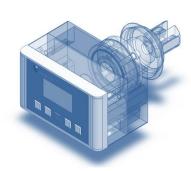
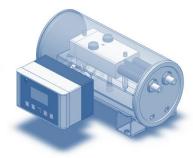




# **The Centec Group**

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  $O_2$  content. The largest pharmaceutical groups in the world are among our key customers.





# **Best of Technology. Centec.**

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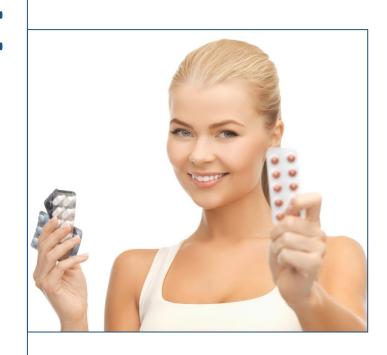
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# Production of Infusion Solutions

# **Centec Pharma Systems**



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

More information at www.centec.de

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# **Designed and Manufactured by Centec:**



cleaning or sterilization of the manufacturing equipment by cleaning media or pure steam















pure steam production by WFI multiple-effect distillation system or stand-alone steam generator









removal of larger suspended solids and dechlorination to prevent degradation of RO membranes

removal of hardness causing ions (calcium/magnesium) to avoid scale deposits in the plant

elimination of more than 99 % of disease causing microorganisms (bacteria/viruses)

removal of smaller particles to extend the lifetime of RO membranes

removal of up to 99 % of the total dissolved solids (TDS) such as minerals, salts and metals

removal of remaining ionisable solids after the reverse osmosis ("polishing of RO permeate")

multiple-effect distillation to reach bacteria and endotoxin levels in compliance with pharmacopeia

storage and distribution of the WFI for use in the next steps of product manufacturing

preparation of the infusion solution by mixing WFI with weighted raw materials and subsequent filtration

filling of the infusion solution in plastic bags of variable size by a table top duplex bag filler

heat treatment of the infusion bags in a plastic bag infusion autoclave sterilizer

- Full Raw Water Pre-Treatment; Proven RO and EDI Technology
- Production of Water for Injection (WFI) and Pure Steam
- Storage Tanks and Distribution Loops for WFI
- Highest Quality Vessels for Product Preparation
- Table Top Duplex Filling Machines for Infusion Bags
- In Accordance with FDA, GMP, GAMP, USP, ISPE
- Completely Qualified (DQ, IQ, OQ) if Required
- Outstanding Price-Performance-Ratio

## The Infusion Solution Company. Centec.

Particle Pre-Filtration · Disinfection · 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 · Pure Steam Generation





