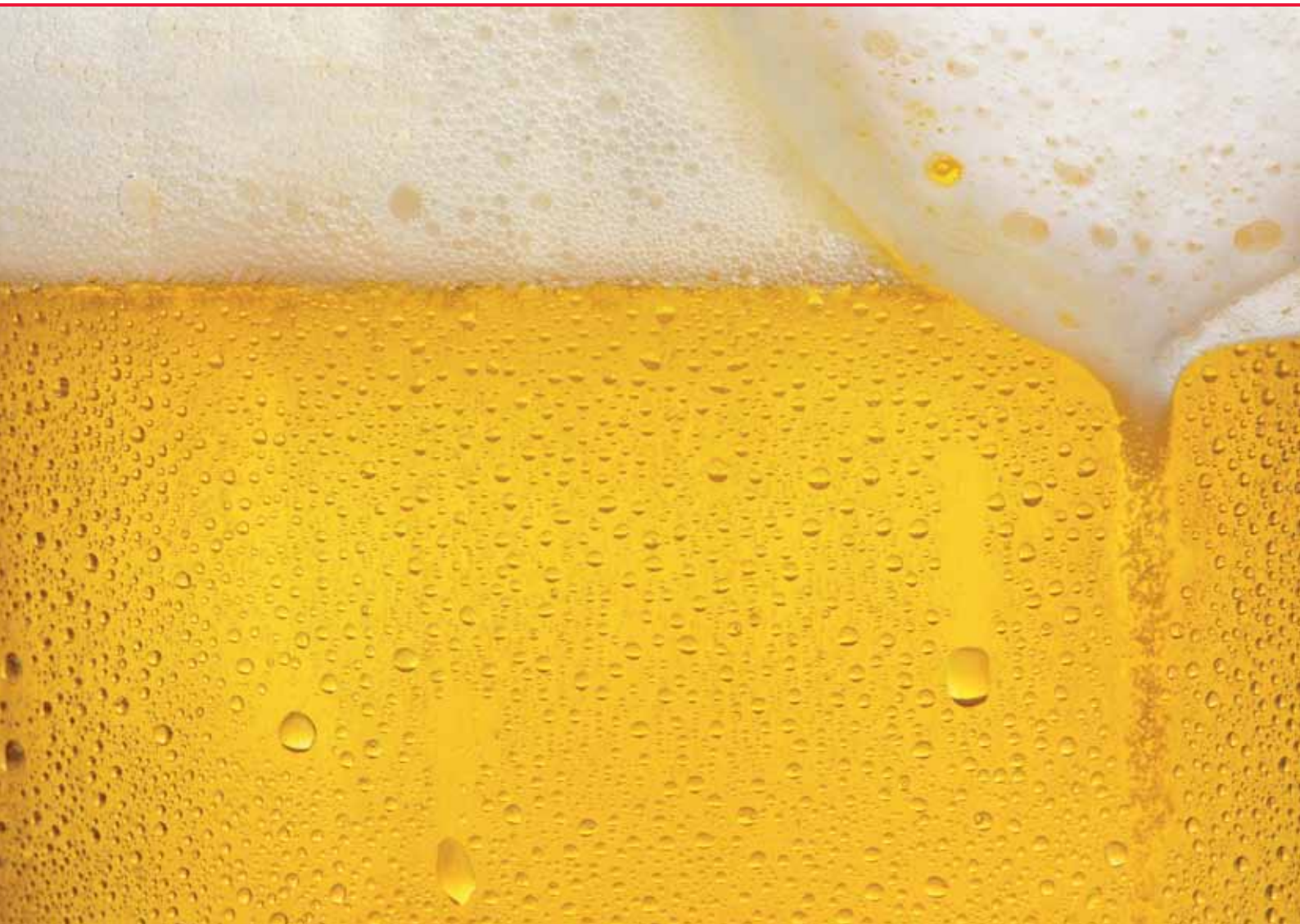
BUCHER
denwel

Brewery Solutions



Innovative Brewing Technologies

Bucher Denwel develops and produces a wide range of specialized equipment and provide engineering solutions dedicated to help brewers to optimize their processes.

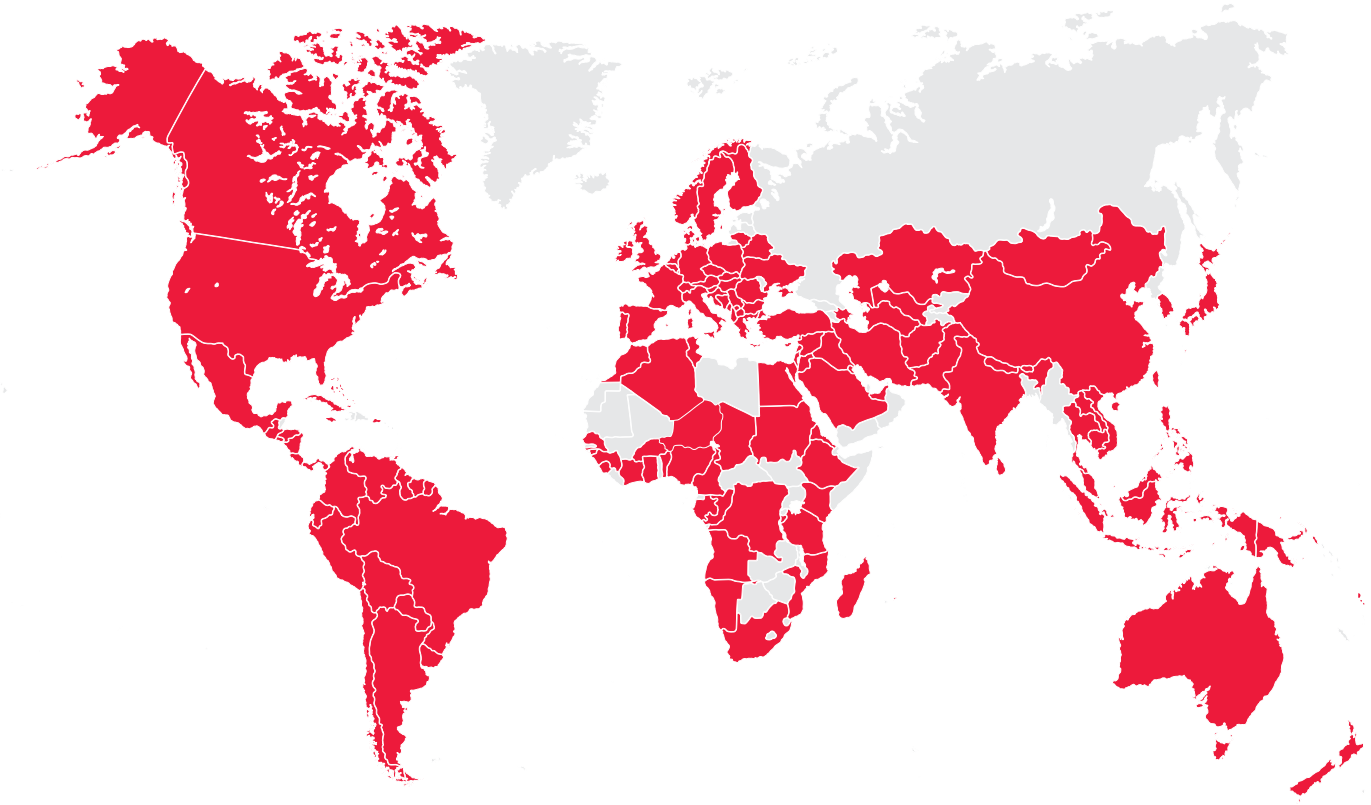
Bucher Denwel is your reliable single-source supplier for complete Brewery solutions. Our offering now goes beyond superior filtration and Cold Block solutions, and includes high-tech brewhouse and energy management systems, as well as cutting-edge hopping technologies. Our scope includes technological design, supply of the equipment and process automation, installation and commissioning. We offer complete new turnkey projects or upgrades and extensions of existing plants.

We supply innovative brewing equipment such as compact Brewhouses, Energy management systems, Yeast plants, Filtration technologies, Hopping units, Water deaeration, Blending, Carbonation, Dosing and Hard seltzer systems, Dealcoholisation, Cold sterilization, Flash pasteurization, CIP and all types of Beer tanks.

We have a global presence. Our sales and service network are always available for you to provide consultancy, technical support and after sales service.

Bucher Denwel, a member of the Bucher Unipektin group, is a global technological leader serving both industrial and craft breweries.

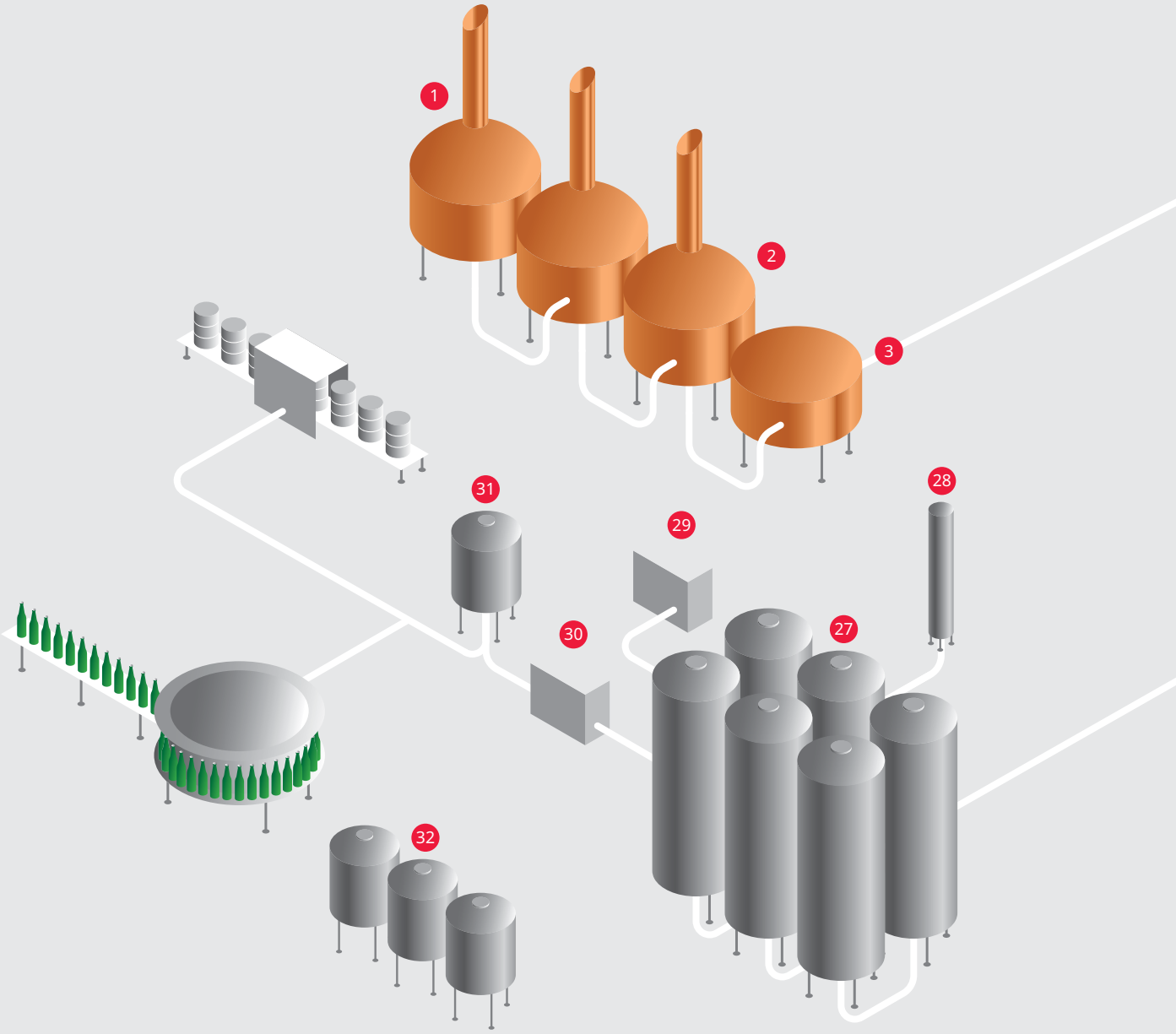
Our Playground



Close to 5,000 References in 140 Countries

Content

Solutions for Brewing



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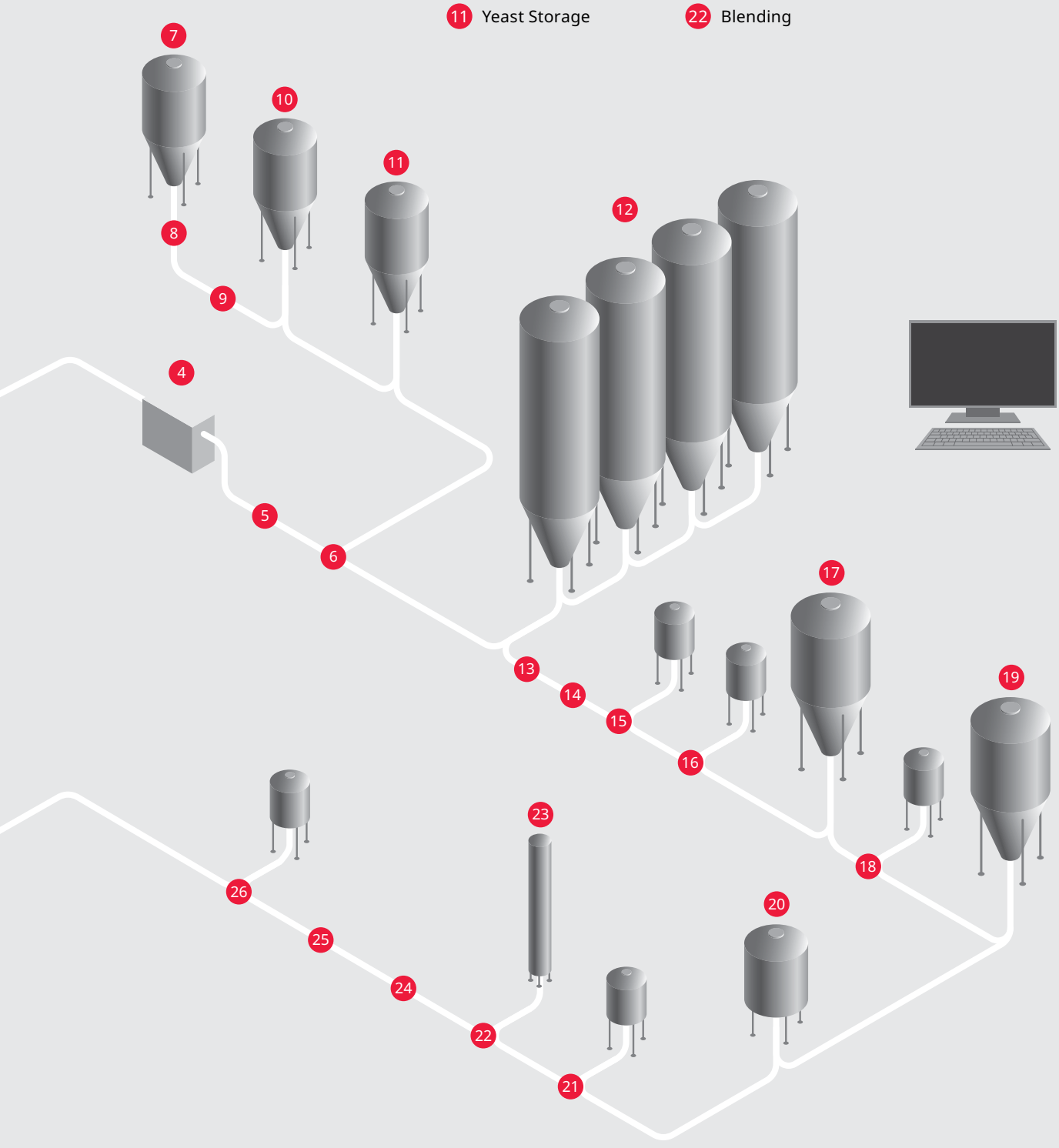


Traditional Brewhouse

Manual/Semi-automatic/Automatic

Highest brewing flexibility with state-of-the-art technologies
– Highest wort qualities
– Designed according to your requirements
– Innovative Banke Technology for highest standards

Applications

Our brewhouse systems offer you the perfect solution for producing the best wort qualities. With innovative technologies from mashing to wort cooling, we achieve maximum product and energy efficiency with the greatest possible flexibility. Designed to meet your individual requirements in terms of production volumes, product range, budget, and spatial conditions, we will design your ideal brewhouse configuration.

