radiation. As a rule, the plasma is excited by establishing a current flow between the electrodes, which are fused or crimped at both ends of the lamp. Electrode free medium pressure lamps can be stimulated to light by means of microwaves. By varying the length, the diameter (*Graphic 1*) and the filling, UV medium-pressure lamps can be influenced in their performance and adapted to different operating conditions. UV medium-pressure lamps must always be operated on a suitable ballast.



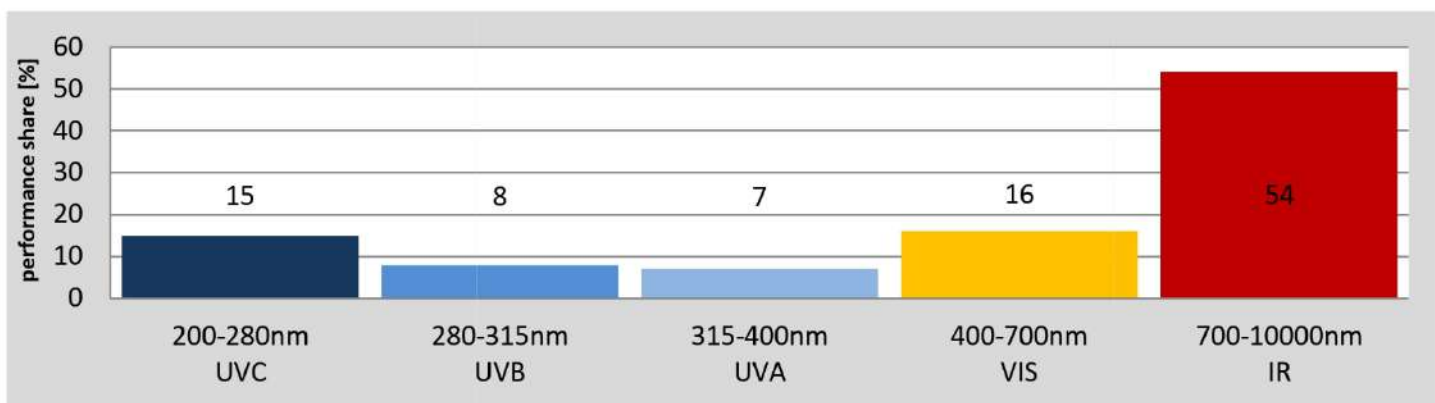
Graphic 1: Typical specific performance of UV medium pressure lamps in W/cm light emitting length as a function of Ø

UV medium pressure lamps emit radiation from the UV range to the infrared (*Graphic 2*).

