



Light instead of Heat

Industrial photoreactors and process development systems

Peschl Ultraviolet GmbH

Your partner for turn-key photoreactors for applied photochemistry

Leading through innovation

Peschl Ultraviolet GmbH supplies efficient photoreactors for large-scale production as market leader in applied photochemistry for over 38 years worldwide. Scientifically substantiated consultancy services as well as automated process development systems enable a successful up-scaling within short time. For basic experiments a variety of application-optimized standard photoreactors as well as special light sources are offered as a modular toolkit system.

The company, located in Mainz / Germany, with international distributors in Europe, Asia and USA, is a family-owned, global operating company in the domain of applied Ultraviolet Technologies. As manufacturer with own product- and process development, the company provide innovative UV-solutions for applications in industry, medicine, environmental technology and research.



Photoreactors for feasibility studies

Application based, unique photoreactors as toolkit for different photochemical reactions

Feasibility study

Process development

Pilot scale

Commercial installation

How you can take advantage of photochemistry in research and development using a sophisticated system

MPDS, which stands for '**M**odular **P**hotochemical **D**evelopment **S**ystem', describes the modular system as standard for photochemical trials in the lab. The **MPDS**BASIC product range covers application-oriented photoreactors and radiation sources for photochemical reactions, that have been specially developed for basic trials and feasibility studies on a laboratory scale.

From batch to semi-batch through to Conti Flow photoreactors, we supply the entire range as standard. This includes falling film-, tubular-, side-loop- and micro- photoreactors. Depending on the application, you can choose from photoreactors with a volume of 2 ml to 5.000 ml.



Photoreactors for process development

Automated process development for reproducible and fast results in a modular toolkit

Feasibility
study

Process
development

Pilot scale

Commercial
installation

Process development and up-scaling can be easy

The implementation of a photochemical process from laboratory to production scale is impossible without the prior investigation of fundamental photochemical process parameters. By using the **MPDSEVO** in miniplant technology at the lab it is now possible to determine all photochemically relevant process parameters, such as the space-time yield, reaction kinetics, selection of suitable solvents, concentration and spectral absorption coefficient, optical path, etc. in a structured and reproducible way under supervision. In addition, different photochemical process methods can be compared and evaluated side by side.

With this, it is possible to select the correct application optimized industrial photoreactor out of the portfolio of Pechl Ultraviolet GmbH and thus it is easy to transfer the process into commercial scale. Photochemical reactions which are already performed in industrial scale can be traced and afterwards optimized in detail in the laboratory (down-scaling). With the reaction optimized and safe photoreactors from Pechl Ultraviolet, you are getting a highly efficient photochemical production plant with exceptional productivity.



MPDSEVO

Photoreactors for up-scaling in the pilot phase

Turnkey pilot plants with process control for process validation or for small-scale production

Feasibility
study

Process
development

Pilot scale

Commercial
installation

The solution for kilogram production

Pilot reactors represent important intermediate steps in the up-scaling of all laboratory reactors right up to an optimized and well operating production system in commercial scale in order to minimize technical and economical uncertainties. They are also used for the production of limited amounts of chemical compounds in the development of APIs during the approval phases.

Peschl Ultraviolet GmbH provides multi-purpose and custom built photoreactors including the necessary infrastructure and automated process control functionality.