Characteristics

Higher yields during mashing: Thanks to the Mashinist system, you can achieve up to 1% higher yields, which increases the profitability of your production.

Efficient Mashwing agitator: The agitator accelerates the lautering process by protecting the husks and leads to higher final fermentation degrees – for optimal beer results with low electrical power consumption.

Precise lautering with Opteron: Our Opteron lautering system ensures homogeneous extraction of the spent grains, prevents leakage at the edges thanks to special blade geometry and optionally minimizes extract losses through a spent grain flap.

Wort boiling system: With only 2% total evaporation at low heating medium temperatures, our system offers maximum energy and technological efficiency while guaranteeing high wort quality.

Whirlpool for optimal trub separation: Thanks to its optimal nozzle arrangement and geometry, our whirlpool ensures ef f icient and water-saving trub separation with minimal extract losses. With optional wort pre-cooling fine hop aromas can be emphasized more st rongly.

Energy savings at the highest level: In combination with our Exergon Brew® and Exergon Eco systems, we enable significant energy savings that significantly reduce your operating costs

Technical data and capacities

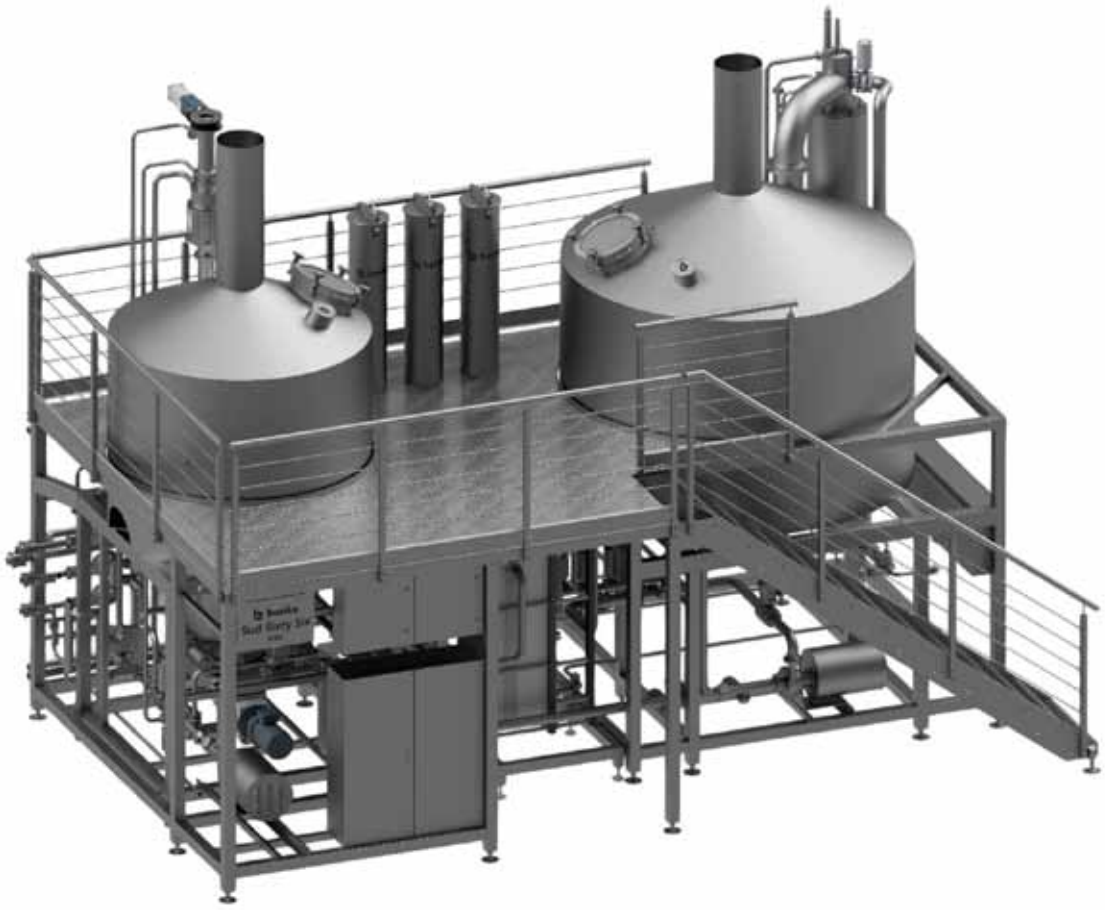
Cast out wort	5–250 hl/brew
Capacity	3–12 brews in 24 hours
Set up	2 to 5 vessels
Automation	fully automated

Sud Sixty Six

Compact brewhouse

High performance brewing at lowest space demand

– Combination of mash lauter tun and whirlpool kettle
– Decoction mashing possible
– Innovative brewing technology for highest efficiency



Applications

The Sud Sixty Six compact brewhouse consists of an innovative mash lauter tun and a whirlpool kettle, enabling maximum production output with minimum space requirements.

With just two brew vessels a revolutionary 6 brews can be produced in 24 hours.

Characteristics

The heart of the system is a combined mash lauter tun equipped with a conical lauter surface. This special design achieves very short lautering times with high flexibility in terms of gravity.

External heat exchanger for mash and wort allow for the lowest possible heating medium temperatures, thus providing the ideal basis for our energy management systems. They also guarantee low thermal stress on the product.

By layering the boiling mash, decoction mashing is possible in a single vessel.

The Sud Sixty Six wort boiling system also impresses with its very low evaporation rate of only 2%.

Technical data and capacities

Cast out wort	5–150 hl/brew
Capacity	3–6 brews in 24 hours
Gravity	7–24° Plato
Automation	fully automated

Optional

In conjunction with the Exergon Brew® and Exergon Brew® Eco energy management systems, it is possible to achieve extremly low thermal consumption and even complete decarbonization. The low energy requirement at low heating medium temperatures enablescost-effective energy supply with wood chips or pellet heating systems.

Flavorit

Late hopping technology for brewhouses

For well-balanced and
reproducible hop aroma

– Reduces wort losses associated with late hopping
– Up to 200 kg of hops
– For hop pellets, hop cones, herbs, flowers and other ingredients

Applications

Flavor carriers such as hops, herbs, spices, citrus peel and flower petals are extracted with hot wort in the brewhouse for specialty beers.
In traditional brewhouses, the extracted solids are separated in the whirlpool together with the hot trub. This results in considerable wort losses and the extraction process is linked to the whirlpool process. With the Flavorit technology, extraction takes place in a bypass to the wort kettle or whirlpool in an independent process.
The solids are retained in the system. In addition, extraction is more efficient, precise and the duration can be flexibly selected. This significantly reduces wort losses. The quantity of aroma carriers can be considerably reduced through targeted and faster extraction. For hops, the increase in bitterness can be controlled.

Principle

The hops are added to the device and hot wort is then flowed through them. The ideal and homogeneous flow through the aroma carriers guarantees uniform extraction. The increase in bitterness can be controlled, while the targeted extraction of the lupulin glands in cone hops ensures an intense aroma. The solids are largely retained by an integrated sieve and can also be washed out with hot water to reduce further extract losses. Optionally, a discharge pump can be integrated to control and optimize the process fully automatically.

Technical data and capacities

For a smooth, efficient, and clean late hopping process tailored to your requirements:

Hop loads	10–200 kg per batch
Cleaning	inline with brewhouse CIP
Integration	retrofittable
Automation	full automation possible

Process development in the laboratory

To select the right extraction system, we collect all the necessary data in a laboratory test, followed by a detailed analysis of filtration characteristics, sedimentation rates, swelling volumes and the respective wet densities of your ingredients. Based on these values we select the aroma extraction system that is right for you. If required, we can also have sensory and analytical processes examined for you.

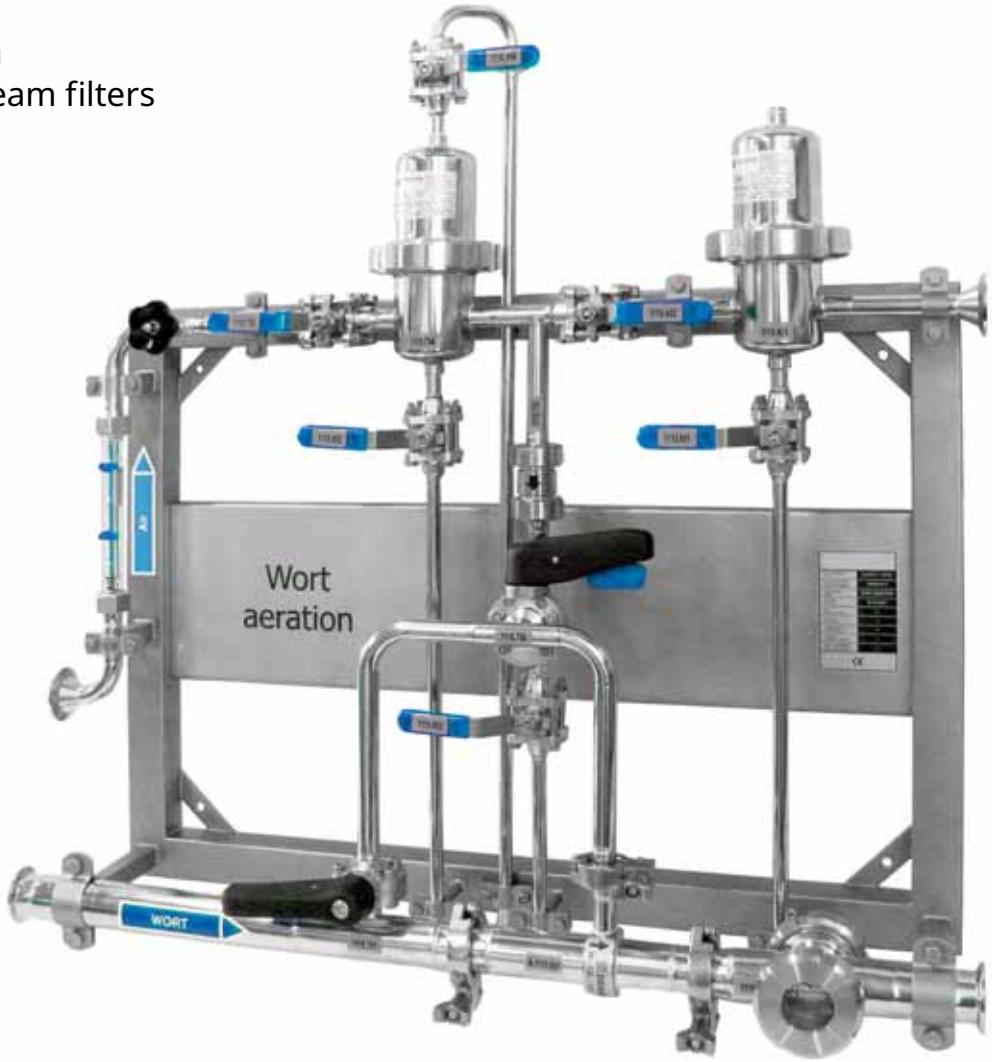
Characteristics

Flavorit systems are flexible and can be easily retrofitted for integration into existing brewhouses. They can comfortably process 10 to 200 kg of hop pellets or up to 200 kg of hop cones, as well as herbs, flower petals, citrus peel, and much more.
As a combination device, it can also be used for the simultaneous processing of cones and pellets, individually tailored to your application.
Efficient aroma extraction: A specially developed stirrer or special flow control ensures accelerated and gentle extraction of the hop oils, while the defined flow through the hop layers prevents dead zones or bypasses.
Full automation: The process, including CIP cleaning and hop discharge, is fully automated, guaranteeing maximum efficiency and ease of operation.
Flexibility: The system can be easily retrofitted and installed between the whirlpool and wort cooler or in the wort boiling area.
Quality: The targeted extraction of the lupulin glands ensures an intense aroma, while the controlled bitterness adjustment ensures a harmonious taste experience.
Convenience: Easy filling through the manhole, inline cleaning, and the ability to precisely control bitterness and aroma extraction.
Discover the most efficient solution for aroma extraction and bitterness adjustment – for an unparalleled taste experience in every batch!

Inline Aeration/Oxygenation

Manual Unit

For instant wort aeration/oxygenation
– Micro bubble size
– Instant saturation
– Sterile gas and steam filters



Principle

Oxygen or air is injected into the wort through Bucher Denwel Injector, which splits the gas into micro bubbles. Most efficient and instant saturation of the gas is achieved with only a minimal pressure drop, no gas loss and a fully hygienic design. No static mixer or sinter candles needed.

The system includes a sterile filter for cleaning the gas and a steam filter cleaning the steam used for sanitization of the sterile filter.

Technical data

Air addition:	up to 15 ppm (P & T dependent)
O_2 addition:	up to 25 ppm (P & T dependent)
Pressure:	operating 2 to 5 barg, 30 to 72 psig
Temperature:	operating 0 to 15 °C, 32 to 60 °F
CIP:	2 to 5 barg, 30 to 72 psig; max. 90 íC, 200 °F; Steam 120 °C, 248 °F
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 0,8 m, 31,5”; Width 0,9 m, 35,4”; Depth 0,2 m, 6,5”
Weight:	from 25 kg, 55 lb
Material:	Stainless Steel 304, EPDM, PSU, PP
Models:	Aeration DASxxxM; Oxygenation DOSxxxM; Aeration and Oxygenation DOAxxxM

D__025M	DN 25	1”	10 to 25 hl/h	5 to 11 gpm	9 to 21 bbls/h
D__040M	DN 40	1½”	16 to 40 hl/h	8 to 17 gpm	14 to 34 bbls/h
D__050M	DN 40	1½”	20 to 50 hl/h	9 to 22 gpm	18 to 42 bbls/h
D__075M	DN 40	1½”	30 to 75 hl/h	14 to 33 gpm	26 to 63 bbls/h
D__100M	DN 50	2”	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h

Inline Aeration/Oxygenation

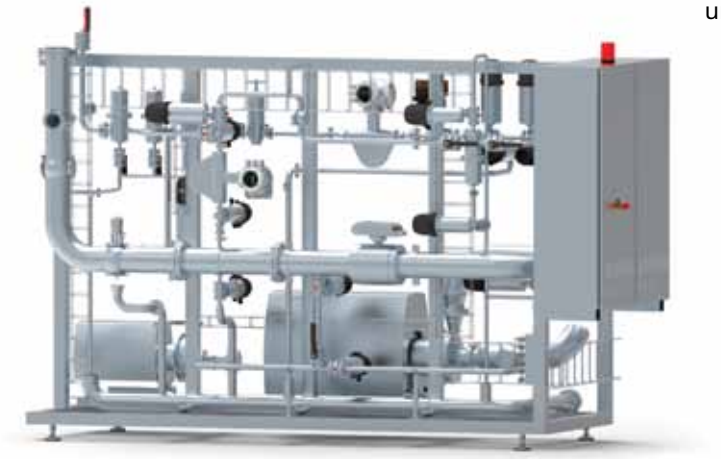
Automatic Unit

For instant wort aeration/oxygenation
– Micro bubble size
– Instant saturation
– O_2 analyzer controlled

Application

Brewing yeast needs oxygen to multiply. While insufficient aeration results in reduced yeast reproduction, overdosing may cause the formation of undesired substances and wort foaming. Therefore, controlled wort aeration is required for a consistent fermentation rate and constant product quality.