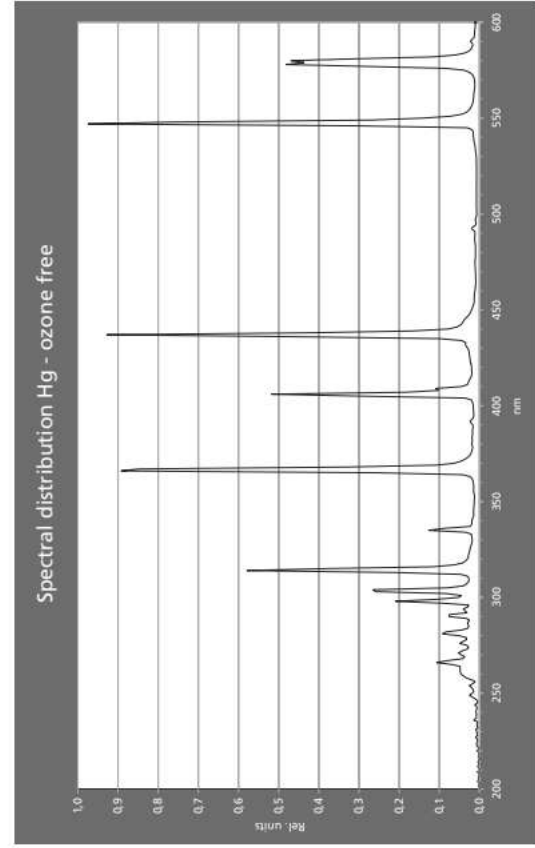
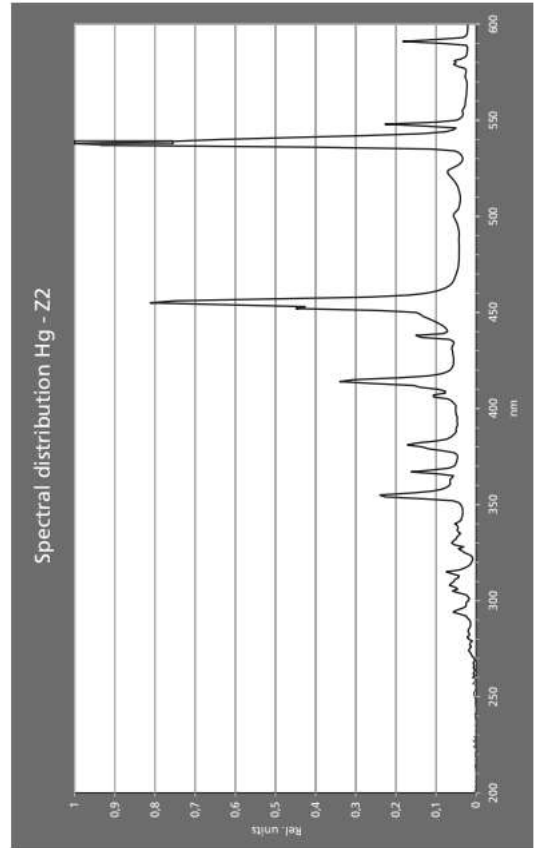
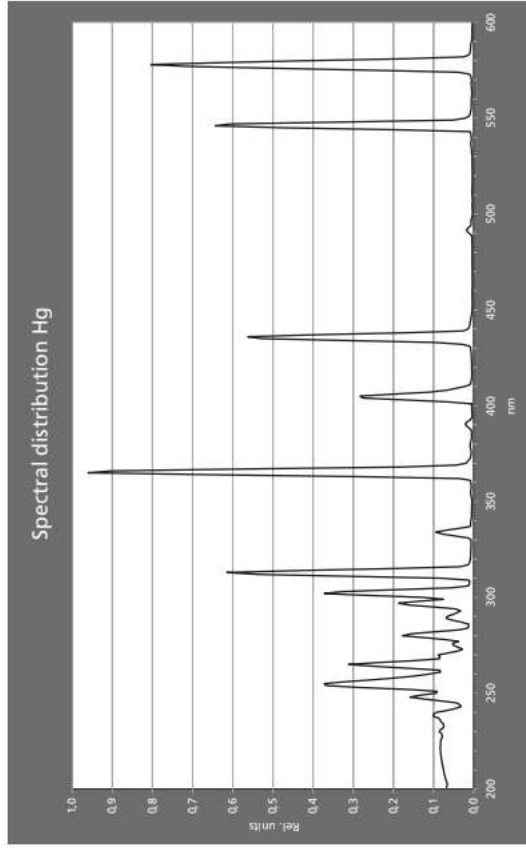
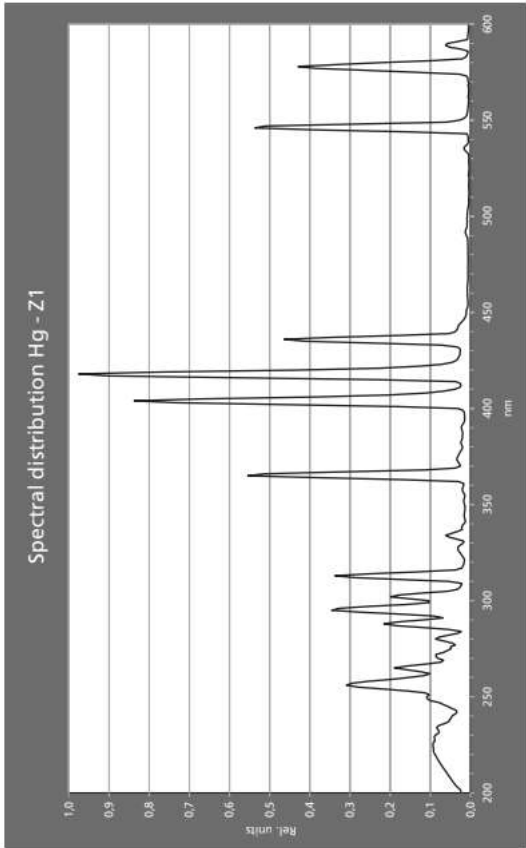