Photoreactors and commercial immersion lamps for industrial production scale

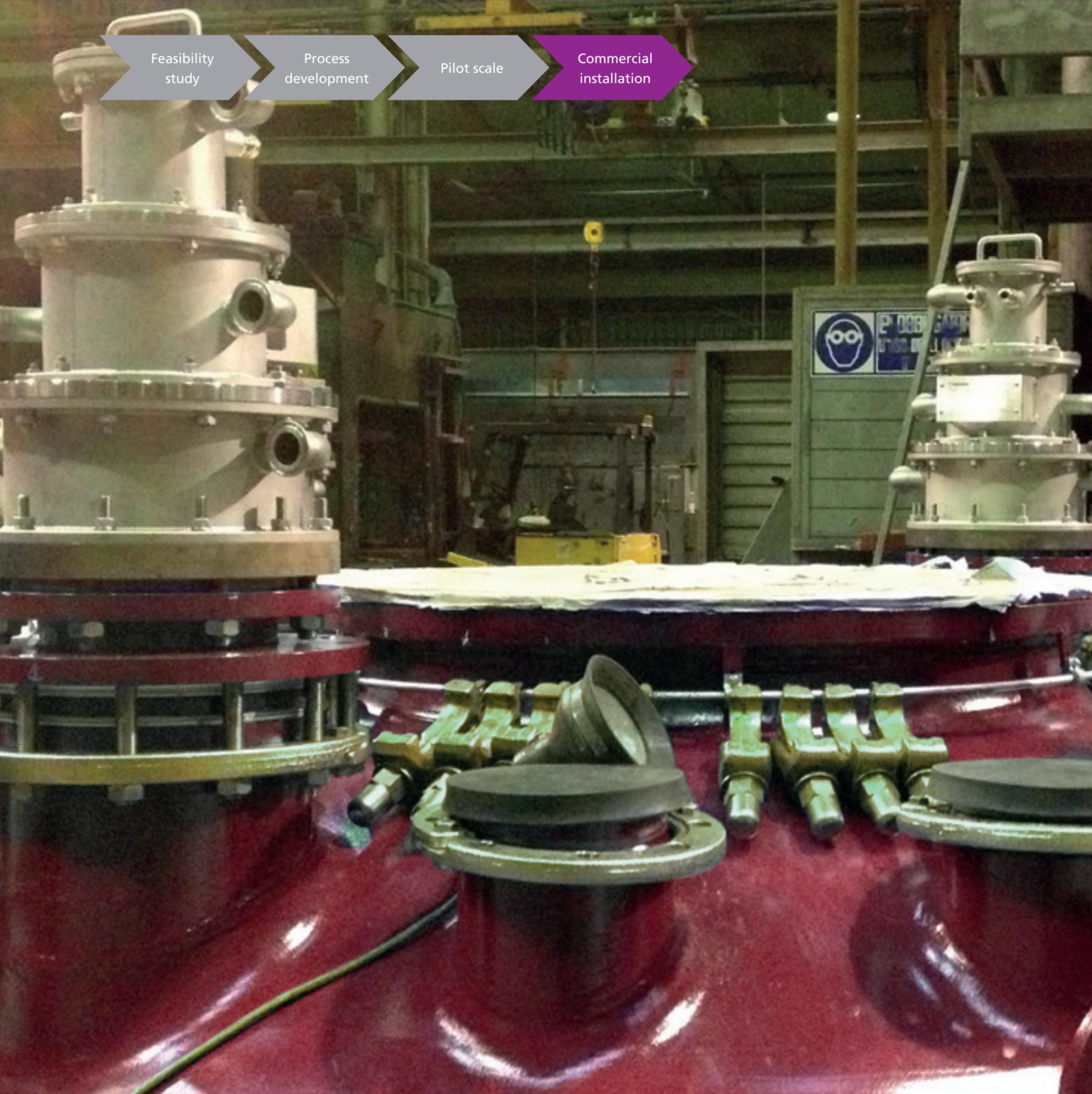
Industrial immersion lamps from 10 kW to 60 kW for use in hazardous areas (ATEX)

Feasibility study

Process development

Pilot scale

Commercial installation



Rely on 38 years of experience in the manufacturing of photoreactors in industrial scale

Photoreactors and immersion lamp systems for photochemical production processes have been developed by our engineers, in order to be able to use radiation sources with outputs of 10 kW up to 60 kW in rough industrial environments, with the associated demands on failure and operating safety, control and documentation. As a result of many years of comprehensive development work, we supply ATEX-certified immersion lamps up to 40 kW power consumption per radiation source, for use in atmospheres subject to the risk of explosion as standard components. The sophisticated control concept enables safe operation, as well as control, regulation and fault analysis any process control system from the control room.



With kind permission of company Heraeus

Consulting services

Scientifically substantiated consultancy services in the field of applied photochemistry

We will not leave you alone!

In addition to our turnkey process development systems, profound, scientifically substantiated consultancy services in the field of applied photochemistry might be required as a service.

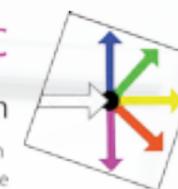
Together with our cooperation partner "Oliveros Consulting" (Prof. E. Oliveros and Prof. A.M. Braun), we are able to transfer comprehensive and detailed knowledge of photochemical process technology and offer the assistance during your process development phase on advisory basis upon request for each stage of the project.

Trust the expertise of professionals with decades of experience!