Designed for fast and accurate injection and dissolution of air or oxygen, Bucher Denwel provides a fully automated solution for continuous wort aeration.



Principle

Oxygen or Air is injected into the wort through Bucher Denwel Injector, which splits the gas into micro bubbles. Most efficient and instant saturation of the gas is achieved with only a minimal pressure drop, no gas loss and a fully hygienic design. No static mixer or sinter candles needed. The injected gas can be cleaned and sterilized by micro and sub-micro sterile filters.

An inline O_2 analyzer continuously monitors the O_2 concentration. The output signal is processed by the PLC to control the O_2 dosing. A high precision control valve accurately adjusts the injection, avoiding any over- or under- aeration/oxygenation.

Technical data

Air addition:	up to 15 ppm (P & T dependent)
O_2 addition:	up to 25 ppm (P & T dependent)
Pressure:	operating 2 to 5 barg, 30 to 72 psig
Temperature:	operating 0 to 15 °C, 32 to 60 °F
CIP:	2 to 5 barg, 30 to 72 psig; max. 90 °C, 200 °F; Steam 140 °C, 286 °F
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 1,9 m, 6,2''; Width 2,0 m, 6,5''; Depth 0,6 m, 2''
Weight:	from 100 kg, 220 lb
Material:	Stainless Steel 304, EPDM, PSU, PP
Models:	Aeration DASxxxA; Oxygenation DOSxxxA; Aeration and Oxygenation DOAxxxA

D__050A	DN 40	1½"	20 to 50 hl/h	9 to 22 gpm	18 to 42 bbls/h
D__075A	DN 40	1½"	30 to 75 hl/h	14 to 33 gpm	26 to 63 bbls/h
D__100A	DN 50	2"	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h
D__150A	DN 65	2½"	60 to 150 hl/h	27 to 66 gpm	52 to 127 bbls/h
D__200A	DN 65	2½"	80 to 200 hl/h	36 to 88 gpm	69 to 170 bbls/h
D__300A	DN 80	3"	120 to 300 hl/h	53 to 132 gpm	103 to 225 bbls/h
D__500A	DN 100	4"	200 to 500 hl/h	88 to 220 gpm	171 to 426 bbls/h
D__750A	DN 125	5"	300 to 750 hl/h	132 to 330 gpm	256 to 639 bbls/h
D__A00A	DN 150	6"	400 to 1000 hl/h	176 to 440 gpm	341 to 852 bbls/h

Yeast Plant

Propagation, Storage, Pitching

For yeast management
– Various yeast strains
– Flexible design
– Highest hygienic standard

Application

Bucher Denwel Yeast management systems ensures that highest hygienic and quality standards are maintained. Yeast is propagated in time at required concentration and volume, yeast is harvested and treated directly after fermentation, multiple yeast strains are properly stored and scheduled to make sure, that each batch is pitched with corresponding and vital yeast with no cross contamination of strains. For optimal efficiency beer is recovered from surplus yeast with our cross flow filtration plant.

A typical Yeast management includes following production operations:

- Propagation
- Pitching
- Harvesting
- Treatment
- Storage
- Beer recovery
- Sanitation and sterilization

We are strong, single source and highly qualified supplier for your Yeast management system

- Vital yeast propagation in one or multiple propagation vessels under sterile conditions with gently homogenizing and optimizing aeration
- Yeast harvest, treatment and storage
- Precise yeast pitching
- Yeast autolysis plant and yeast disposal vessels
- Beer recovery filtration plant
- CIP plant

Cerinox® BR

Cross-flow filtration plant with ceramic membranes

For beer recovery from surplus yeast
– Short payback period
– Economic system with diafiltration
– High quality of recovered beer

Characteristics

Cerinox® is a compact cross-flow filtration plant equipped with ceramic tubular membranes. The plant consists of two main parts, the filter unit and the CIP station. Both parts can be arranged separately or on a common skid. Different automation levels are available, from manually controlled units up to fully automated plants.

The special design of the so-called dual-flow modules allows high packing density of filter surface, which leads to small footprints and lower heights of Cerinox® plants. Especially because of the latter, the Cerinox® is easy to maintain. Due to the compactness of the plant, its inner volume is small compared to the installed filter area. This leads to low water and energy consumption as well as low product losses. Tailor-made ceramic membranes for beer recovery from surplus yeast guarantee high economical benefit and high quality of recovered beer. The high durability of the membranes, together with a well proven process based on over 20 years of experience with more than 100 plants installed worldwide, lead to very reliable systems with very low demand for operator presence and maintenance. This, and the short pay back periods, made the CERINOX® a standard solution for beer recovery today.

Basic process

During the brewing of beer, surplus yeast settles in the fermentation and storage tanks. The total volume of surplus yeast represents about 2 to 3 % of a brewery's output. Approximately 50 % of the volume of surplus yeast is beer, which is lost to the brewery if the slurry is sent untreated to farms or food producers. If yeast is discharged into the sewerage system, very high treatment charges arise because of the very high biological oxygen demand. The average B.O.D. value is around 140,000 mg/kg. For these reasons, the valuable component "beer" is recovered from surplus yeast.

Characteristics of the membranes

For the beer recovery, process tailor-made ceramic membranes in tubular multi channel elements have been developed:

Channel diameter	8 mm
Pore size	0.3 µm
Pressure resistance	30 bar
Temperature	> 90 °C
pH	0~14

The robustness of the ceramic material guarantees long lifetime of the membranes, high availability of the plants, low membrane replacement costs and low maintenance costs.

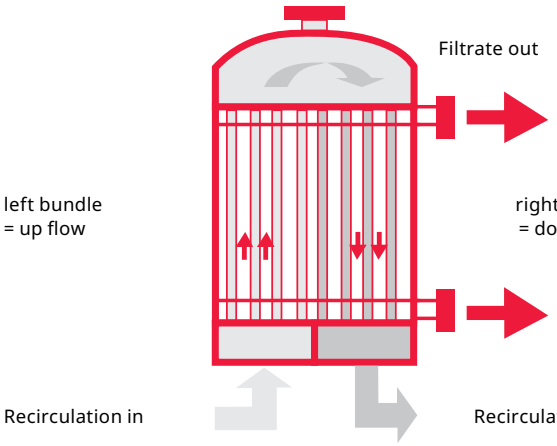
Quality of recovered beer

The membrane's pore size of 0.3 µm guarantees high quality of recovered beer:

Turbidity of filtrate	< 08. EBC (90° angle)
Yeast cells in filtrate	< 5 cells / 100 ml
Bacteria reduction	> 10^5

The dual-flow module

The name of the dual-flow-module is derived from the two different flow directions – upwards and downwards – of the unfiltered liquid in the channels of the installed ceramic elements.



Thanks to this concept, a maximum of packing density and a minimum of pipe connections are achieved. Complete venting and draining are guaranteed by discharging the liquid through the top and bottom plate.

This concept allows for easy maintenance by simply taking away the top cover of the housing.

With two different sizes of dual-flow modules, one with 20 m^2 filter area, the other one with 48 m^2, and hence by modularly increasing filter area, an optimal plant design for all required brewery sizes is possible.

Dry Hopping

Technology for safe and efficient dry hopping

For well-balanced and reproducible hop aroma
– Reduces wort losses associated with late hopping
– Up to 200 kg of hops
– For hop pellets, hop cones, herbs, flowers and other ingredients

Applications

Strongly hopped beers such as IPA, pale ales, and New England IPA are popular in many countries. Dry hopping is the key technology for these beers. This involves adding hops during fermentation and storage. Dry hopping has important process requirements that directly influence the quality of the beer. These include avoiding oxygenation, reproducible extraction of aromas, and low-loss removal of hop solids. In terms of plant technology, we implement these requirements in a modular concept: dissolving and extracting with the Loopulator hop dissolving and dosing system, and separating the solids using a Hopsteiner curved strainer or, in the case of the external dry hopping system LoopulEX, using a decanter.

Technical data and capacities

For a smooth, efficient, and clean late hopping process tailored to your requirements:

Hop loads	up to 1,500 kg per batch
Cleaning	inline with brewhouse CIP
Integration	retrofittable
Automation	full automation possible

Principle

Up to 1,500 kg of hop pellets can be dispersed in beer using a special agitator in the Loopulator. Thanks to rapid dissolution in a CO_2 atmosphere, oxygen is removed, the viability and vitality of the yeast is preserved, and beer quality is ensured. The technology enables rapid hop addition with aroma transfer in just 30 to 60 minutes, with flexible dosing in the transfer line or circulation line. It can be controlled both manually and fully automatically, which guarantees easy integration and operation. This also reduces the contact time. By using the Loopulator, hop savings of 25 to 40% can be achieved.

The Loopulator serves as a reliable dissolving tank for hop pellets and can be easily retrofitted into existing systems. It can be expanded with the Hopsteiner to become the LoopulEx® Basic and with a decanter to become the LoopulEx®, making the process even more efficient.

The Hopsteiner uses curved screen technology to create new possibilities in the cold hopping process for separating hop solids. The solids can be separated independently of sedimentation, significantly reducing the time spent in the tank. This creates additional capacity in the cellar. Hop-related beer losses can be reduced by up to 60%. The dry matter content of the separated hop trub is around 12%, with particle retention above 100 µm. The technology also helps to reduce the hop creep effect and significantly shortens tank occupancy times, as there is no need to wait for the hops to settle in the tank. Downstream centrifuges or beer filters are significantly relieved. Wastewater pollution is also significantly reduced.

With LoopulEx®, we offer an external dry hopping solution that reduces beer loss by an impressive 96% – up to 5,000 kg of hops per batch! The external extraction system consists of the Loopulator together with a decanter, whereby the process steps of dissolving, extracting, and separating take place continuously one after the other. This minimizes beer losses, reduces wastewater pollution, and achieves a complete flavor match while significantly saving hops.

Options

For handling hop pellets and cones, we offer a range of solutions depending on the quantity, from simple manual feeding to various conveyor and feeding systems from different containers.

Polynox MC

Cross-flow beer filtration with polymeric membranes

Kieselguhr free beer filtration with organic membranes
– Bright, yeast free filtered beer
– High flexibility for a wide range of beer types
– Easy to operate

The reliable solution for membrane filtration of beer

The technologies set up by Bucher Denwel ensure performance, reliability, short return on investment and sound operating profits.

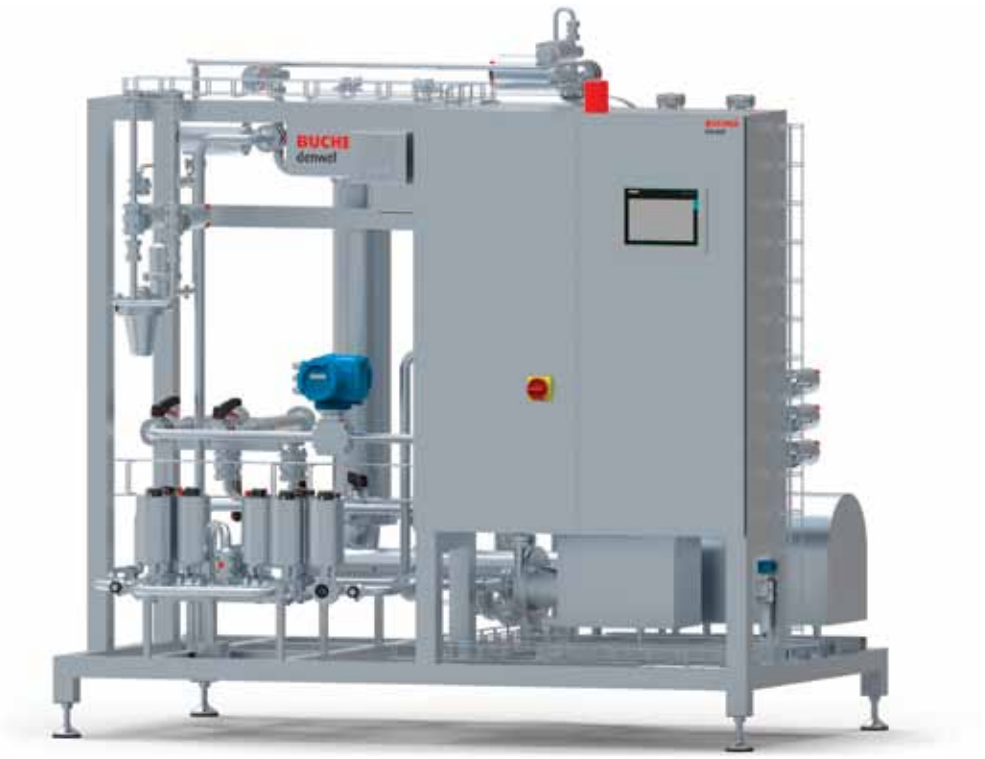
Bucher Denwel presents Polynox MC, the reliable solution for cross-flow beer filtration with polymeric membranes.
- Polynox MC filtration process for high-quality filtered beer and steady flow rates.
- High filtrate yield without solid waste.
- Flexible automation system with maximum operational safety thanks to permanent self-controlling devices.

Plant sizes from 10–50 hl/h / 100 hl/h (4–22/44 gpm, 8–42/85 bbls/h) for twin plants.

Membranes

The filters are equipped with a polymeric, hydrophilic membrane with asymmetrical structure specially adapted to beer.

The asymmetrical structure greatly contributes to maintaining a steady filtration flow rate. The membranes can be exposed to alkaline, acidic and oxidising cleaning agents for reliable recovery of filtration performance.



Technical data

Models:			Average filtration capacity		
Polynox MC2	DN 25	1″	10 hl/h	5 gpm	9 bbls/h
Polynox MC3	DN 25	1″	15 hl/h	7 gpm	13 bbls/h
Polynox MC4	DN 25	1″	20 hl/h	9 gpm	17 bbls/h
Polynox MC6	DN 25	1″	30 hl/h	13 gpm	26 bbls/h
Polynox MC8	DN 40	1½″	40 hl/h	18 gpm	34 bbls/h
Polynox MC10	DN 40	1½″	50 hl/h	22 gpm	43 bbls/h

Polynox MF

Industrial cross-flow beer filtration with polymeric membranes

Kieselguhr free beer filtration with innovative filter cartridges with organic membranes

– Bright, yeast free filtered beer
– High flexibility for a wide range of beer types
– Longer average lifetime of membranes due to cartridge concept
– Easy expandability

The reliable solution for membrane filtration of beer

The technologies set up by Bucher Denwel ensure performance, reliability, short return of investment and sound operation profits.

Bucher Denwel presents Polynox MF, the reliable solution for industrial cross-flow beer filtration with innovative filter cartridges with polymeric membranes.

- Polynox MF filtration process for high-quality filtered beer and steady flow rates.
- High filtrate yield without solid waste.
- Flexible automation system with maximum operational safety thanks to permanent self-controlling devices.
- Plant sizes from 50 to 500 hl/h (22 – 220 gpm).

Module design

Stainless steel module holds up to 19 pcs of 2 m2 filter cartridges BD20 which corresponds to approximate beer flow of 16 hl/h. Each filter cartridge is easy exchangeable and thus longer average lifetime of membranes is provided.

Membranes

Filter cartridges are filled with hydrophilic polyether sulfone (PES) membrane with asymmetrical structure specially adapted to beer. All materials are FDA approved.

The asymmetrical structure greatly contributes to maintaining a steady filtration flow rate. The membranes can be exposed to alkaline, acidic and oxidizing cleaning agents for reliable recovery of filtration performance.

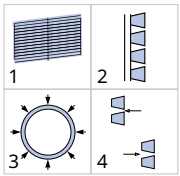
2 m^2 filter cartridge BD20

Synox BF

Compact precoat candle filter

The smart candle filter for precoat filtration
– Compact design
– Easy handling
– High flexibility

STABOX® candle



1 Spiral of V4A
2 Calibrated openings
3 High resistance
4 No obstructions during filtration
5 Perfect cleaning

Characteristics

The Synox BF is the advanced version of the former Secu-jet candle filter but with hanging candles from a top plate. The design of the filter and the usage of the same STABOX candles (25 mm diameter) make it the small version of the large Synox® filters.