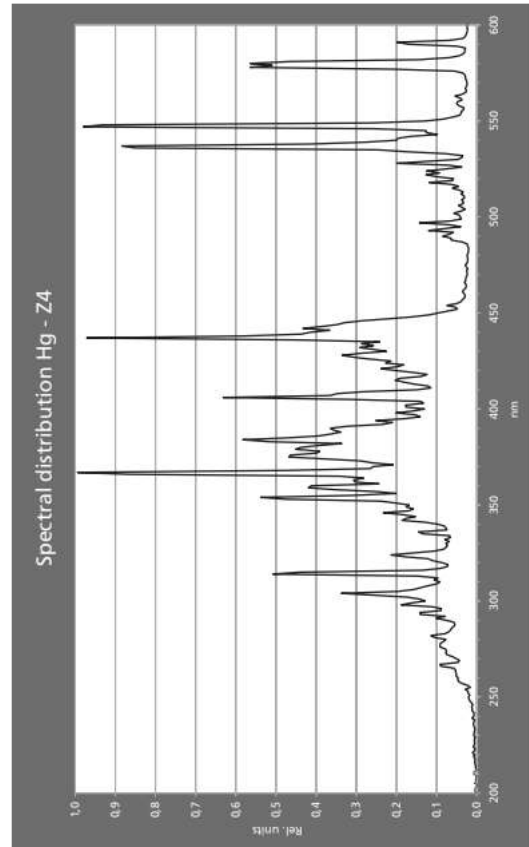
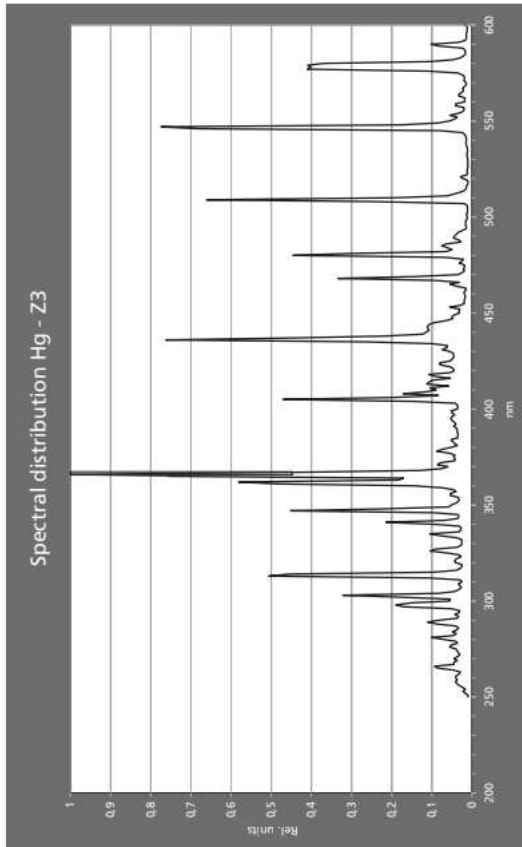
Graphic 2: Section from the electromagnetic spectrum with its typical classification

A considerable part of the radiation power of a medium pressure lamp is in the infrared range (*Graphic 3*). The lamps therefore require cooling.



Graphic 3: Distribution of the power of a typical UV medium pressure lamp, Hg type across the spectrum



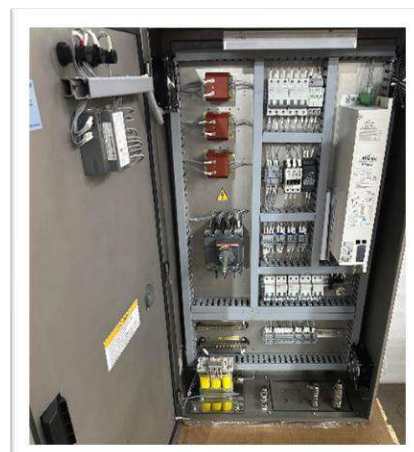


Information on spectral energy distribution and radiation flux for a particular lamp will be shared upon request.

Automated Control System for UV Immersion Lamp

Automated control system for UV immersion lamp consists of Power Control Panel and Operator Panel which can be engineered depending on the degree of automation required and scope for the integration of instruments.

Electronic power supply enables stepless and accurate regulation of power to the UV lamp. Furthermore, it provides features for e.g., measurement and control other process parameters, Data logging and transfer, safety interlocks and user-friendly interface.



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