Quantapplic

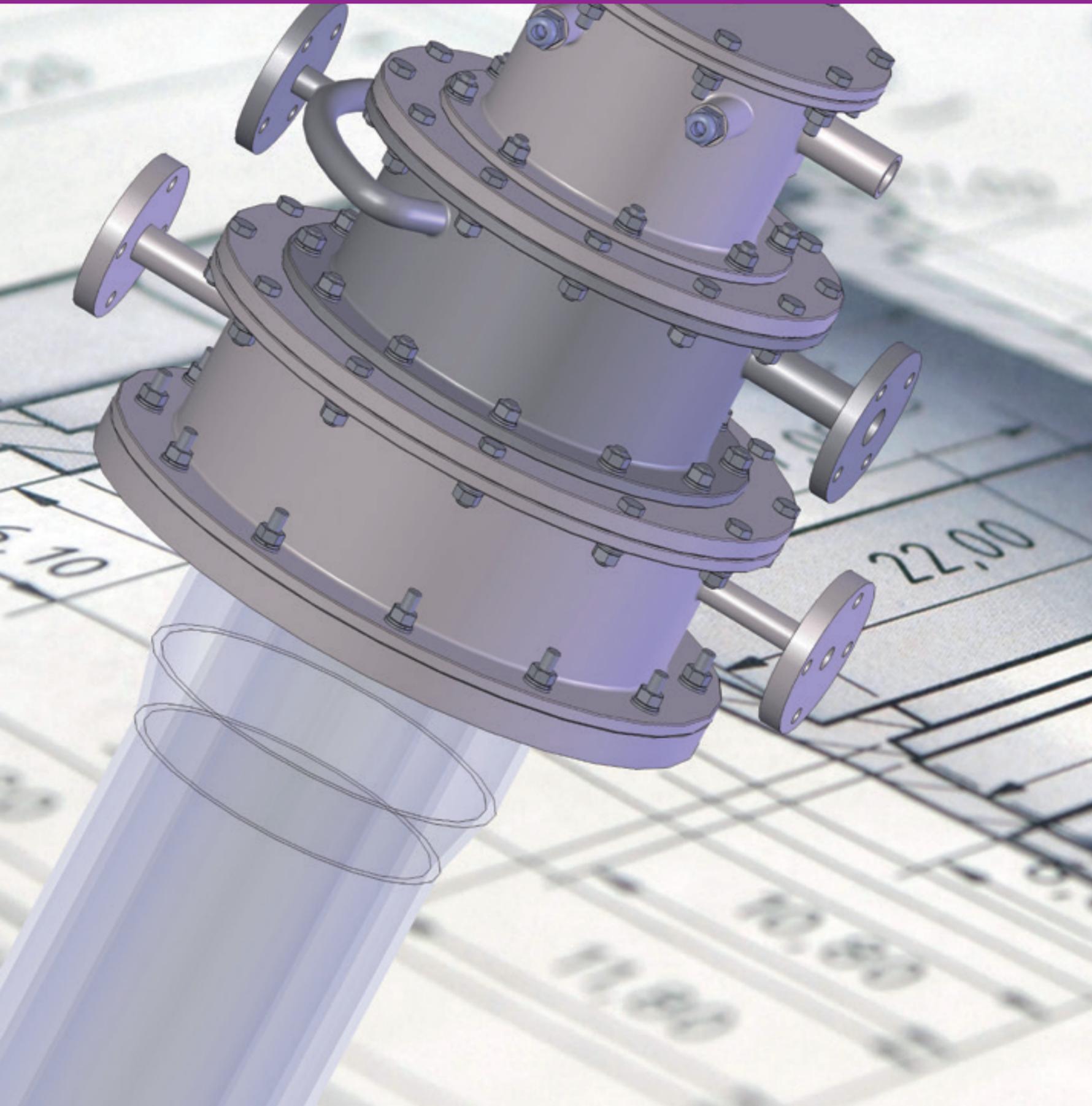
Prof. Dr. André Braun

Wissenschaftliche und technische Beratungen
auf dem Gebiet der photochemischen Technologie



Development of optimized photoreactors

Application-based design of turn-key solutions



Planning and construction of customized systems

From the first sketch to 3D structures and from a prototype to a finished photoreactor - all from one source.

The emphasis is on the application specific selection of suitable radiation sources and their optimized operation in order to create high-performance and energy-efficient solutions. We are specialized in the glass-metal joining technology which is one of the required key competences .

When using radiation sources for exposure and the associated system design, a way must be found to match between theoretical and practical feasibility, availability of components and the safety and security considerations in order to develop an economic production plant.

Beside of the immersion lamp module with different dip pipe and filter tubes which have to be determined in accordance with the objective mentioned above, also the suitable reactor design need to be considered for optimal performance and functional efficiently.

This is part of our daily business and core competence so that you will receive an optimized turn-key production skid.

Professional project support

Documentation according to pharma-standards, support in all project phases (HAZOP, FAT, SAT, IQ, OQ,...)



We know your needs!

Construction and delivery of the photochemical system is not enough. We supply project plans and keep them precisely on track. First-class documentation quality as per pharmaceutical standard - on request in all languages - are available. We assist you carrying out the necessary risk analysis during the HAZOP phase.