Applications

The Synox BF was developed with the focus on the rising amount of small Craft-Breweries worldwide and their increasing demand for filtered beer. But also, for any other beverage to be filtered with filter aid like diatomaceous earth this filter will be a reliable solution.

Advantages

- compact skid mounted design
- movable with wheels
- low water and energy consumption
- long service life due to high quality design
- very little maintenance required, no moving parts inside
- efficient cleaning device inside the vessel
- dosing pump separately mounted on the skid for easy maintenance

Technical data

Type	Synox BF / 380	Synox BF / 500	Synox BF / 560
Operating pressure / bar	0–6	0–6	0–6
Operating temperature / °C	0–100	0–100	0–100
Max. flow rate / hl/h	32	47	55
Min. flow rate / hl/h	16	23	27
Sludge volume / ltr	141	201	226
Filter area / m2	6.4	9.4	11.0
Number of candles / pcs	60	60	60
Candle length / mm	945	1381	1603
Total DE capacity / kg	41.3	59.2	66.5
Precoat charge DE / kg	7.7	11.3	13.2
Body feed charge DE / kg	33.7	48.0	53.4
Volume of dosing tank / ltr	130	130	130
Performance of dosing pump / kW	0.75	0.75	0.75
Dosing flow rate / ltr/h	16–160	16–160	16–160
Performance of process pump / kW	5.5	5.5	5.5
Weight of complete unit (empty) / kg	780	840	880
Weight of complete unit (operating) / kg	1300	1480	1580

Synox 2.0® PF

Precoat candle filter

The new generation of candle filter offers the most efficient and economical solution

– Reduced pre-run
– Reduced beer losses
– Reduced cleaning water consumption

The new generation of candle filter for precoat filtration presented by the market leader

The SYNOX 2.0® offers excellent value for all kind of precoat filtration within a hygienic environment. Typical applications include filtration of beer, wine; all clear beverages as well as liquid food components such as gelatine, sugar syrup, edible oil and the like.

New features

- New CFD optimized flow pattern (= computational fluid dynamics)
- New and patented inlet distributor
- New cleaning device

Benefits

- Reduced beer losses
- Capability of small batch handling
- Reduced pre-run
- Reduced interphase between brands
- Reduced cleaning water consumption

Proven features

- Unique, patented 25mm STABOX® candle completely in stainless steel for high packing density with reduced void volume; best utilisation of slurry space
- Gasket free candle fixing for minimum maintenance
- Hygienic vessel design according to EHEDG guidelines
- Internal cleaning of candles in situ, without removing candles from filter
- Compatibility with the new generation of regenerable filter media
- Minimum required space above the filter as candles are mounted from the bottom

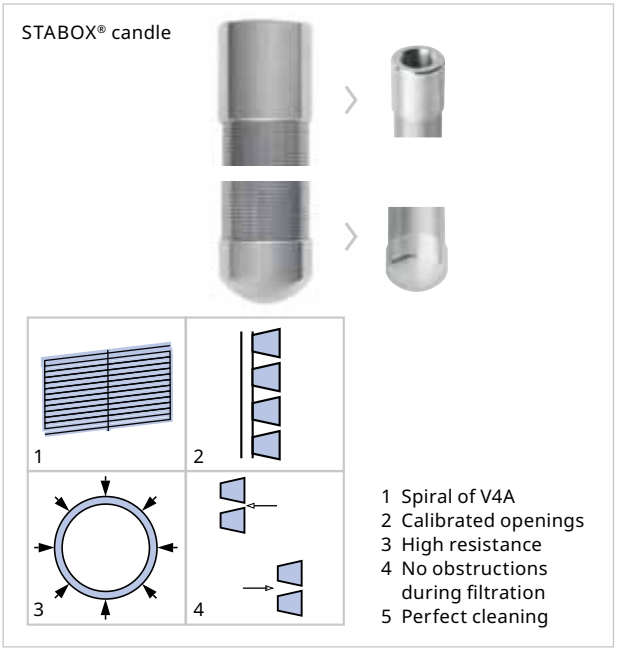
Technical data

Synox 2.0® PF size	Filter area Sqm	Sludge holding capacity in liters	Vessel volume in hl	Operating pressure	Capacity in hl/hr
800	12–22	300–460	8.5 / 11.5	7 bar / 100 °C	60–110
1100	24–46	640–1010	17 / 21 / 23	7 bar / 100 °C	120–230
1300	45–70	1150–1500	29 / 32 / 34	7 bar / 100 °C	225–350
1500	67–95	1670–2090	42 / 44 / 47	9 bar / 100 °C	335–475
1800	90–139	2270–3020	59 / 62 / 65 / 69	9 bar / 100 °C	450–695
2000	121–175	3080–3770	79 / 83 / 88	9 bar / 100 °C	605–875
2300	153–237	3870–5130	104 / 109 / 114 / 121	9 bar / 100 °C	765–1185
2600	225–339	5800–7180	135 / 144 / 159	9 bar / 100 °C	1125–1500

Synox 2.0® PS

Candle filter for PVPP stabilisation

For treatment of beer and other beverages
– Reliable beer stabilisation
– Low PVPP losses
– Easy to handle



Characteristics

The Synox 2.0® PS is an especially developed version of our market leading kieselguhr candle filters, and uses the same robust and reliable, patented Stabox® candles. Recognising the serious shortcomings of "traditional" horizontal pressure-leaf PVPP filters, the Synox® PS is based on two decades of positive experience with candle filters. The new and patented inlet distributor allows superior flow control.

Higher reliability:

- stable and long-life filter elements (non-fouling, welded, steel wedge-wire lasting >15 years without deterioration)
- a simple and reliable process concept (constant hydraulic conditions)
- no moving parts and few elastomer seals

Lower operating costs:

- lower PVPP losses compared to horizontal leaf filters
- short regeneration and total downtimes
- infrequent, semi-skilled maintenance
- high productivity and low specific costs

Lower investment costs compared to horizontal leaf filters:

- special foundations not needed
- optimised (smaller & simpler) design
- reduced first charge (fill) of PVPP

Applications

The Synox 2.0® PS is designed for economical treatment of beer and other beverages by using regenerable PVPP to achieve a long shelf-life, wherein the PVPP is regenerated in-situ. Expensive sacrificial (single-use) PVPP is eliminated. Even for moderate production capacities, the required investment can be amortised in a short time-scale.

Technical data

Synox 2.0® PS size	Filter volume (litres)	Filtration capacity (hl/hr)	max. PVPP load (kg)
800	770	50–90	50
1100	1850	90–200	125
1300	3200	200–350	225
1500	4600	350–550	370
1800	7000	550–750	540
2000	8700	700–950	625
2300	10600	600–1200	> 700
2600	13550	700–1500	> 1000

FOM® 110 DGR

Horizontal pressure leaf filter

For precoat filtration in various applications
– Horizontal filter elements
– Centrifugal discharge
– For syrup, beverages and food products

Characteristics

This robust and compact design, improved over many years of practical experience, is made for industrial applications. The following characteristics are expression of the state of the art design:

– drive at the bottom for easy maintenance
– robust filter elements for high sludge volume
– all parts made of stainless steel
– certified pressure vessel according to DGR regulations
– spray tube for optimal CIP
– available with manual or automatic control system

Applications

This filter is widely used in all parts of the world for the following applications:

– sugar syrup
– tea (extraction and filtration)
– wine
– spirit
– gelatine
– soya sauce
– other special liquids

Using various filter aids like:

– Active carbon
– Kieselguhr
– Cellulose
– Perlite
– PVPP
– And many others

Models

Filter area/volume		Available element pitch (mm)	Effective filter area (m^2)	Sludge volume (liter)	Volume of dosing vessel (liter)
FOM® 110/900	DN50/65	30/40/50/62	15.6/11.7/9.1/7.15	334/358/361	220
FOM® 110/1300	DN50/65	30/40/50/62	26.6/19.5/15.6/12.3	570/597/619	350
FOM® 110/1600	DN50/65	30/40/50/62	33.1/24.7/19.5/15.6	709/756/774	350
FOM® 110/1800	DN50/65	35/40/50/62	32.5/28.6/22.7/17.6	871/878/918	350 or 500

Securox® BF

Filter cartridge housing

For particle and final filtration of beer after precoat filters
– Two chamber design
– Safe particle retention
– Efficient backwash

Characteristics

The SECUROX® BF is a high precision stainless steel filter housing for filter cartridges, designed and manufactured especially for the brewing industry.

The enclosed system allows high capacity filtration with no drip loss. Its unique two chamber design allows an efficient cleaning of the cartridges at the end of the filtration cycle.

Applications

Securox® BF series filters are especially designed to be integrated within automated beer filtration lines. Their construction guarantees long service life of both filter media and equipment for heavy duty use in a industrial 24/7 operation. The technology is designed for high service life of filter media and equipment.

Its high filtration performance, top manufacturing quality and comprehensive set of certificates meet the high standards of the brewing industry.

Advantages of the SECUROX® BF – cartridge system

- two chamber-system for optimized cleaning procedure
- vertical construction
- small volume of unit
- adaptable to desired performance with possibility to add filter area
- short regeneration and sterilization cycles
- easy replacement of the cartridges
- perforated plate to accommodate standard filter cartridges with bayonet adapter and double o-ring
- also available as compact, movable system. Custom design versions for the pre-, final and sterile filtration

Options

The typical setup requires gauges and valves, as well as a check valve. Securox® BF is available in many options:

- Connections can be triclamp (sanitary), or dairy (DIN).
- Gaskets: EPDM (standard), silicone, viton® or teflon® encapsuled.

Technical data

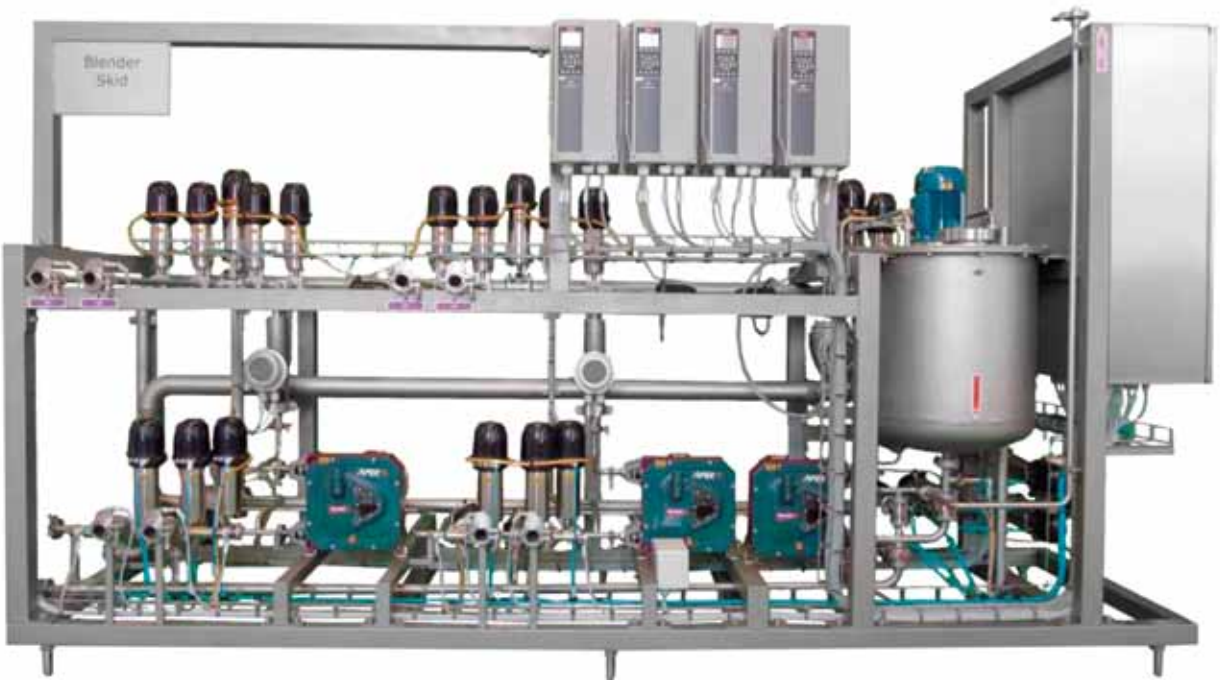
Securox® BF	Unit	30/10	40/14	40/20	60/32	60/46
Max. operating pressure	bar	7	7	7	7	7
Max. operating temperature	°C	100	100	100	100	100
Volume of filter – without pipe system	l	70	152	152	275	275
Weight of perforated plate – with cartridges	kg	40	56	56	103	103
Number of cartridges	pcs	10	14	20	32	46
Material quality filter		316L	316L	316L	316L	316L
Material quality gaskets		EPDM	EPDM	EPDM	EPDM	EPDM
Material quality pipe system, valves, etc.		1.4301	1.4301	1.4301	1.4301	1.4301
		Option 316L				

Dosing

Compact Unit

Customized dosing systems

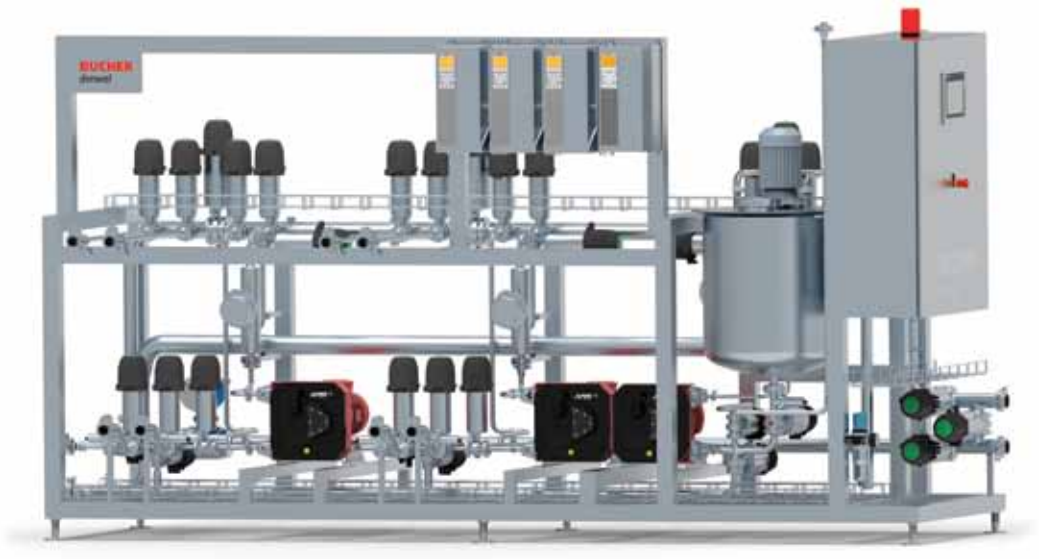
– Full capacity range
– Vessels with stirrer
– Precise and reliable dosing



Color concentrate / Fruit syrup / Fructose / Bitterness / Iso hops / Tetra hops / Kieselguhr / Hydragel / Silicagel / PVPP

Principle

The Compact Dosing Unit provides continuous dosing of one, or more additives into beverage, water or cleaning solution. A precise dosing rate is controlled by process analytics or volume / mass flow measurement. Additives can be dosed directly from barrels, storage vessels or agitated reactors and can be kept under protective atmosphere. Its high filtration performance, top manufacturing quality and comprehensive set of certificates meet the high standards of the brewing industry.



