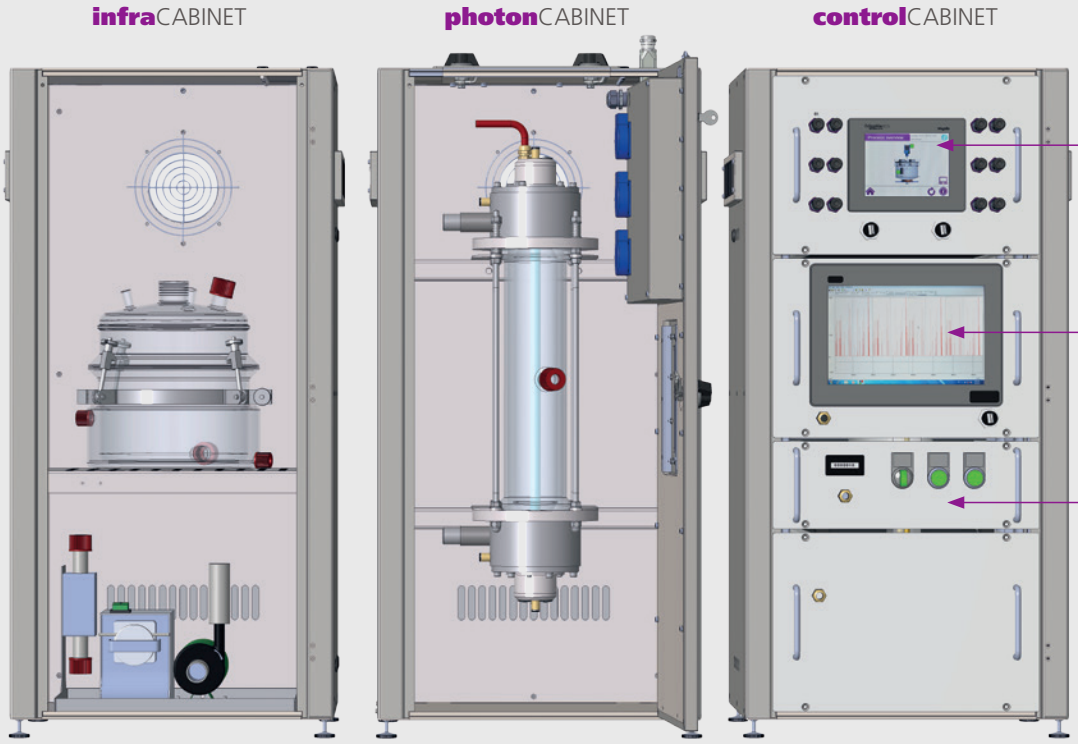
MPDS



Example configuration

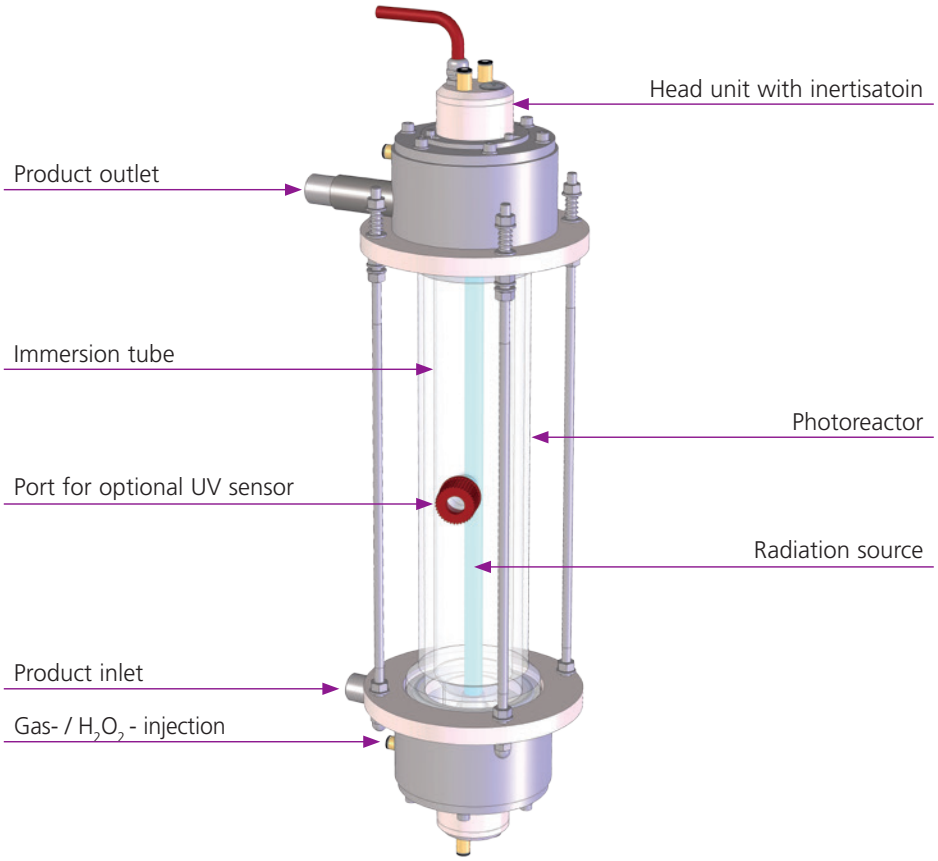
MPDSEVO – AOP Photoreactor

It is common knowledge that no one portion of wastewater is exactly identical to any other in terms of composition. For this reason, industrial-scale photochemical treatment of wastewater requires detailed preliminary laboratory investigations, which involve comparing the various photochemical methods available for wastewater treatment and determining the respectively relevant photochemical process parameters. This assessment is mandatory in each individual case.

The requirements for a photoreactor for "Advanced Oxidation Processes" (AOPs) vary based on the photochemical methods applied and require the photoreactor to be adapted to the prevailing circumstances to facilitate further process development and achieve optimal results.

The **MPDS**EVO – AOP photoreactor is the product of extensive experience and specialist knowledge accumulated over years and from dozens of special UV applications and reflects the very latest technology. Painstaking development work has produced a patented and all-new reactor design with outstanding properties, which paves the way for simple, structured and reproducible development of photochemical reactions for optimally accurate wastewater treatment.

The vertical annular photoreactor made of borosilicate glass is equipped with a synthetic quartz glass sheathing tube, which allows high transmission <200nm. The sheathing tube is replaceable and available in a range of diameters, allowing you to configure the respectively optimal optical route. Depending on the methods used, various radiation sources from the VUV range up to the visible range can be used. The unique easy-upscaling radiation sources allow analysis of the energy requirement, this means the initial rough cost estimate can also be established (CAPEX / OPEX). The ability to purge the immersion tube with inert gas helps to avoid any build-up of ozone and resulting unwanted absorptions. Any educt is tangentially



released and generates an optimally abrasive rotational flow given corresponding volume, which reduces the formation of deposits efficiently by leveraging polymerisation effects. There is also the option of including an external cooling jacket on the reactor, if there is a need to thermally stabilise the reactor. H_2O_2 can be continually injected into the photoreactor, while gases and liquids can be added at any stage of the photoreactor process, to obtain a stable concentration of oxygen and peroxides in the reaction zone. Upon request, a metal-free and totally corrosion-resistant version of the photoreactor can be supplied, which would also allow a range of synthesis reactions as well as TOC decomposition in the ultra-pure water range for the semiconductor industry. It is easy to dismantle the photoreactor or clean it using the CIP method.

The AOP photoreactor breaks new ground in allowing the entire range of photochemical AOP methods to be compared and the relevant laboratory results determined, which helps the user selecting the ideal industrial system from the Peschl Ultraviolet GmbH product range and handle the target volume flow efficiently on an industrial scale.

Typical applications:

- Elimination of pharmaceuticals and pesticides
- TOC reduction
- Pre-treatment of non-biodegradable wastewater prior to biotreatment
- Decomposition of organohalogenated compounds
- Cyanide degradation in the galvanic industry
- Treating industrial wastewater with a COD value of up to 5,000 mg/l

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