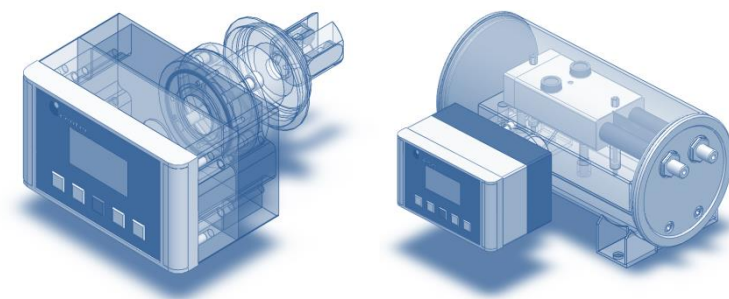


The Centec Group

Centec is a privately owned group of companies. With a focus on the processing industries, we are rapidly growing in the major world markets. We have a global sales and service structure, with our own subsidiaries and a network of qualified distributors. Our international operations include skilled mechanical, electrical and process automation engineering, with skid manufacture and pipework fabrication; as well as our own switch cabinet production. This infrastructure allows efficient logistics, short lead times and strict adherence to delivery deadlines. The quality of our products is excellent, so is the price-performance ratio.



Best of Technology. Centec.

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Product Overview

Water Purification

Centec Process Systems



Automated
process skids
and high precision
sensors from a
single source.
Centec.

Water Purification

Water is an important ingredient for a wide range of products and processes. It is vital in manufacturing for e.g. mixing, heating, cooling, cleaning and sterilization. Raw water quality depends greatly on its source. Potentially harmful contamination can be a significant risk. The levels of suspended materials, dissolved solids, ionic salts, pH value, microbial content and toxins vary significantly. Based on the raw water quality (quantitative analysis) and the requirements for the purified water, Centec select the most appropriate technologies for each client and their requirements – from the production of bottled water through to Purified Water (PW), Highly Purified Water (HPW), Water for Injection (WFI) and Pure Steam.

Consequently multi-stage and occasionally complex regimes may be necessary. For water pre-treatment, **particle pre-filters** (e.g. cartridge or granular bed filters) are used to remove suspended material (e.g. flora, fauna, Fe, Mn). If bacteria and microbes are suspected, **disinfection** by UV, ozone or chlorine is used. **Activated carbon (AC) filtration** may be next. AC has a large surface area that adsorbs substances such as odours and tastes, also oxidizing agents like chlorine and organic materials that can lead to chemical attack or fouling of membranes in subsequent steps. **Ion exchangers** soften the water (i.e. remove Ca^{++} and Mg^{++}) or demineralize it (i.e. remove all dissolved ions). Subsequently **membrane filtration** technologies use differing pore sizes (micro, ultra, nano filtration and reverse osmosis) to remove bacteria, viruses, most pyrogens and even ions. Afterwards and depending on the regimes selected, the water may be ready for use as an ingredient in food products and beverages or further purification is necessary to produce PW, HPW, WFI or Pure Steam. For WFI, Centec offers highly efficient multi-effect **WFI distillation** units. As **pure steam generators**, these units reliably separate any water droplets and remaining pyrogens from the final product. **WFI storage and distribution** systems supplied by Centec are installed around the globe. For PW, **electro deionisation** (EDI) is used subsequent to RO. To become HPW the water is passed through additional cross-flow membrane filtration. UV or ozone provides further protection.

While WFI is generally required for manufacturing medicines for parenteral administration, PW is commonly used for non-sterile products and for rinsing purposes; whereas HPW better controls bacterial endotoxin levels. In microelectronics, HPW is typically called Ultra Pure Water (UPW).

- **Application Specific and Energy Efficient**
purification technologies for a large range of applications from bottling water through to pyrogen-free HPW and WFI
- **Modular Design with Standard PLC**
skid mounted for easy installation and start-up
- **In Compliance with USP, ASME, GMP, FDA, ISPE (if required)**
- **Completely Qualified (DQ, IQ, OQ) (if required)**
- **Outstanding Price-Performance-Ratio**

The Purification Technology Company. Centec.

Particle Pre-Filtration · UV & Chlorine Disinfection · Ozonation · Activated Carbon Filtration

Water Softening & Demineralization · Ultrafiltration · Reverse Osmosis Electro · Electro Deionization

pH-Adjustment · WFI Distillation · WFI Storage · WFI Distribution · Pure Steam Generation