Technical data

Medium:	Beer
Pressure:	1 to 5 barg, 15 to 72 psig
Temperature:	0 to 10 °C, 32 to 50 °F
CIP Pressure:	3 to 6 bar, 43 to 87 psig
CIP Temp.:	max. 90 °C, 200 °F

Models:

DDS075C	DN 40	1½"	30 to 75 hl/h	14 to 33 gpm	26 to 63 bbls/h
DDS100C	DN 50	2"	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h
DDS200C	DN 65	2½"	80 to 200 hl/h	36 to 88 gpm	69 to 170 bbls/h
DDS300C	DN 80	3"	120 to 300 hl/h	53 to 132 gpm	103 to 225 bbls/h
DDS500C	DN 100	4"	200 to 500 hl/h	88 to 220 gpm	171 to 426 bbls/h

Inline Carboblender

Automatic Unit

For precise beverage blending and instant carbonation
– Instant blending and CO_2 saturation
– Multiple valve control for precise blending
– Alcohol, Extract and CO_2 analyser controlled

Application

High Gravity Brewing is a standard procedure in modern brewing. Precise adjustment of the extract or alcohol concentration is performed directly after filtration rather than in the brewhouse. It allows increasing the final output with the existing brew capacity and gives high flexibility in brewing different types of beers.

Designed for fast and accurate dosage of deaerated water, Bucher Denwel provides a fully automated solution for continuous blending ensuring consistent product quality.

Principle

An inline Alcohol / Extract analyser continuously monitors standardized beer. Two parallel valves of different size control accurate dosing of deaerated water. Special software algorithm regulates both control valves simultaneously anticipating their required position: the coarse valve acts for the fine valve so that the latter never remains in any end position but can do fine tuning in its most efficient range. This results in very fast regulation and most precise adjustment in just one process step.

Two electromagnetic flow meters measure the volumes of high gravity beer and deaerated water. If the resulting ratio is not within expected range, the system sends a warning or stops. The beer pump reliably blends the two liquids and therefore no additional mixer is necessary. Pressure drop can be avoided and superior sanitary design maintained.

Technical data

Blending ratio:	up to 100%
Original Gravity:	Measuring range 0 to 20 °P, ±0,05 °P
Alcohol:	Measuring range 0 to 10 %vol, ±0,03 %vol
Carbonation:	up to 6 g/l, 3 V/V (P & T dependent)
Pressure:	operating 2 to 5 barg, 30 to 72 psig
Temperature:	operating 0 to 5 °C, 32 to 40 °F
CIP:	2 to 5 barg, 30 to 72 psig; max. 90 °C, 200 °F
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 1,9 m, 6,2'; Width 2,0 m, 6,5'; Depth 0,6 m, 2'
Weight:	from 250 kg, 550 lb
Material:	Stainless Steel 304, EPDM, PSU, PP

Models:

DBC050A	DN 40	1½"	20 to 50 hl/h	9 to 22 gpm	18 to 42 bbls/h
DBC075A	DN 40	1½"	30 to 75 hl/h	14 to 33 gpm	26 to 63 bbls/h
DBC100A	DN 50	2"	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h
DBC150A	DN 65	2½"	60 to 150 hl/h	27 to 66 gpm	52 to 127 bbls/h
DBC200A	DN 65	2½"	80 to 200 hl/h	36 to 88 gpm	69 to 170 bbls/h
DBC300A	DN 80	3"	120 to 300 hl/h	53 to 132 gpm	103 to 225 bbls/h
DBC500A	DN 100	4"	200 to 500 hl/h	88 to 220 gpm	171 to 426 bbls/h
DBC750A	DN 125	5"	300 to 750 hl/h	132 to 330 gpm	256 to 639 bbls/h
DBCA00A	DN 150	6"	400 to 1000 hl/h	176 to 440 gpm	341 to 852 bbls/h

Water Deaeration

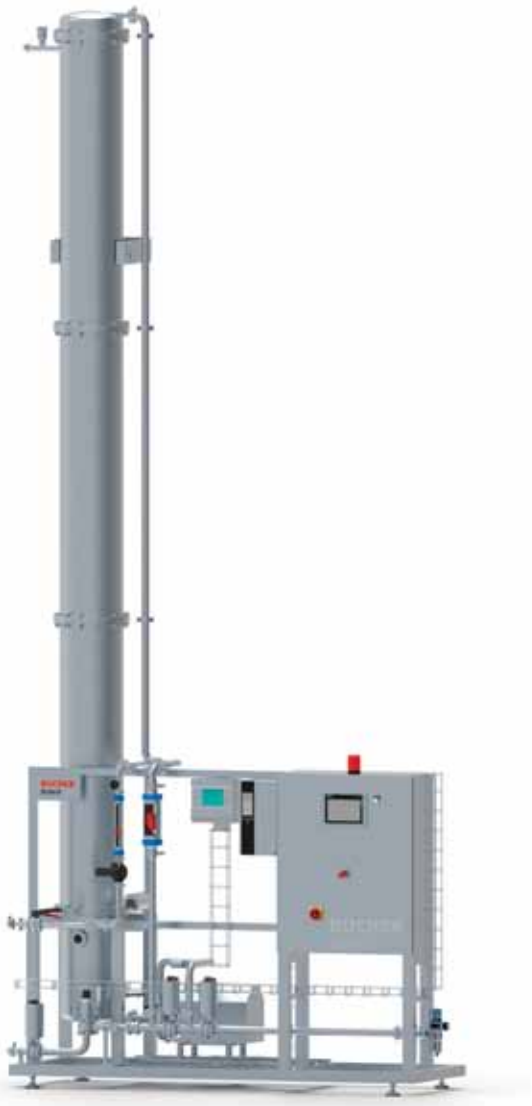
Column Cold Unit

Stripping technology
for deaerated water production
– Final oxygen below 10 ppb
– Carbonation of deaerated water
– No vacuum required
– Low CO_2/N_2 consumption

Principle

The deaeration column is filled with high efficient structured packing. Its large internal surface ensures a maximal contact area between gas and liquid. Water is homogeneously distributed on the top and CO_2/N_2 is injected at the bottom of the column. While the water flows downwards through the packing, the CO_2/N_2 rises in counter current removing the oxygen to concentrations as low as 10 ppb. A drive controlled pump maintains the level in the column and forwards the deaerated water into a buffer tank or point of use.

The unit has an uncompromising sanitary design and is fully CIP cleanable.



Technical data

Final Oxygen:	less than 10 ppb (0,01 ppm)
Pressure:	operating 2 to 4 barg, 30 to 60 psig
Temperature:	operating 8 to 30 °C, 40 to 90 °F
CIP:	2 to 4 barg, 30 to 60 psig; max. 90 °C, 200 °F
CO_2/N_2 purity:	99,995 %
Stripping gas flow:	app. 0,5 g/l (final O_2, water temperature and column height dependent)
Carbonation:	app. 2 g/l (water temperature dependent)
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 5,5 m, 16,4'; Width 1,0 m, 3,3'; Depth 0,5 m, 1,6'
Weight:	from 200 kg, 440 lb
Material:	Stainless Steel 304, EPDM, PSU, PP

DWD010C	DN 25	1"	4 to 10 hl/h	2 to 4 gpm	4 to 8 bbls/h
DWD015C	DN 25	1"	6 to 15 hl/h	3 to 6 gpm	6 to 12 bbls/h
DWD025C	DN 25	1"	10 to 25 hl/h	5 to 11 gpm	9 to 21 bbls/h
DWD050C	DN 40	1½"	20 to 50 hl/h	9 to 22 gpm	18 to 42 bbls/h
DWD075C	DN 40	1½"	30 to 75 hl/h	14 to 33 gpm	26 to 63 bbls/h
DWD100C	DN 50	2"	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h
DWD150C	DN 50	2"	60 to 150 hl/h	27 to 66 gpm	52 to 127 bbls/h
DWD200C	DN 65	2½"	80 to 200 hl/h	36 to 88 gpm	69 to 170 bbls/h
DWD250C	DN 65	2½"	100 to 250 hl/h	44 to 110 gpm	86 to 213 bbls/h
DWD400C	DN 80	3"	160 to 400 hl/h	70 to 176 gpm	136 to 340 bbls/h
DWD600C	DN 100	4"	240 to 600 hl/h	105 to 264 gpm	204 to 511 bbls/h
DWDA00C	DN 125	5"	400 to 1000 hl/h	176 to 440 gpm	340 to 852 bbls/h

Water Deaeration

Vacuum Unit

Vacuum enhanced stripping technology for deaerated water production

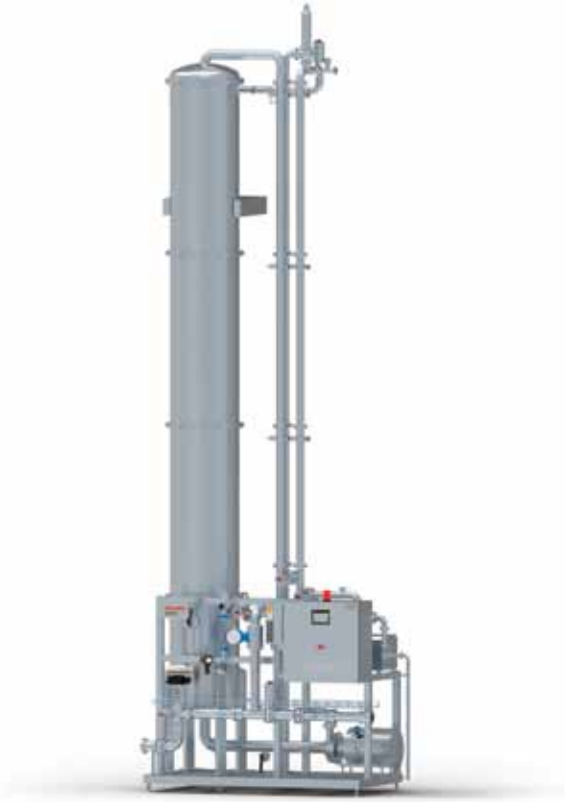
– Final oxygen below 10 ppb
– Very low CO_2 or N_2 consumption
– Efficient and hygienic design

Principle

The deaeration column is filled with high efficient structured packing. Its large internal surface ensures a maximal contact area between gas and liquid. Water is homogeneously distributed on the top and CO_2 or N_2 is injected at the bottom of the column. While the water flows downwards through the packing, the CO_2 or N_2 rises in counter current removing the oxygen to concentrations as low as 10 ppb. The deaeration column operates under vacuum, decreasing gas solubility in water. Therefore, striping gas consumption is significantly lower compared to the unit working under atmospheric pressure.

A drive controlled pump maintains the level in the column and forwards the deaerated water into a buffer tank or point of use.

The unit has an uncompromising sanitary design and is fully CIP cleanable.



Technical data

Final Oxygen:	less than 10 ppb (0,01 ppm)
Pressure:	operating 2 to 4 barg, 30 to 60 psig
Temperature:	operating 8 to 30 °C, 40 to 90 °F
CIP:	2 to 4 barg, 30 to 60 psig; max. 90 °C, 200 °F
CO_2/N_2 purity:	99,995 %
Stripping gas flow:	app. 0,2 g/l (final O_2, water temperature and column height dependent)
Carbonation:	app. 0,2 g/l (water temperature dependent)
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 5,5 m, 16,4''; Width 1,0 m, 3,3''; Depth 0,5 m, 1,6''
Weight:	from 200 kg, 440 lb
Material:	Stainless Steel 304, EPDM, PSU, PP

DWD010V	DN 25	1''	4 to 10 hl/h	2 to 4 gpm	4 to 8 bbls/h
DWD010V	DN 25	1''	4 to 10 hl/h	2 to 4 gpm	4 to 8 bbls/h
DWD015V	DN 25	1''	6 to 15 hl/h	3 to 6 gpm	6 to 12 bbls/h
DWD025V	DN 25	1''	10 to 25 hl/h	5 to 11 gpm	9 to 21 bbls/h
DWD050V	DN 40	1½''	20 to 50 hl/h	9 to 22 gpm	18 to 42 bbls/h
DWD075V	DN 40	1½''	30 to 75 hl/h	14 to 33 gpm	26 to 63 bbls/h
DWD100V	DN 50	2''	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h
DWD150V	DN 50	2''	60 to 150 hl/h	27 to 66 gpm	52 to 127 bbls/h
DWD200V	DN 65	2½''	80 to 200 hl/h	36 to 88 gpm	69 to 170 bbls/h
DWD250V	DN 65	2½''	100 to 250 hl/h	44 to 110 gpm	86 to 213 bbls/h
DWD400V	DN 80	3''	160 to 400 hl/h	70 to 176 gpm	136 to 340 bbls/h
DWD600V	DN 100	4''	240 to 600 hl/h	105 to 264 gpm	204 to 511 bbls/h
DWDA00V	DN 125	5''	400 to 1000 hl/h	176 to 440 gpm	340 to 852 bbls/h

Water Deaeration

Column Hot Unit

Stripping technology
for deaerated water production
with water sterilization

– Final oxygen down to 5 ppb
– No vessels, no vacuum
– Heat Recovery up to 96%
– Compact short column

Application

Deaerated water is used in the brewing industry for flushing filters, centrifuges, pipes, tanks, etc. When used to adjust the alcohol concentration or original gravity after filtration, residual oxygen concentration of the deaerated water is critical as it directly influences the quality and shelf life of the final product.

Bucher Denwel provides a fully automated solution able to economically achieve oxygen down to 5 ppb.

Principle

The deaeration column is filled with high efficient structured packing. Its internal surface of 500 m^2 / m^3 ensures a maximal contact area between gas and liquid. Water is homogeneously distributed from the top and CO_2/N_2 is injected at the bottom of the column. While the water flows downwards through the packing, the CO_2/N_2 rises in counter current removing the dissolved oxygen from the water. This process is distinguished by high efficiency and reliability and consumes just a fraction of energy compared to other methods.

With hot deaeration water sterilization is part of the process: the incoming water is heated up to high temperature in order to remove contamination and ensuring high water quality. No further water sterilization is required. An efficient three-zone plate heat exchanger with a large regenerative zone ensures heat recovery rate up to 96%. The unit has an uncompromising sanitary design and is fully CIP cleanable.

Technical data

Final Oxygen:	down to 5 ppb
Pressure:	operating 2 to 4 barg, 30 to 60 psig
Temperature:	operating 1 to 90 °C, 34 to 194 °F
CIP:	2 to 4 barg, 30 to 60 psig; max. 90 °C, 200 °F
CO_2/N_2 purity:	99,995 %
Stripping gas flow:	app. 0,4 g/l (final O_2 and column height dependent)
Carbonation:	app. 0,5 g/l
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 3,5 m, 16,4'; Width 1,5 m, 4,9'; Depth 0,5 m, 1,6'
Weight:	from 300 kg, 660 lb
Material:	Stainless Steel 304, EPDM, PSU, PP

DWD010H	DN 25	1"	4 to 10 hl/h	2 to 4 gpm	4 to 8 bbls/h
DWD015H	DN 25	1"	6 to 15 hl/h	3 to 6 gpm	6 to 12 bbls/h
DWD025H	DN 25	1"	10 to 25 hl/h	5 to 11 gpm	9 to 21 bbls/h
DWD050H	DN 40	1½"	20 to 50 hl/h	9 to 22 gpm	18 to 42 bbls/h
DWD075H	DN 40	1½"	30 to 75 hl/h	14 to 33 gpm	26 to 63 bbls/h
DWD100H	DN 50	2"	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h
DWD150H	DN 50	2"	60 to 150 hl/h	27 to 66 gpm	52 to 127 bbls/h
DWD200H	DN 65	2½"	80 to 200 hl/h	36 to 88 gpm	69 to 170 bbls/h
DWD250H	DN 65	2½"	100 to 250 hl/h	44 to 110 gpm	86 to 213 bbls/h
DWD400H	DN 80	3"	160 to 400 hl/h	70 to 176 gpm	136 to 340 bbls/h
DWD600H	DN 100	4"	240 to 600 hl/h	105 to 264 gpm	204 to 511 bbls/h

Water Deaeration

Membrane Unit

Membrane technology
for deaerated water production
– Final oxygen below 10 ppb
– Water prefiltration
– Expandable capacity

Application

Deaerated water is used in the brewing industry for flushing filters, centrifuges, pipes, tanks, etc. When used to adjust the alcohol concentration or original gravity after filtration, residual oxygen concentration of the deaerated water is critical as it directly influences the quality and shelf life of the final product.

