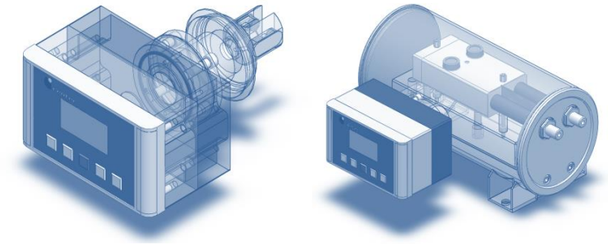
The Centec Group

Centec is a privately owned group of companies. From conventional power plants to solar energy and biofuel – there is a broad range of applications for our automated process skids. We are a leading supplier of water purification and deaeration technologies. Automated CIP-systems designed and manufactured by Centec are installed around the globe 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 energy groups in the world and numerous power plants are among our key customers.



Accuracy. Reliability. 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

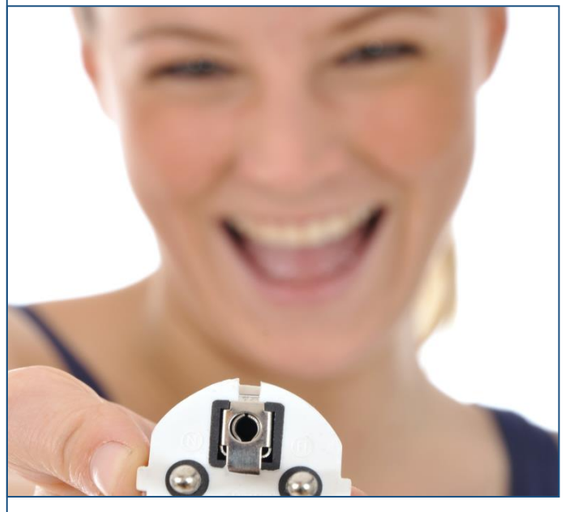
India
Centec RRR Systems & Sensors Pvt Ltd
RRR House, Plot 80, Sector 23
Turbhe Naka, Navi Mumbai - 400 705
Tel.: +91 22 2783 3655 & 2783 1348
Fax: +91 22 2783 4814
mail@centecrrr.com

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

REVOTEC

Reverse Osmosis

Centec Energy Systems



More information at **www.centec.de**

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

REVOTEC

The Principle

The Centec reverse osmosis (RO) system REVOTEC is used for water purification. RO is the reversal of natural osmosis. If a semipermeable microporous membrane is placed between pure water and water with dissolved ions (salts) osmosis will come into play. The pores of the membrane only allow the passage of H_2O, but not of salts, viruses, bacteria and larger molecules. Osmotic pressure due to a concentration difference causes the pure water to pass through the membrane to dilute the solution on the impure side. This will continue until osmotic equilibrium is reached. In the REVOTEC unit this process is reversed. In order to separate pure water from water containing dissolved salts and solids, pressure is applied to the contaminated water. When the applied pressure overcomes the natural osmotic pressure, pure water will pass through the membrane into the pure water side. The purified water (permeate), is practically free of all impurities. Cross-flow technology minimises fouling by quickly removing the impure water (concentrate). However, depending on the feedwater quality, pre-treatment may be required to prevent scaling and chemical attack by oxidizing agents like chlorine.

- **Application Specific and Energy Efficient**
  execution in various materials available
  double stage REVOTEC for highly purified water (HPW)
  water pre-treatment technologies on demand
- **Modular Design with Standard PLC**
  skid mounted for easy installation and start-up
- **Hygienic Execution and Full CIP Capability**
- **Outstanding Price-Performance-Ratio**

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

Technical Data

Capacity	1 - 150 t/h
Residual Conductivity	< 1,1 µS/cm (20°C) possible
Pressure of Operation	0 - 30 bar
Temperature of Operation	2 - 35 °C
Temperature of CIP	max. 85 °C
Material	epoxy/PP/PE 1.4301/1.4404 AISI 304/316L
PLC	SIMATIC S7
Options	pre-filtration softening & demineralization electro deionization disinfection

The Centec production is certified according to ISO 9001.