

Montz Dealcoholization



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MONTZ

FOOD PROCESSING

Montz offers advanced process know-how and specific expertise for the effective removal of alcohol to breweries and other beverage producers so they can reach near zero percent alcohol content in beer, wine, and cider. With the design and supply of columns including Montz unique BSH packing and high performance distribution systems, and through a technology that removes alcohol at low temperature levels while treating beer and wine gently, Montz solutions can guarantee alcohol levels below 0.01% vol. This gentle treatment of beer and wine results in a product that retains its natural aroma and taste.

Process description

The core technology of the Montz dealcoholization unit is a thermal distillation process wherein alcohol is separated from the beverage in a special designed column system with proprietary packing and high-performance distribution trays. The process can be divided into different sections:



1. Product Preparation

The incoming product is pre-heated to process temperature and degassed (in case of carbonated beverages). Temperature and pressure in the degasser can be adapted to specific demands.

2. Alcohol Separation

The lower part of the column is designed to separate the alcohol from the beverage to < 0.01% vol. at the outlet. The upper part is built for concentrating the removed alcohol up to 85% vol. (according to customer demands).

3. Vapor Generation

The required vapor to run the dealcoholization process is created by evaporating a small percentage of the dealcoholized liquid. Steam or hot water can be used as heating medium.

4. Alcohol Treatment

The alcohol vapor generated in the process is condensed and pumped out of the system. Montz can also supply a variety of solutions for alcohol-treatment and storage.

5. Aroma Recovery

The system can optionally be equipped with an aroma recovery unit to collect the aromas lost in the process and reintroduce them to the dealcoholized product.

6. Product Post-Processing

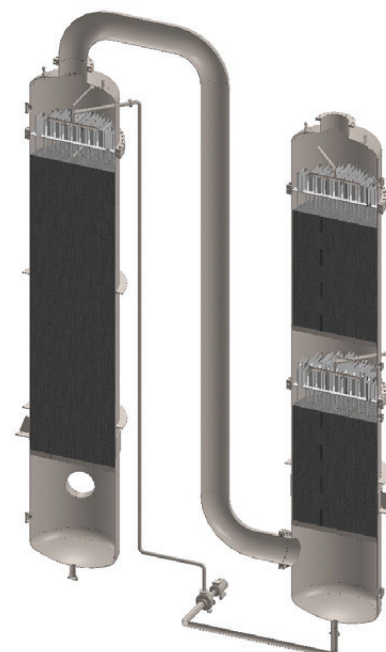
The system can include several treatment steps for the dealcoholized product, such as: carbonization, flavor dosing and blending with fresh beer or water.

Overall Solution

- Fully automated, continuously operating thermal distillation process
- Column system for reducing alcohol to 0.0% vol. and concentration of the separated alcohol (up to 85% vol.) in one process step
- Lower stripping part for dealcoholization
- Upper part for concentration
- Stainless steel 304 or 316

Montz Processing Units for Beer and Wine

- Unit Feedstock:
 - Capacity from 300 l/h up to 20,000 l/h with an alcohol content of 1 to 14% vol. [80 to 5000 gal/h]
- Products:
 - Beer and wine with an alcohol content less than 0.01% vol.
 - Distillate with an alcohol content of up to 85% vol.
- Operating temperature of < 32 °C [90 °F] is important for the taste of the beer and can be reached with vacuum distillation at
 - 40 to 100 mbar [0.6 to 1.5 psi] top pressure
 - Combined with a 10 to 15 mbar [0.15 to 0.2 psi] pressure drop over the unit
- A proprietary Cleaning In Place (CIP) system is applied above and below the distributors

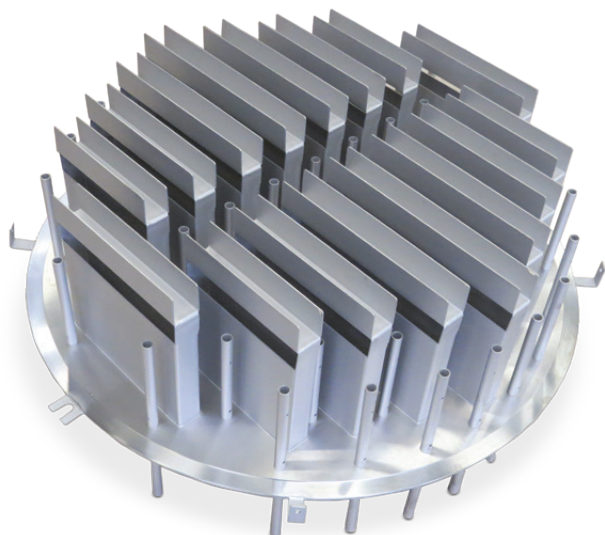


Montz Engineered Column Systems

- Column shell (configuration with one, two or three columns are possible)
- Montz high performance distributor/redistributor and support grid
- Column diameter of 100 to 2,500 mm [4 in to 8 ft]

Montz-Pak type BSH

Montz unique structured packing type BSH combines the essential features and characteristics of metal sheet and wire gauze packing. A remarkable characteristic of the Montz-Pak types BSH-500 and BSH-750 is the special surface structure, consisting of rhombic openings with alternating burred-up edges. This ensures an excellent and uniform wetting under lowest and high liquid loads.



Montz-Liquid Distributor type KFR

Montz can offer a comprehensive range of liquid distributors adapted to various fields of application. As a result of many years of research and development, the distributors fulfil the highest quality requirements and ensure an excellent performance.