Designed for the most efficient deaeration of water, Bucher Denwel provides a fully automated solution able to economically achieve oxygen levels below 10 ppb.

Principle

The membrane contactor contains thousands of microporous hydrophobic hollow fibers. They form a large internal surface ensuring a maximal contact area between gas and liquid.

A strip gas (CO_2 or N_2) is applied on the inside of the hollow fibers and pulled out by a vacuum. The water flows in counter current on the outside of the fibers. The high difference in partial pressure forces the oxygen out of the liquid. Depending on the required oxygen level or the total capacity, several membrane contactors can be arranged in parallel and/ or series for optimal performance.

The unit has an uncompromising sanitary design and is fully cleanable. The polypropylene hollow fibers are FDA approved and CIP compatible. For prolonged high performance given concentrations and gentle temperature gradient must be applied.

Technical data

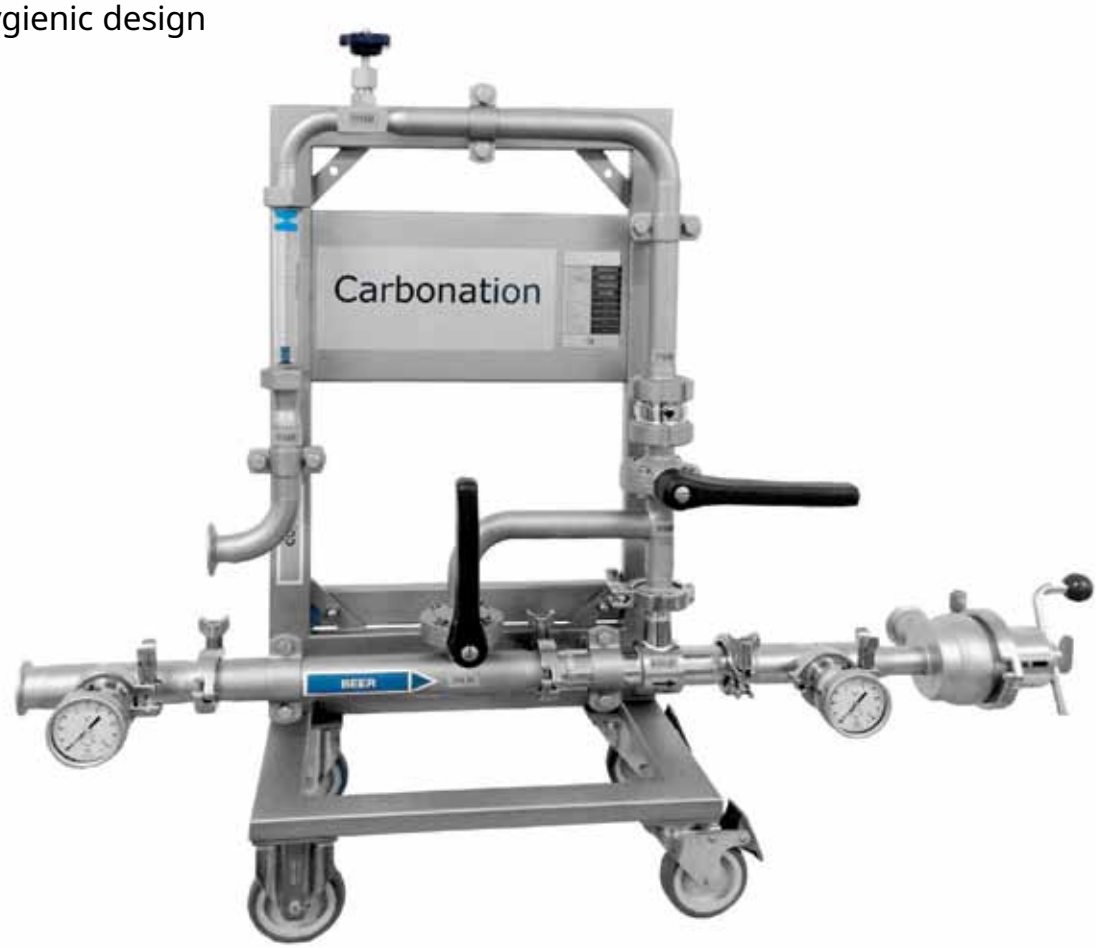
Final Oxygen:	less than 10 ppb (0,01 ppm)
Pressure:	operating 2 to 4 barg, 30 to 60 psig
Temperature:	operating 10 to 30 °C, 40 to 90 °F
CIP:	50 °C, 120 °F, at 7 barg, 100 psig; Max. 65 °C, 150 °F, at 2 barg, 30 psig
CO_2/N_2 purity:	99,995 %
Stripping gas flow:	app. 0,5 g/l (final O_2 and water temperature dependent)
Carbonation:	0 g/l
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 1,6 m, 63”; Width 0,7 m, 47”; Depth 0,6 m, 24”
Weight:	from 550 lb, 250 kg
Material:	Stainless Steel 304, EPDM, PE, PSU, PP

DWD010M	DN 25	1”	4 to 10 hl/h	2 to 4 gpm	4 to 8 bbls/h
DWD025M	DN 25	1”	10 to 25 hl/h	5 to 11 gpm	9 to 21 bbls/h
DWD040M	DN 40	1½”	16 to 40 hl/h	8 to 17 gpm	14 to 34 bbls/h
DWD075M	DN 40	1½”	30 to 75 hl/h	14 to 33 gpm	26 to 63 bbls/h
DWD100M	DN 50	2”	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h
DWD150M	DN 50	2”	60 to 150 hl/h	27 to 66 gpm	52 to 127 bbls/h
DWD200M	DN 65	2½”	80 to 200 hl/h	36 to 88 gpm	69 to 170 bbls/h

Inline Carbonation

Mobile Manual Unit

For instant beverage carbonation
– Micro bubble size
– Instant saturation
– No CO_2 and flavor loss
– Efficient, hygienic design



Principle

CO_2 is injected into the beverage through Bucher Denwel Injector, which splits the gas into micro bubbles. Most efficient and instant dissolution of CO_2 is achieved with only a minimal pressure drop and no gas and flavor loss. No static mixer, sinter candle or tank with stone is required. Designed for CIP, no parts of the Injector have to be removed for sanitation.

Precise CO_2 injection adjustment using beer flow determination always maintains carbonation at desired level. The integrated a pressure holding valve keeps the injected CO_2 dissolved in the beer.

The unit comes assembled on a compact frame, is tested and rapidly put into operation. Proven components guarantee reliability and extended lifetime. The modular layout allows easy integration into production and efficient combination with other process units.

Technical data

Carbonation:	up to 6 g/l, 3 V/V (P & T dependent)
Pressure:	operating 3 to 5 barg, 44 to 72 psig
Temperature:	operating 0 to 5 °C, 32 to 40 °F
CIP:	3 to 5 barg, 44 to 72 psig; max. 90 °C, 200 °F
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 0,8 m, 31,5”; Width 1,1 m, 43,3”; Depth 0,2 m, 6,5”
Weight:	from 25 kg, 55 lb
Material:	Stainless Steel 304, EPDM, PE, PSU, PP

DCS025M	DN 25	1”	10 to 25 hl/h	5 to 11 gpm	9 to 21 bbls/h
DCS040M	DN 40	1½”	16 to 40 hl/h	8 to 17 gpm	14 to 34 bbls/h
DCS050M	DN 40	1½”	20 to 50 hl/h	9 to 22 gpm	18 to 42 bbls/h
DCS075M	DN 40	1½”	30 to 75 hl/h	14 to 33 gpm	26 to 63 bbls/h
DCS100M	DN 50	2”	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h

Inline Carbonation

Semi-Automatic Unit

For instant beverage carbonation
- Micro bubble size
- Instant saturation
- Precise CO_2 injection
- CO_2 ratio controlled

Principle

CO_2 is injected into the beverage through Bucher Denwel Injector, which splits the gas into micro bubbles. Most efficient and instant dissolution of CO_2 is achieved with only a minimal pressure drop, no gas loss and a fully hygienic design. No static mixer, sinter candles are needed.

Precise CO_2 ratio controlled injection using a flow meter always maintains carbonation at desired concentration. An integrated pump with a pressure holding valve maintains required pressure for carbonation.

The unit comes assembled on a compact frame, is tested and rapidly put into operation. Proven components guarantee reliability and extended lifetime. The modular layout allows easy integration into production and efficient combination with other process units.

Technical data

Carbonation:	up to 6 g/l, 3 V/V (P & T dependent)
Pressure:	operating 2 to 5 barg, 30 to 72 psig
Temperature:	operating 0 to 5 °C, 32 to 40 °F
CIP:	2 to 5 barg, 30 to 72 psig; max. 90 °C, 200 °F
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 1,9 m, 6,2'; Width 2,0 m, 6,5'; Depth 0,6 m, 2'
Weight:	from 200 kg, 440 lb
Material:	Stainless Steel 304, EPDM, PE, PSU, PP

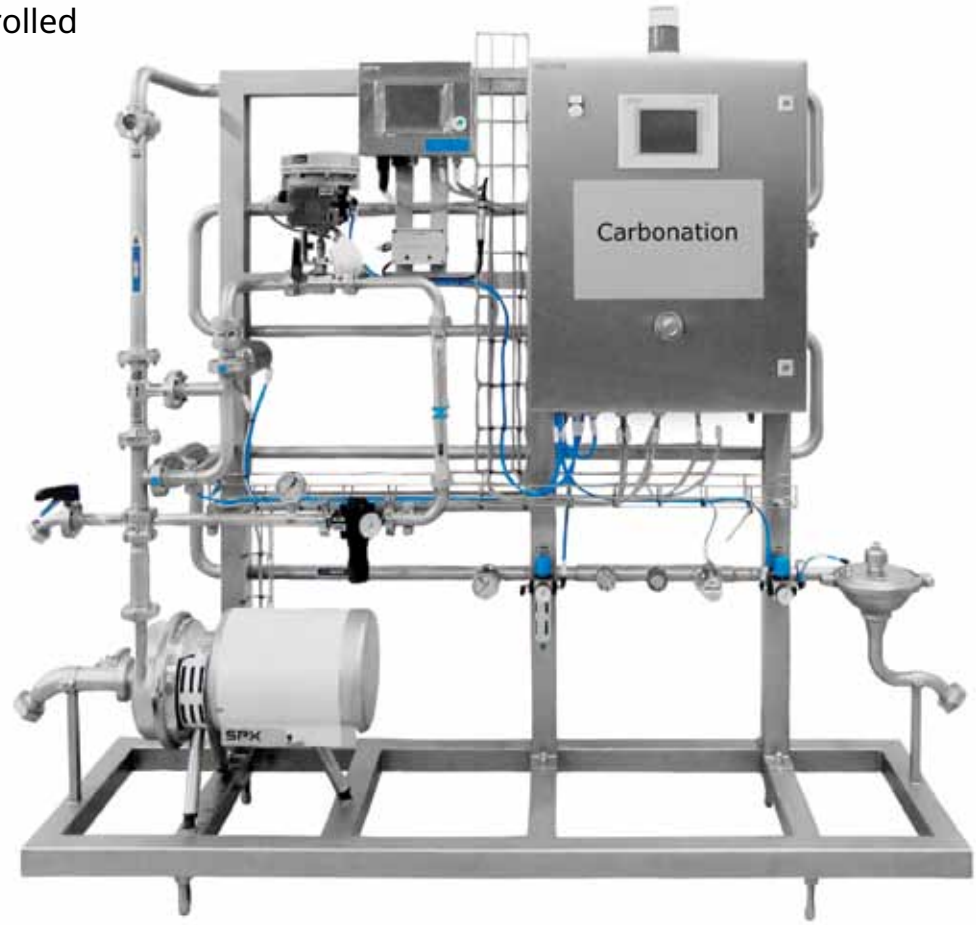
Models:

DCS050S	DN 40	1½"	20 to 50 hl/h	9 to 22 gpm	18 to 42 bbls/h
DCS075S	DN 40	1½"	30 to 75 hl/h	14 to 33 gpm	26 to 63 bbls/h
DCS100S	DN 50	2"	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h
DCS150S	DN 65	2½"	60 to 150 hl/h	27 to 66 gpm	52 to 127 bbls/h
DCS200S	DN 65	2½"	80 to 200 hl/h	36 to 88 gpm	69 to 170 bbls/h
DCS300S	DN 80	3"	120 to 300 hl/h	53 to 132 gpm	103 to 225 bbls/h
DCS500S	DN 100	4"	200 to 500 hl/h	88 to 220 gpm	171 to 426 bbls/h
DCS750S	DN 125	5"	300 to 750 hl/h	132 to 330 gpm	256 to 639 bbls/h
DCSA00S	DN 150	6"	400 to 1000 hl/h	176 to 440 gpm	341 to 852 bbls/h

Inline Carbonation

Automatic Unit

For instant beverage carbonation
- Micro bubble size
- Instant saturation
- Precise CO_2 injection
- CO_2 analyzer controlled



Application

CO_2 is an essential ingredient of carbonated beverages. It enhances flavor and body of the product and the effect of effervescence characterizes the refreshing taste of the beverage. The CO_2 content also influences beer foam structure and its stability. Therefore, consistent and accurate CO_2 is one of the main quality factors in the production of beer and soft drinks. Designed for fast and accurate injection and dissolution of CO_2, Bucher Denwel provides a fully automated solution for continuous carbonation.

Principle

CO_2 is injected into the beverage through Bucher Denwel Injector, which splits the gas into micro bubbles. Most efficient and instant dissolution of CO_2 is achieved with only a minimal pressure drop, no gas loss and a fully hygienic design. No static mixer, sinter candles or recirculation-tanks are needed.

The system is PLC controlled and has automatic modes for continuous carbonation and CIP. The selective inline CO_2 analyzer continuously monitors the CO_2 concentration. The output signal is processed by the PLC to control the CO_2 dosing. A high precision control valve accurately adjusts the CO_2 injection, avoiding any over or under carbonation. The back pressure valve maintains constant pressure in the system despite any changes in flow. Constant system pressure ensures fast and accurate control of CO_2 dosing.

Technical data

Carbonation:	up to 6 g/l, 3 V/V (P & T dependent)
Pressure:	operating 2 to 5 barg, 30 to 72 psig
Temperature:	operating 0 to 5 °C, 32 to 40 °F
CIP:	2 to 5 barg, 30 to 72 psig; max. 90 °C, 200 °F
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 1,9 m, 6,2'; Width 2,0 m, 6,5'; Depth 0,6 m, 2'
Weight:	from 550 lb, 250 kg
Material:	Stainless Steel 304, EPDM, PE, PSU, PP

Models:

DCS050A	DN 40	1½"	20 to 50 hl/h	9 to 22 gpm	18 to 42 bbls/h
DCS075A	DN 40	1½"	30 to 75 hl/h	14 to 33 gpm	26 to 63 bbls/h
DCS100A	DN 50	2"	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h
DCS150A	DN 65	2½"	60 to 150 hl/h	27 to 66 gpm	52 to 127 bbls/h
DCS200A	DN 65	2½"	80 to 200 hl/h	36 to 88 gpm	69 to 170 bbls/h
DCS300A	DN 80	3"	120 to 300 hl/h	53 to 132 gpm	103 to 225 bbls/h
DCS500A	DN 100	4"	200 to 500 hl/h	88 to 220 gpm	171 to 426 bbls/h
DCS750A	DN 125	5"	300 to 750 hl/h	132 to 330 gpm	256 to 639 bbls/h
DCSA00A	DN 150	6"	400 to 1000 hl/h	176 to 440 gpm	341 to 852 bbls/h

Carbonation/ Nitrogenation

High Concentration Unit

For beverage carbonation/nitrogenation in batch mode

- All types of beverages
- Precise CO_2/N_2 dosing
- Integrated CIP
- Integrated cooling
- Direct connection to the filler

Principle

Batch carbonator is a unit made for carbonation / nitrogenation and cooling of a small amount of product in off line mode. The system is designed for most efficient carbonation / nitrogenation of product with a wide range of CO_2 or N_2 content.

