

## Water Purification

Depending on the composition of the incoming water and numerous customer driven needs, the requirements for each project can vary greatly. Our broad range of technologies enables us to provide the purification technology that perfectly meets all specifications. Water can be produced for standard industrial applications through to pyrogen-free deionised for injection purposes or ion-free for micro-electronic silicone chip production.



For the reduction of water hardness, anion or cation exchangers are applicable. Mixed bed ion exchangers contain a mixture of anion and cation exchange resins. They are used for simultaneous and highly efficient exchange of both ion types.

Raw water conductivity can be reduced by membrane filtration and electro-deionization. With reverse osmosis, all ions and solids remain in the retentate. For sterilization and WFI, we provide distillation, pure steam generation and various evaporation technologies.



## Water Deaeration

Our deaeration systems are typically used to remove O<sub>2</sub> from water in order to improve product quality or shelf life of beverages and food. The presence of both O<sub>2</sub> and CO<sub>2</sub> in boiler feed water accelerates costly corrosion in heating systems.



In membrane and column deaeration units O<sub>2</sub> passes from the liquid phase into the gas phase. Vacuum and strip gas on the gas side create a large partial pressure difference. Our special design maximizes the surface for the gas exchange.

**Innovative Process Engineering. Centec.**

## Carbonation, Nitrogenation and Oxygenation

One of the most common applications for our carbonation units is the addition of pressurized CO<sub>2</sub> to carbonate beverages like beer, soft drinks, sparkling water and tap water after treatment. Nitrogenation enhances the head stability of some beer and reduces CO<sub>2</sub> content. Oxygenation is a requirement for fermentation, e. g. in beer and wine processing.

Our carbonation and nitrogenation units are equipped with a specific Vortex-Venturi nozzle that injects pressurized CO<sub>2</sub> in fine bubbles and extremely homogeneously. Another type of system uses hollow fibre membranes in which CO<sub>2</sub> passes through microscopic pores.



## Blending and Dosing

In beverage manufacture, our processes often produce concentrated syrups or a high gravity base which is diluted and mixed with other ingredients before carbonation and bottling.

A key to the performance of our blending and dosing systems is our unique ability to accurately monitor and control product characteristics such as density, concentration, alcohol content, etc. with incredible precision.



Applied across the globe in beverage, chemical and pharmaceutical industries, our Multi Stream Blender is designed to blend several streams of liquids and flavor concentrates. Accurate proportioning, rapid change-over and fast cleaning are attributes incorporated into this unit.

Our Additive Dosing System is used for the production of liquid food, cosmetics, personal care and chemical products. Various fluids from low viscosity solvents through to high viscosity polymers can be continuously and accurately blended.

**Excellent System Performance. Centec.**

## Dealcoholization, Pasteurization and Cleaning

Dealcoholization plants by Centec remove alcohol from beer, cider and wine. Our rectification systems also highly concentrate the removed alcohol to produce a saleable product. The volatile aromas and flavours from the original product can be separated from the exhaust vapour in a specifically designed recovery system and added back to enhance the quality of the alcohol-free beverage.

Our flash pasteurizer is used to pasteurize beer and soft drinks. Similar systems are made for dairy products and other liquid media. The fully automated process skid uses high precision sensors and control technology, together with the most appropriate heat exchangers to deliver the right level of heat input, energy recovery and cooling.



Microbiological safety is of highest importance in any system where water and food are available for the harbouring and growth of micro-organisms. This applies to pharmaceuticals, cosmetics, beverages, food, dairy and many water based products.



Centec designs and builds CIP units to deliver efficient cleaning across a wide variety of process systems – starting with small mobile sets typically for cleaning individual items through to multi-tank systems for applications in large industrial process plants.

No matter how complex requirements may be, Centec will provide exactly the right solution. Our capabilities include engineering, assembly, Factory Acceptance Test (FAT), delivery and commissioning of turn-key plants. We are more than familiar with GMP guidelines and FDA requirements.

**Maximum Energy Efficiency. Centec.**

## Industries and Applications

Centec is a strong, privately owned group of companies. With a focus on processing industries, we are rapidly growing in the major world markets. We have a global structure for sales and service with our own subsidiaries and service centers on several continents and a network of qualified distributors.

Our production facilities are located in Germany, in the Czech Republic and in the US. This outstanding infrastructure allows efficient logistics, short lead times and strict adherence to delivery deadlines. The quality of our products is outstanding, so is the price-performance ratio.

	Brewery	Soft Drinks	Wine & Spirits	Dairy	Food	Chemical	Petrochemical	Electronics	Semiconductor	Pharmaceutical	Biotechnology	Coal-fired Power Plants	Power & Heat Supply Stations	Nuclear Power Plants
Ion Exchange	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Reverse Osmosis	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HPW Purification								X	X					
WFI Distillation										X	X			
Pure Steam Generation								X	X	X	X			
Membrane Deaeration	X	X	X	X	X	X		X	X	X	X	X	X	X
Column Deaeration	X	X	X	X	X	X				X	X	X	X	
Vacuum Deaeration	X	X	X	X	X					X	X	X		
Carbonation	X	X	X	X	X					X				
Decarbonation	X	X	X	X	X					X				
Nitrogenation	X	X	X	X	X									
Wort Aeration	X													
Yeast Dosing	X													
High Gravity Blending	X													
Continuous Premixing	X	X	X	X	X									
Multi Stream Blending	X	X	X	X	X	X	X			X	X			
Additive Dosing	X	X	X	X	X	X	X	X	X					
Flash Pasteurization	X	X	X	X	X					X	X			
Sterile Filtration	X		X			X				X				
Dealcoholization	X	X	X	X	X	X		X	X	X	X			
Cleaning-in-Place	X	X	X	X	X	X		X	X	X	X	X	X	X
Sterilization-in-Place	X	X		X		X		X	X	X	X			

Dairy · Food · Brewery · Beverage · Pharmaceutical · Chemical · Semiconductor · Energy · Power Plants

## Global Knowledge for Local Applications

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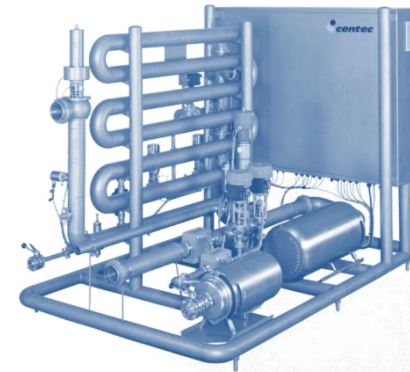
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## Automated Process Skids



Dairy · Food · Brewery · Beverage · Pharmaceutical · Chemical · Semiconductor · Energy · Power Plants