- The distribution quality is ensured by drain tubes welded into the distributor. These drain tubes have holes above a sedimentation zone through which the liquid is evenly distributed over the entire column cross-section.
- Multi-stage designs are possible by the arrangement of several orifices
- Operation ranges:
 - 1-stage: approximately 1:2.5
 - 2-stage: 1:10
 - (higher ranges on request)
- Number of drip points: 60 to 200 per m² [6 to 19 per ft²]
- Throughputs approximately 0.3 to > 250 m³/(m² h) [0.12 to 100 gpm]
- Resistant to sedimentable dirt particles

Experience

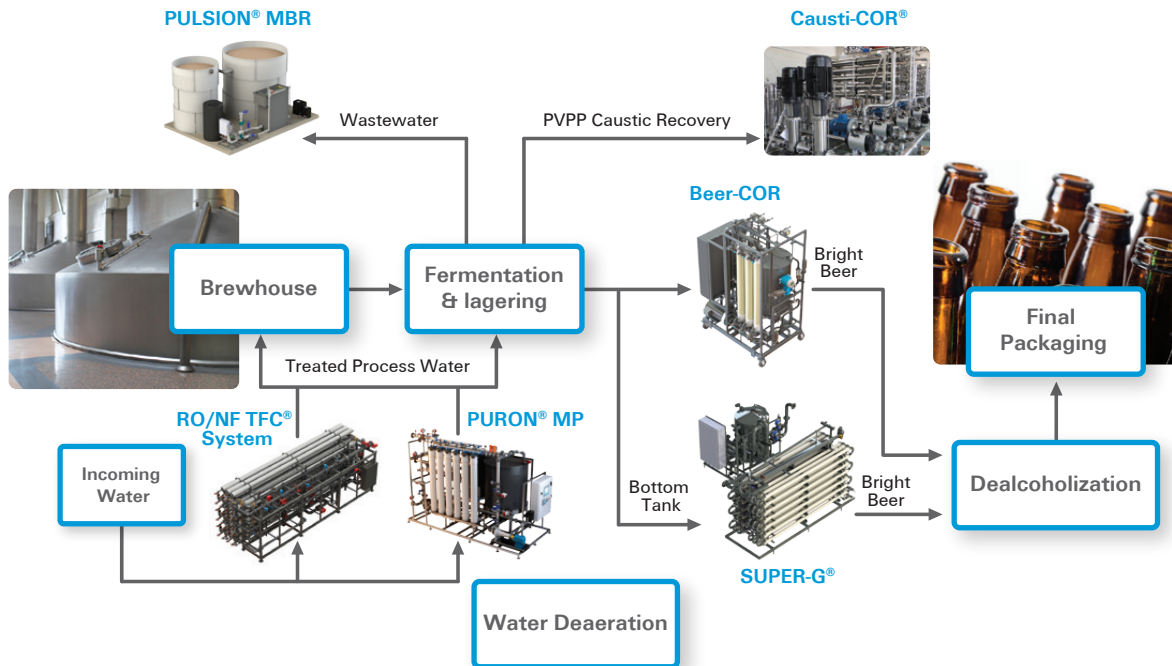
- First equipment supplied 1989
 - Unique surface treatment for structured packing
 - Anti foam packing
- Globally, more than 130 units in breweries and wineries are equipped with Montz Engineered Columns
- Expansion to a turnkey plant supplier
 - Based on 20 years of experience in alcohol processing
- Pilot plant testing offered

Scope of Service

- Process design
- Engineering
- Installation service and trouble shooting
- Secure supply chain
- Experienced project management
- Manufacturing and supply of turnkey plants
- Staff training for the most efficient operation
- Spare parts

Cooperation with Koch Separation Solutions in Breweries

Montz expertise in distillation along with Koch Separations Solutions' (KSS) deep experience in membrane and filtration technology offer brewers full and flexible solutions for their operations – with the added benefit of lower operational costs, increased efficiency, and improved sustainability. KSS can apply a variety of filtration technologies applied in Food Processing, i.e. Ultra Filtration, Reverse Osmosis and Membranes for Micro Filtration. KSS and Montz cooperate in promoting, implementing, and developing technologies for the Food Processing Industry.

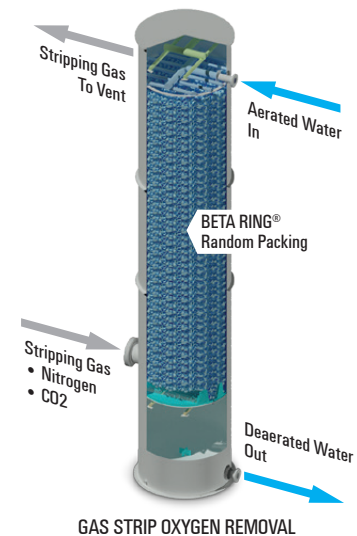


Eta Process Plant, a division of Koch Engineered Solutions, is a global leader in the supply of Deaeration Systems with over 45 years' experience and 550 installed systems.

Eta utilizes multiple technologies for deaeration: gas strip, steam, vacuum and membrane.

Most of the food and beverage installations are gas strip, however Eta has also supplied and installed vacuum systems for specific customer requirements.

Eta uses proprietary BETA RING® random packing, which is specifically designed for the high liquid loads and low gas loads in deaeration processes. This random packing allows higher liquid loads to be used with confidence.



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