CO_2/N_2 is injected into the product using Bucher Denwel Injector during circulation process. Requested pressure and temperature is kept in the product tank during carbonation and nitrogenation.

The unit is equipped with integrated CIP tank.

Technical data

Carbonation:	up to 10 g/l, 5 V/V
Nitrogenation:	up to 60 ppm, mg/l
Capacity:	batch production
Temperature:	product cooled down to 2 °C, 35 °F
CIP:	integrated CIP vessel and heating up to 90 °C, 200 °F
Connection:	Tri-clamp
Dimensions:	from Height 2,3 m, 75”; Width 2,2 m, 72”; Depth 0,9 m, 29”
Frame:	Mobile
Weight:	from 550 lb, 250 kg
Material:	Stainless Steel 304, EPDM, PE, PSU, PP

Models:

DCS120B	DN 25	1”	30 to 120 l	7,5 to 30 gal
DCS300B	DN 40	1½”	75 to 300 l	19 to 75 gal

Inline Nitrogenation

Manual Unit

For instant beverage nitrogenation
– Improves foam stability
– Micro bubble size
– Instant saturation
– Efficient, hygienic design

Principle

N_2 is injected into the beverage through Bucher Denwel Injector, which splits the gas into micro bubbles. Most efficient and instant saturation of N_2 is achieved with only a minimal pressure drop, no gas loss and a fully hygienic design. No static mixer, sinter candle or recirculation-tank is needed. Designed for CIP, no parts of the Injector have to be removed for sanitation.

The unit comes assembled on a compact frame, is tested and rapidly put into operation. Proven components guarantee low maintenance and extended lifetime. The modular layout allows for easy integration into the plant and efficient combination with other process units.

Technical data

Nitrogenation:	up to 20 ppm (P & T dependent)
Pressure:	operating 3 to 5 barg, 44 to 72 psig
Temperature:	operating 0 to 5 °C, 32 to 40 °F
CIP:	3 to 5 barg, 44 to 72 psig; max. 90 °C, 200 °F
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 0,8 m, 31,5”; Width 1,1m, 43,3”; Depth 0,2m, 6,5”
Weight:	from 25 kg, 55 lb
Frame:	Mobile or Wall-mount
Material:	Stainless Steel 304, EPDM, PE, PSU, PP

Models:

DNS025M	DN 25	1”	10 to 25 hl/h	5 to 11 gpm	9 to 21 bbls/h
DNS040M	DN 40	1½”	16 to 40 hl/h	8 to 17 gpm	14 to 34 bbls/h
DNS050M	DN 40	1½”	20 to 50 hl/h	9 to 22 gpm	18 to 42 bbls/h
DNS075M	DN 40	1½”	30 to 75 hl/h	14 to 33 gpm	26 to 63 bbls/h
DNS100M	DN 50	2”	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h
DNS150M	DN 65	2½”	60 to 150 hl/h	27 to 66 gpm	52 to 127 bbls/h
DNS200M	DN 65	2½”	80 to 200 hl/h	36 to 88 gpm	69 to 170 bbls/h
DNS300M	DN 80	3”	120 to 300 hl/h	53 to 132 gpm	103 to 225 bbls/h
DNS500M	DN 100	4”	200 to 500 hl/h	88 to 220 gpm	171 to 426 bbls/h
DNS750M	DN 125	5”	300 to 750 hl/h	132 to 330 gpm	256 to 639 bbls/h
DNSA00M	DN 150	6”	400 to 1000 hl/h	176 to 440 gpm	341 to 852 bbls/h

Inline Nitrogenation

Automatic Unit

For instant beverage nitrogenation

– Efficient, hygienic Injector
– Micro bubble size
– Instant N_2 dissolution
– PLC controlled

Application

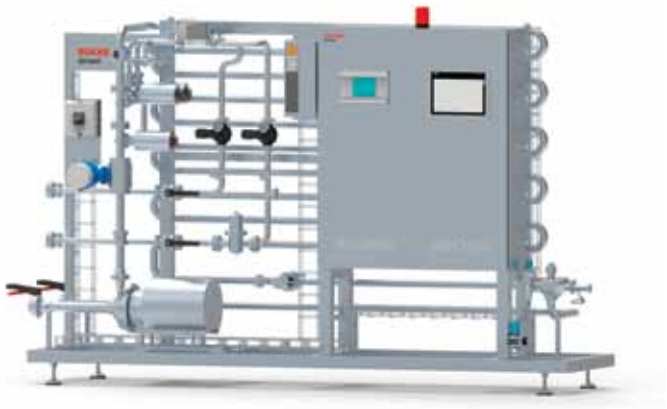
When added to beer, nitrogen creates creamy and fine foam head with small bubble size; it improves the foam stability and softens the beer on the palate. While traditionally nitrogenation was applied in ales and stouts, the same process is nowadays successfully used for the classical lagers treating. Nitrogen increases beer foam stability of lagers up to 30 seconds. Due to its low solubility, nitrogen consumption is very low. Consistent and accurate nitrogenation will determine the appearance and quality of the final beverage.

Principle

N_2 is injected into the beverage through Bucher Denwel Injector, which splits the gas into micro bubbles. Most efficient and instant dissolution of N_2 is achieved with only a minimal pressure drop, no gas loss and a fully hygienic design. No static mixer, sinter candle or recirculation-tank is needed.

The system is PLC controlled and has automatic modes for continuous nitrogenation and CIP. The selective inline N_2 analyzer continuously monitors the nitrogen concentration. The output signal is processed by the PLC to control the N_2 dosing. A high precision control valve accurately adjusts the Nitrogen injection, avoiding any over or under carbonation.

The unit has an uncompromising sanitary design and is fully CIP cleanable. It comes assembled on a compact frame and is tested to be rapidly put into operation. The modular layout allows for easy integration into production and efficient combination with other process units.



Technical data

Nitrogenation:	up to 20 ppm (P & T dependent)
Pressure:	operating 3 to 5 barg, 44 to 72 psig
Temperature:	operating 0 to 5 °C, 32 to 40 °F
CIP:	3 to 5 barg, 44 to 72 psig; max. 90 °C, 200 °F
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 0,8 m, 31,5 ”; Width 0,5 m, 19,7”; Depth 0,2 m, 6,5”
Frame:	Mobile or Wall-mount
Weight:	from 550 lb, 250 kg
Material:	Stainless Steel 304, EPDM, PE, PSU, PP

Models:

DNS050A	DN 40	1½”	20 to 50 hl/h	9 to 22 gpm	18 to 42 bbls/h
DNS075A	DN 40	1½”	30 to 75 hl/h	14 to 33 gpm	26 to 63 bbls/h
DNS100A	DN 50	2”	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h
DNS150A	DN 65	2½”	60 to 150 hl/h	27 to 66 gpm	52 to 127 bbls/h
DNS200A	DN 65	2½”	80 to 200 hl/h	36 to 88 gpm	69 to 170 bbls/h
DNS300A	DN 80	3”	120 to 300 hl/h	53 to 132 gpm	103 to 225 bbls/h
DNS500A	DN 100	4”	200 to 500 hl/h	88 to 220 gpm	171 to 426 bbls/h
DNS750A	DN 125	5”	300 to 750 hl/h	132 to 330 gpm	256 to 639 bbls/h
DNSA00A	DN 150	6”	400 to 1000 hl/h	176 to 440 gpm	341 to 852 bbls/h

Inline Nitrogenation

High Concentration Unit

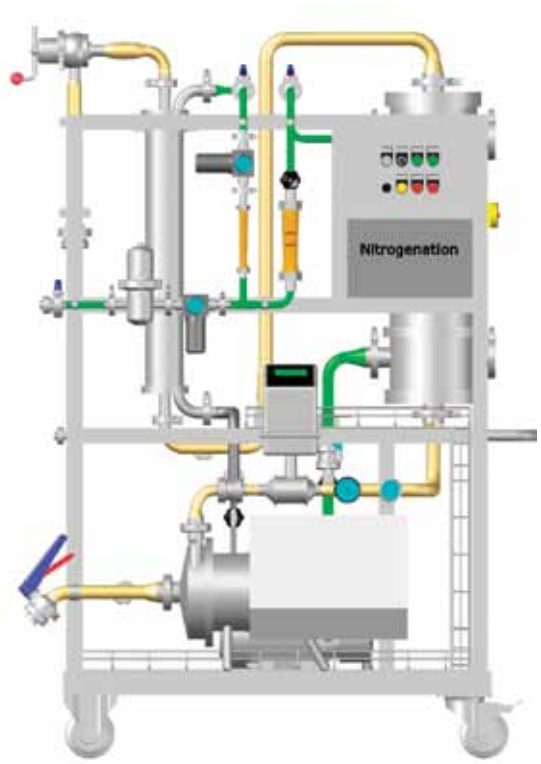
Membrane technology
for beverage nitrogenation
– Efficient, hygienic Injector
– Micro bubble size
– Instant N_2 dissolution
– PLC controlled

Principle

The unit is equipped with a membrane contactor for nitrogenation. The internal fibers of the membrane contactor form a large contact area between gas and beverage ensuring instant and efficient dissolution. The applied N_2 pressure controls final N_2 concertation in beverage.

Optionally an additional membrane contactor is used to remove CO_2. This is useful for beverage with higher CO_2 concertation, or beverage where a specific CO_2/N_2 concentrations shall be achieved. The removal of CO_2 is set by the level of vacuum applied to the Decarbonation membrane contactor.

The unit is typically installed between two BBTs. The centrifugal pump transfers beverage from the first tank into the unit at constant pressure, temperature and flow. The outlet valve is used to set up required beverage pressure and flow. Final beverage is pushed to the second tank.



Technical data

CO_2 removal:	up to 3 g/l, 1,5 V/V (P & T dependent)
N_2 addition:	up to 80 ppm (P & T and other gases presence dependent)
Pressure:	Operating 1 to 6 barg, 15 to 90 psig
Temperature:	Operating 0 to 5 °C, 32 to 40 °F
CIP:	50 °C, 120 °F, at 7 barg, 100 psig; Max. 65 °C, 150 °F, at 2 barg, 30 psig
Connection:	Tri-clamp; other connections upon request
Dimensions:	from: Height 1,9 m, 75”; Width 1,4 m, 55”; Depth 0,7 m, 28”
Weight:	from 100 kg, 220 lb
Material:	Stainless Steel 304, EPDM, PE, PSU, PP

Models:

DNS050H	DN 40	1½”	20 to 50 hl/h	9 to 22 gpm	18 to 42 bbls/h
DNS100H	DN 50	2”	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h
DNS200H	DN 65	2½”	100 to 200 hl/h	36 to 88 gpm	85 to 170 bbls/h
DNS300H	DN 80	3”	200 to 300 hl/h	88 to 132 gpm	170 to 256 bbls/h
DNS300H	DN 100	4”	300 to 500 hl/h	132 to 220 gpm	256 to 426 bbls/h
DNS750A	DN 125	5”	300 to 750 hl/h	132 to 330 gpm	256 to 639 bbls/h
DNSA00A	DN 150	6”	400 to 1000 hl/h	176 to 440 gpm	341 to 852 bbls/h

De-Alconox M

Membrane dealcoholization of beer

Membrane dealcoholization

– Dealcoholisation down to <0.05 % vol.
– Preserves aroma and taste of beer, no oxygen pickup
– Processing at low operating temperature <10 °C
– Low energy consumption
– Compact design with minimum space requirement

Principle

The basic principle of this dealcoholization technology is the pressure driven separation of a water/alcohol-mixture from the alcoholic beverage through a semi-permeable membrane. The amount of remaining alcohol in the final product can be controlled with high flexibility and will be equal or lower than 0.5% ABV or equal or lower than 0.05% ABV, depending on the process setup.
Since this process takes place at low temperatures, no heat-related off-flavors are produced. Choosing the right pore size also prevents the loss of valuable aromatic substances. The product is treated in a closed system so that no oxygen pickup occurs.
This process is characterized by low energy consumption.

Process

In the first step, the concentration phase, a mixture of water and alcohol is separated from the product so that the volume of the product is reduced between 30 and 50 %. The second step causes a further reduction of the alcohol content by washing the remaining product with de-aerated water. The final alcohol content and the final volume of the dealcoholized product is determined by adding de-aerated water in the third step (Re-dilution phase).

Technical data / Capacities

Standardized membrane dealcoholization skids are available for daily production batches from 8 to 100 hl, higher batch size on request.

Technical data

Models:			Daily production capacity		
DBD010M	DN 25	1”	5 to 10 hl	132 to 264 gal	4 to 9 bbls
DBD015M	DN 25	1”	10 to 15 hl	264 to 396 gal	9 to 13 bbls
DBD025M	DN 25	1”	15 to 25 hl	396 to 660 gal	13 to 21 bbls
DBD040M	DN 40	1½”	25 to 40 hl	660 to 1 057 gal	21 to 34 bbls
DBD070M	DN 50	2”	50 to 70 hl	1 320 to 1 845 gal	43 to 60 bbls
DBD100M	DN 50	2”	80 to 100 hl	2 113 to 2 642 gal	68 to 85 bbls

De-Alconox B

Thermal dealcoholisation of beer

Dealcoholisation of beer

– Processing at lowest temperatures (<39 °C)
– Dealcoholisation down to <0.03 % vol.
– Suitable for filtered and non-filtered beer

Application

Bucher Denwel dealcoholisation plants are designed in a way to produce a highly dealcoholised beer as well as rectified alcohol with minimum negative side effects on beer quality. Additionally, the design is flexible regarding product flow and composition and is also well suitable for non-filtered beer. It is therefore a sustainable investment enabling a brewery to serve all current or future market trends.

Process

Firstly, the beer is gently degassed in order to avoid foaming throughout the process. The temperature of the incoming product is adjusted in counterflow to the outgoing dealcoholised beer. In a special Bucher Denwel degassing system very low final gas levels are achieved at a pressure slightly below the boiling pressure.

The alcohol is then removed from the beer and rectified in a special column. The column consists of two sections: a first section for stripping the alcohol out of the beer and a second section for rectifying the alcohol to the desired concentration.

The unique design of the high precision inserts provides several advantages:

- minimum pressure drop allows a low temperature at the bottom of the column with least impact on beer quality and optimised energy consumption compared to similar systems
- high tolerance for suspended particles enabling trouble-free processing of non-filtered beers
- very low alcohol content achievable providing maximum options for final blending with non-treated beer

The energy for the stripping and rectifying column is supplied by a small amount of vapour which is evaporated out of the already dealcoholised beer. Bucher Denwel uses evaporator bodies with a large heat transfer surface which minimises the required surface temperature in contact with the product. Finally, the beer is cooled back and carbonised again.

The whole process is operated under vacuum limiting the product temperature to <39 °C and excellently preserving the quality of the treated beers.

Technical data / Capacities

Standardised dealcoholisation plants are available from 5 up to 200 hl/h.

Hard Seltzer

Continuous Unit

Customized continuous technology for production of mixed drinks
– Continuous and precise production of mixed drinks
– “Just in Time” production without the need for storage and conditioning vessels
– Immediate switch over to another product with minimal losses
– Numerous individual recipes

Principle

Hard Seltzers and other RTDs are bespoke beverages that should be custom blended to the producer's wishes. Hard Seltzer continuous units offer "Just in Time" production without the need for large storage and conditioning vessels. The modular and CIP-able design supports set up of bespoke systems to reach any of the ambitious demands. Microbiologically clean potable water is provided by a Filter set, unnecessary oxygen is efficiently removed by Water Deaeration Column system after. Without the need of water storage, concentrate is precisely blended and liquid additives dosed from a container or from a mix preparation tank. Unique carbonation and/ or nitrogenation process provides zero-loss of gas, flavor and time. The intuitive touch panel displays and allows the recipe based operations.

