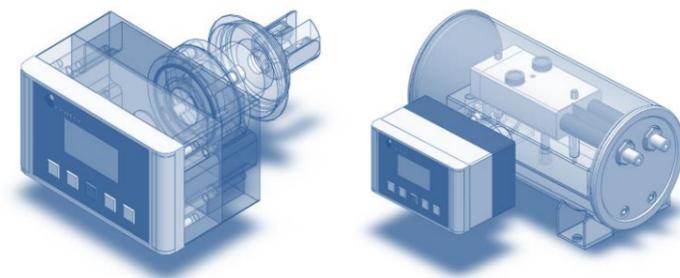


## The Centec Group

Centec is a privately owned group of companies. A core business for us is customized systems for the production and distribution of high purity water and water for injection (WFI) for pharmaceutical and biotechnological plants in accordance with GMP and FDA guidelines. We are an experienced partner for pure steam generation, CIP- and SIP-processes as well as for services related to product preparation. Centec technology includes a range of high precision process sensors for accurately measuring critical product properties such as the concentration of acidic and caustic solutions and O<sub>2</sub> content. The largest pharmaceutical groups in the world are among our key customers.



**Accuracy. Reliability. Centec.**

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STILL

WFI Distillation

Centec Pharma Systems



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

# STILL

## The Principle

According to pharmaceutical standards and by definition, water for injection (WFI) is water required for manufacturing medicines for parenteral administration. The Centec multi effect distillation system STILL is designed for the production of sterile, pyrogen-free WFI. The unit consists of a series of interconnected columns. Pre-treated feedwater enters into the first column. Using external energy, a significant proportion of it evaporates in the first tubular heat exchanger. In order to separate any water droplets that might harbour contaminants like particles and pyrogens, the column contains an expansion chamber. While the steam moves further upwards in the chamber, the water droplets fall into its lower section by gravity, thus separating from the steam. The non-evaporated water flows into the next column, where it is again heated in a heat exchanger using steam produced in the previous stage. While another portion of the water evaporates, some steam condenses into WFI. This process is repeated in each column. To condense the steam produced in the final column, cooling water is used. The WFI is at 80 °C and needs to be kept at this temperature to prevent the growth of microorganisms.

## Technical Data

Capacity	0 - 20 m <sup>3</sup> /h
Number of Columns	up to 8
WFI Temperature	80 °C (lower on request)
Total Bacteria	< 10 CFU/100ml
Endotoxin	< 0,25 EU/ml
Residual Conductivity	< 1,1 µS/cm (20°C)
Material	1.4404/1.4435/ AISI 316L/ electropolishing possible
Surface Finish	Ra < 0,4 possible
Ferrite Content	< 1 % possible
PLC	SIMATIC S7
Options	water pre-treatment WFI storage & distribution



The Centec production is certified according to ISO 9001.

- **Application Specific and Energy Efficient**  
optimized gravitational separation method  
WFI storage and loop on demand
- **Modular Design with Standard PLC**  
skid mounted for easy installation and start-up
- **In Compliance with USP, ASME, GMP, FDA, ISPE**
- **Completely Qualified (DQ, IQ, OQ)**
- **Low Operating and Maintenance Costs**

## Experience. Expertise. Centec.

Water Softening & Demineralization · Ultrafiltration · Reverse Osmosis · Electro Deionization  
WFI Distillation · Membrane Deaeration · Column Deaeration · Vacuum Deaeration · Multi Component Mixing  
Additive Dosing · Flash Pasteurization · Cleaning-in-Place · Sterilization-in-Place · Pure Steam Generation

