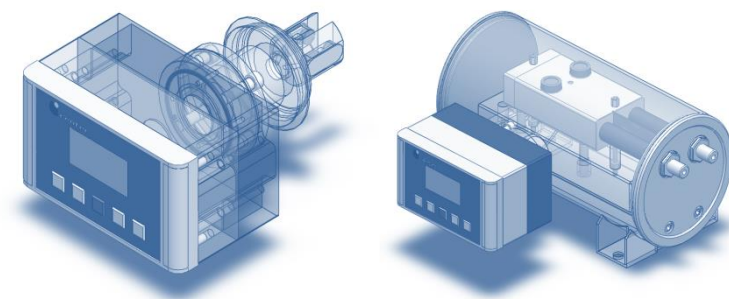


## The Centec Group

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 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.**

### Germany

Centec GmbH  
Wilhelm-Röntgen-Strasse 10  
63477 Maintal  
Tel.: +49 6181 18 78 0  
Fax: +49 6181 18 78 50  
info@centec.de

### Czech Republic

Centec automatika s.r.o.  
Pekařská 8/601  
155 00 Praha 5  
Tel.: +420 257 084 111  
Fax: +420 235 518 701  
prodej@centec.cz

### USA

Centec LLC  
P. O. Box 820  
Germantown, WI 53022-0820  
Tel.: +1 262 251 8209  
Fax: +1 262 251 8376  
info@centec-usa.com

### UK

Centec UK  
Stalworths, The Street  
Great Tey, Colchester, Essex, CO6 1JS  
Tel.: +44 1206 21 19 21  
Fax: +44 1206 21 19 16  
info@centec-uk.com

### Serbia

Centec Serbia  
Bogdana Žerajića 34/III  
11000 Beograd  
Tel.: +381 11 358 11 24  
Fax: +381 11 358 11 24  
info@centec.rs

### India

Centec RRR Systems & Sensors Pvt Ltd  
RRR House, Plot 80, Sector 23  
Turbhe Naka, Navi Mumbai - 400 705  
Tel.: +91 22 2783 3655 & 2783 1348  
Fax: +91 22 2783 4814  
mail@centecrrr.com

### Brazil

Centec América Latina Ltda  
Rua Mexico 148 conj. 1004 Centro  
20031 142 Rio de Janeiro  
Tel.: +55 21 2223 2066  
centelatina@terra.com.br

# 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  $\text{Ca}^{++}$  and  $\text{Mg}^{++}$ ) 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 monovalent and multivalent dissolved 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 ultrafiltration membranes. 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 Deionization  
pH-Adjustment · WFI Distillation · WFI Storage · WFI Distribution · Pure Steam Generation*