Our professional and experienced service team accompany during installation and commissioning of the photoreactors and the subsequent validation, qualification and acceptance documentation as part of our service.

Power supplies and control systems as per industry standard

Trouble-free long-term operation of your equipment guaranteed

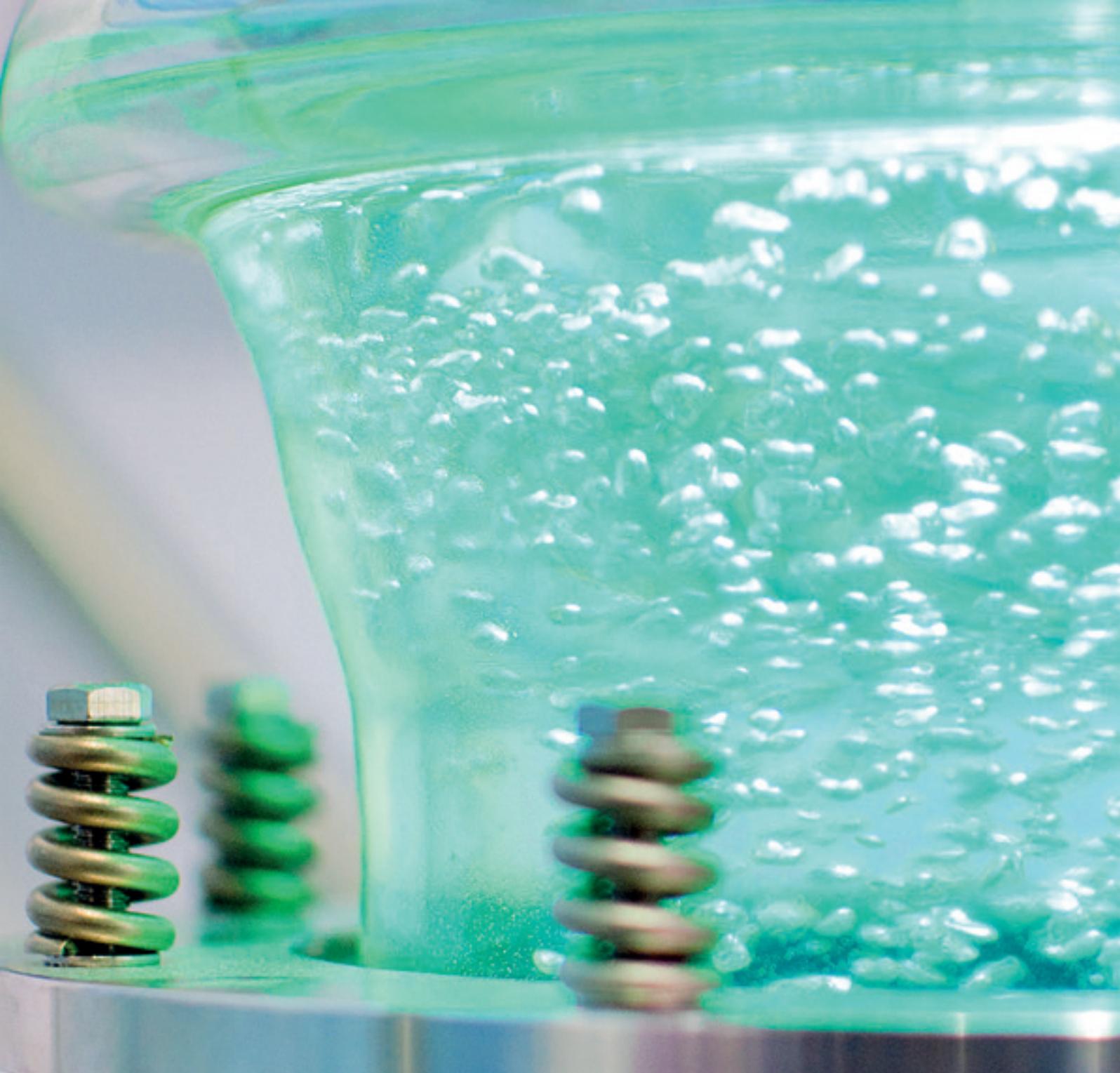
Sophisticated industrial technology for high system availability

Highly efficient power supply technology in combination with our innovative control and monitoring system guarantee highest system availability of our photoreactors as an integral part of our products.

Visualization and control via touch panels, remote maintenance service via Ethernet or wireless connection as well as signal exchange with over-ordinated PLC / DCS systems are state of the art for all of our professional products.

Photoreactors of Peshl Ultraviolet are known throughout the world for their stable and trouble-free long-term operation as well as easy regular maintenance and service.

Leading through innovation - Made in Germany.



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