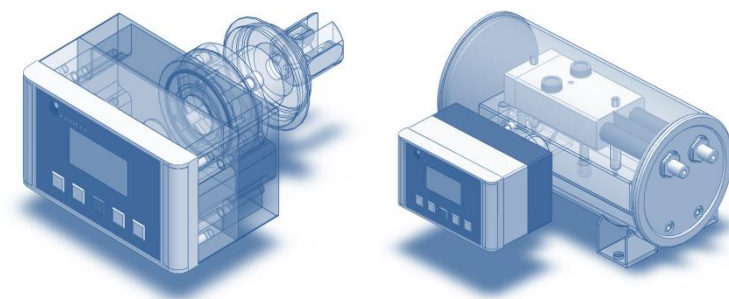


The Centec Group

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 O₂ content. The largest pharmaceutical groups in the world are among our key customers.



Accuracy. Reliability. Centec.

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RDE

Pure Steam Generation

Centec Pharma Systems



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

RDE

The Principle

According to pharmaceutical standards, pure steam is defined as the steam which when condensed becomes WFI quality water. In pharmaceutical production pure steam is applied for various sterilizing applications, e.g. sterilization of storage tanks, preparation vessels, piping systems and filling machines. The Centec pure steam generator skid RDE is designed for the production of sterile, pyrogen-free pure steam and consists of a sanitary tubular heat exchanger at the base and an expansion chamber above. The tubular heat exchanger is used to heat the pre-treated feedwater and to generate the steam. The tubes of the heat exchanger are connected to the expansion chamber (separating column). After entering the chamber, the steam moves further upwards in the column. By gravity, all water droplets fall into the lower section of the chamber, thus separating from the steam. Since the droplets may contain contaminants like particles and pyrogens, it has to be strictly avoided that they are carried forward with the steam. The design of the RDE guarantees dry and saturated steam free from all droplets and impurities.

Technical Data

Capacity	0 - 15.000 kg/h
Steam Pressure	max. 7 bar
Steam Temperature	up to 165 °C
Total Bacteria	< 10 CFU/100ml
Endotoxin	< 0,25 EU/ml
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 sterilization loop

The Centec production is certified according to ISO 9001.



- **Application Specific and Energy Efficient**
optimized gravitational separation method
water pre-treatment technologies 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.

*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*