Technical data

Potable water filtration:	Particle size ≤ 0,2 µm
Water Deaeration	
Final Oxygen:	less than 10 ppb, typically around 5 ppb
Gas Saturation:	app. 2 g/l CO_2 or app. 20 mg/l N_2 (water temperature dependent)
Blending:	up to 10:1, ratio / analyzer control
Multistream Additive Dosing:	up to 10 %, ratio / analyzer control
Carbonation and/ or Nitrogenation:	up to 8 g/l, 4 V/V (P & T dependent), up to 50 mg/l (P & T dependent), ratio / analyzer control
Chilling:	down to 0 to 5°C
Water Inlet:	2 to 4 barg, 30 to 60 psig, < 1 µm particles, 8 to 30 °C, 40 to 90 °F
Beverage Outlet:	1,5 to 3 barg, 22 to 44 psig 0 to 5 °C, 32 to 40 °F
CIP:	2 to 4 barg, 30 to 60 psig; max. 90 °C, 200 °F
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 5,5 m, 16,4''; Width 2,0 m, 6,5''; Depth 1,5 m, 4,9''
Weight:	from 700 kg, 1.500 lb
Material:	Stainless Steel 304, EPDM, PSU, PP

Models:

DHS050C	DN 40	1 ½"	20 to 50 hl/h	9 to 22 gpm	18 to 42 bbls/h
DHS100C	DN 50	2"	40 to 100 hl/h	18 to 44 gpm	35 to 85 bbls/h
DHS150C	DN 65	2 ½"	60 to 150 hl/h	27 to 66 gpm	52 to 127 bbls/h
DHS200C	DN 65	2 ½"	80 to 200 hl/h	36 to 88 gpm	69 to 170 bbls/h
DHS300C	DN 80	3"	120 to 300 hl/h	53 to 132 gpm	103 to 225 bbls/h
DHS500C	DN 100	4"	200 to 500 hl/h	88 to 220 gpm	171 to 426 bbls/h
DHS750C	DN 125	5"	300 to 750 hl/h	132 to 330 gpm	256 to 639 bbls/h
DHSA00C	DN 150	6"	400 to 1000 hl/h	176 to 440 gpm	341 to 852 bbls/h

Flash Pasteurization

Automatic Unit

For beverage pasteurization
– Gentle and precise heat treatment
– Consistent Pasteurization
– Heat recovery up to 96%

Application

Pasteurization is a heat treatment with the purpose of improving the microbiological stability of the beverage in order to prolong its shelf life. While reducing the number of harmful microorganisms, uniform and gentle treatments are required to maintain the original taste and appearance of the beverage.

Principle

Cold beer enters the regenerative zone of the plate heat exchanger being pre-heated by already pasteurized beer and is then heated up to the pasteurization temperature and held in the holding tube during the pasteurization time. Pasteurized beer is then cooled down in the regenerative zone and if required, cooled in the cooling zone to the filling temperature.

Flash pasteurizer is typically installed in front of a filler which speed often varies considerably. To keep the required pasteurization units (PU) within tight limits, we use intelligent control in combination with a buffer tank, capable to match variations in filler demand. If the filling capacity decreases, the flow has to be reduced as well. Lower flow means longer holding time and therefore the pasteurization temperature has to be decreased to keep the same PU.

The control reduces the flow according to the heat exchanger characteristics and increases the level in the buffer tank. When the filling capacity increases again, the level in the buffer tank will be lowered and the nominal pasteurization values will be re-established. This way any over- and under-pasteurization can be avoided and gentle and consistent treatment is always guaranteed.

Technical data

PU range:	10 to 400 PU
Pressure:	up to 16 barg
Heat recovery:	up to 96%

Models:

DFP010A	DN 25	1”	5 to 10 hl/h	2 to 4 gpm	4 to 8 bbls/h
DFP015A	DN 25	1”	8 to 15 hl/h	3 to 6 gpm	6 to 12 bbls/h
DFP025A	DN 25	1”	13 to 25 hl/h	6 to 11 gpm	11 to 21 bbls/h
DFP040A	DN 40	1½”	20 to 40 hl/h	9 to 17 gpm	17 to 34 bbls/h
DFP050A	DN 40	1½”	25 to 50 hl/h	11 to 22 gpm	21 to 42 bbls/h
DFP075A	DN 40	1½”	38 to 75 hl/h	17 to 33 gpm	32 to 63 bbls/h
DFP100A	DN 50	2”	50 to 100 hl/h	22 to 44 gpm	43 to 85 bbls/h
DFP150A	DN 65	2½”	75 to 150 hl/h	33 to 66 gpm	64 to 127 bbls/h
DFP200A	DN 65	2½”	100 to 200 hl/h	44 to 88 gpm	85 to 170 bbls/h
DFP250A	DN 80	3”	125 to 250 hl/h	55 to 110 gpm	107 to 213 bbls/h

Stefinox

For cold sterile filtration of beer

Skids for sterile filtration of beer

– Standardised skids for easy installation
– Prefiltration – sterile filtration – media filtration all on one skid
– Maximum safety and cartridge lifetime
– Stand-alone skid or for integration

Technical data – capacity range for the skids

	Min flowrate skid in hl/h beer	Max flowrate skid in hl/h beer
STEFINOX 1	0	70
STEFINOX 2	70	200
STEFINOX 3	200	250
STEFINOX 4	250	500

- Wide variety of cartridges for prefiltration, sterile filtration and water filtration.
- Membrane cartridges can be integrity tested for a maximum safety.
- Installation at end of filter cellar or prior to filling.
- Modular design, flowrates from 0–500 hl/h of beer.

Application

Cold sterile filtration before the filler is an alternative to flash pasteurizing. The Bucher Denwel skid allows a flexible and easy-to-integrate solution for small to medium size breweries (flowrates from 0–500 hl/h). This safe solution for a reliable product shelf life uses standard cartridges, and an integrity test of these membrane cartridges can be performed before each run.

CIP

Mobile Unit

For cleaning of process technology
– Three sizes of caustic and acid vessels
– For tanks, pipes and equipment cleaning
– Automatic temperature control
– Optimal cleaning performance

Principle

The Mobile CIP Unit reliably removes minerals and biological residues. CIP sequencing valves are used so no pipe reconnection is required. Includes sampling valve for concentration check during cleaning and automatic temperature control. The unit can be used with various detergents for cold or hot cleaning.

The Mobile CIP Unit consists of two vessels, where the cleaning solution is prepared and then circulated in single line. The integrated heating allows heating up of the cleaning media to the required temperature.

Other options can include pressurized tank cleaning, strainer, CIP vessel spray nozzles and heating during cleaning.

Technical data

Detergents:	Acid, Caustic, Disinfectants
Vessels:	Hot caustic (with heating)
	Ambient acid / Disinfectants / Rinse water (not insulated)
Pressure:	Operating 1 to 3 barg, 15 to 43 psig
Temperature:	Operating 0 to 90 °C, 32 to 200 °F
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 1,6 m, 63”; Width 2,0 m, 79”; Depth 0,7 m, 28”
Weight:	from 100 kg, 220 lb
Material:	Stainless Steel 304, EPDM

Models:	
DCP050M	To clean pipes DN 25 (1”) up to 300 m (1000 ft) or vessels up to diameter 1,5 m (4,5 ft)
	Flow: 20 to 50 hl/h, 9 to 22 gpm, 18 to 42 bbls/h
	2x 200 l vessels with heating 4,5 kW + 4,5 kW as option
DCP100M	To clean pipes DN 40 (1½”) up to 300 m (1000 ft) or vessels up to diameter 2,5 m (8,2 ft)
	Flow: 40 to 100 hl/h, 18 to 44 gpm, 35 to 85 bbls/h
	2x 350 l vessels with heating 7,5 kW + 7,5 kW as option
DCP150M	To clean pipes DN 50 (2”) up to 250 m (800 ft) or vessels up to diameter 2,5 m (8,2 ft)
	Flow: 60 to 150 hl/h, 27 to 66 gpm, 52 to 127 bbls/h
	2x 500 l vessels with heating 15 kW + 15 kW as option

CIP

Compact Unit

For cleaning of process technology
– Caustic, acid and water recovery vessel
– For tanks, pipes and equipment cleaning
– Automatic CIP sequencing
– Intuitive and simple user interface
– Optimal and consistent cleaning performance

Principle

The CIP Compact Unit provides a single line cleaning of pipes, tanks and process technology in the brewery. It includes insulated Caustic and not insulated Acid and Water recovery vessels. Automatic CIP sequencing with defined sanitation parameters like temperature, flow, pressure and solution concertation. Easily configurable parameters via user friendly interface.

Technical data

Detergents:	Acid, caustic, disinfectants
Vessels:	Hot caustic (insulated), Ambient acid (not insulated), Recovery water (not insulated)
Pressure:	Operating 1 to 4 barg, 15 to 43 psig
Temperature:	Operating 0 to 90 °C, 32 to 200 °F
Connection:	Tri-clamp; other connections upon request
Dimensions:	from Height 1,8 m, 71”; Width 4,5 m, 177”; Depth 1,5 m, 59”
Weight:	from 500 kg, 1100 lb
Material:	Stainless Steel 304, EPDM,

Models:	
DCP100C	To clean pipes DN 40 (1½”) up to 600 m (2000 ft) or vessels up to diam. 2 m (6,6 ft)
	Flow: 40 to 100 hl/h, 18 to 44 gpm, 35 to 85 bbls/h
	3x 10 hl vessels with heating 115 kW
DCP150C	To clean pipes DN 50 (2”) up to 550 m (1800 ft) or vessels up to diam. 3,2 m (10,5 ft)
	Flow: 60 to 150 hl/h, 27 to 66 gpm, 52 to 127 bbls/h
	3× 15 hl vessels with heating 175 kW
DCP300C	To clean pipes DN 65 (2½”) up to 600 m (2000 ft) or vessels up to diam. 3,8 m (12,5 ft)
	Flow: 120 to 300 hl/h, 53 to 132 gpm, 103 to 225 bbls/h
	3× 30 hl vessels with heating 345 kW
DCP400C	To clean pipes DN 80 (3”) up to 500 m (1600 ft) or vessels up to diam. 4,8 m (15,8 ft)
	Flow: 160 to 400 hl/h, 71 to 176 gpm,137 to 340 bbls/h
	3× 40 hl vessels with heating 460 kW

CIP

Plant

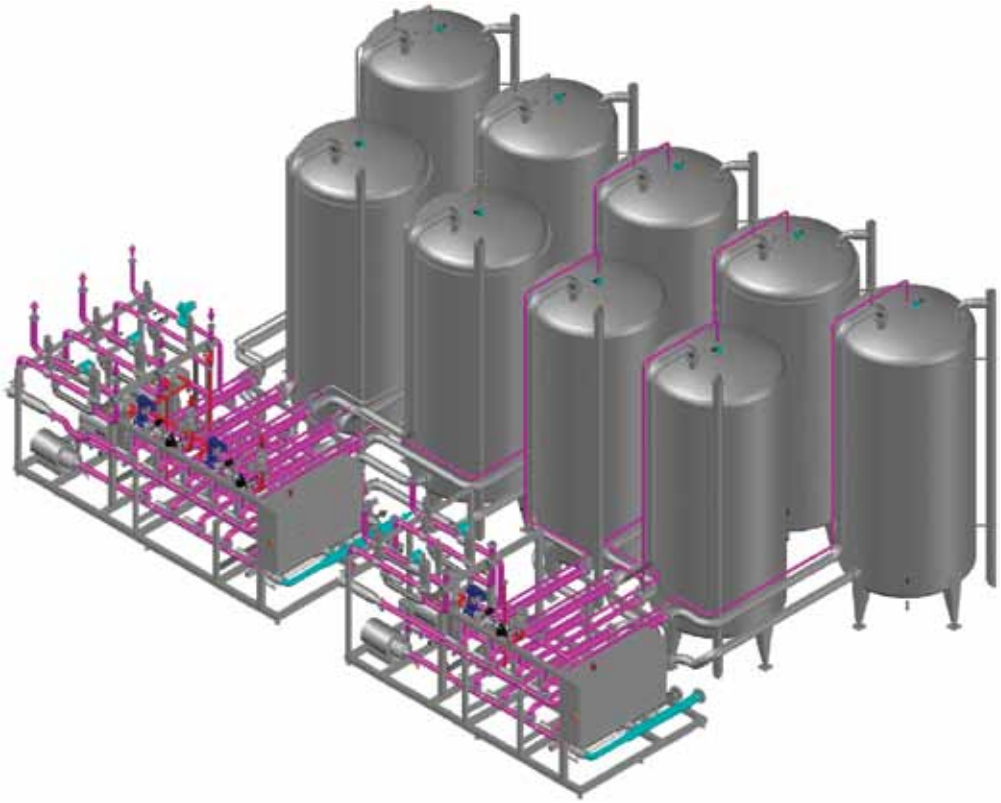
For cleaning of process technology
– Fully automatic CIP programs ensure perfect cleaning
– Economical production due to full automation
– Individual programming of each cleaning circuit
– 3, 4 or 5 vessel system
– Vessel size up to 20 m³
– Up to 6 different cleaning circuits

Principle

Brewing high quality beer using modern production techniques requires effective and careful cleaning of process equipment. Bucher Denwel offers CIP plant designed exactly to customer's specific project needs.

Bucher Denwel CIP is a fully automatic system, programmed to achieve optimal sanitation of the entire production line. It comprises of a complete set of equipment for CIP, including tanks for recovering water, acid and hot caustic, pumps, heat exchangers, valves and instrumentation such as conductivity and flow transmitters.

Automatic CIP sequencing with defined sanitation parameters to covers the complete cleaning cycle: detergent or water selection, detergent concentrations and cycle temperatures.



Tanks and Vessels

Food & Beverage

Process and storage tanks and vessels

– Brewhouses, CCTs, BBTs, Buffer tanks and Storage vessels
– Heating/Cooling system and Insulation
– Pressurized/Atmospheric/Vacuum
– Customized design, Vertical or Horizontal layout
– Up to volume 2 500 hl produced in workshop, larger assembled on site

Application

Process and storage tanks and vessels made of stainless steel are widely used in the beer industry. We supply tanks and vessels, each custom designed and developed applying the latest version of the computer calculation software and project design tools. State-of-the-art manufacturing equipment ensures improved time to delivery and cost reductions.

Tanks with capacities up to 3,000 hl are manufactured at the production facility. Larger tanks are available as per customer needs and requirements and built at the customer's premises.

Our tanks offer includes various design options such as heating/cooling systems with different insulation executions, foundation types, materials and surface finishings, as well as design according to various tanks' manufacturing norms and standards with certifications.

Technical data

Capacity and dimensions:	Workshop production:	Volume up to 3,000 hl Plus OD up to 5,000 mm Height up to 25 m
	On site assembly:	Volume up to 50,000 hl
Material:	SS 1.4301/1.4307, 1.4404, 1.4571, 1.4541, 1.4435	
Surface finishing:	Standard (inside/outside):	2B, welds ground Ra<0,8 µm/ 2B, welds brushed
	Special:	Ra<0,02 µm, mirror polishing, electropolishing
Heating/Cooling system:	Halfpipe, dimple jacket, pillow plate, double jacket, electric heating	
Insulation:	Mineral wool, PUR, RIR	
Cladding:	Fully welded stainless steel, riveted/bolted stainless steel, riveted/bolted aluminium/coated plates	
Foundation type:	Legs, skirt, flat bottom, foundation ring	
Standards:	SEP, PED 2014/68/EU, EN 13445, AD 2000, ASME Section VIII Div.1, TSG 21-2016	

Cold Block

Manual, Semi-automatic, Automatic

Complete solutions for Cold Block

– Yeast plant & Beer recovery
– Fermentation & Maturation Cellar
– Filtration & Bright beer Cellar
– Water Deaeration & Blending
– CIP

Application

We build safe and reliable Cold Blocks for your brewery. Our scope includes technological design, supply of the equipment and process automation, installation and commissioning. We offer complete new turnkey projects, or upgrades and extensions of existing plants. Product safety and cleaning performance are the highest consideration in designs.

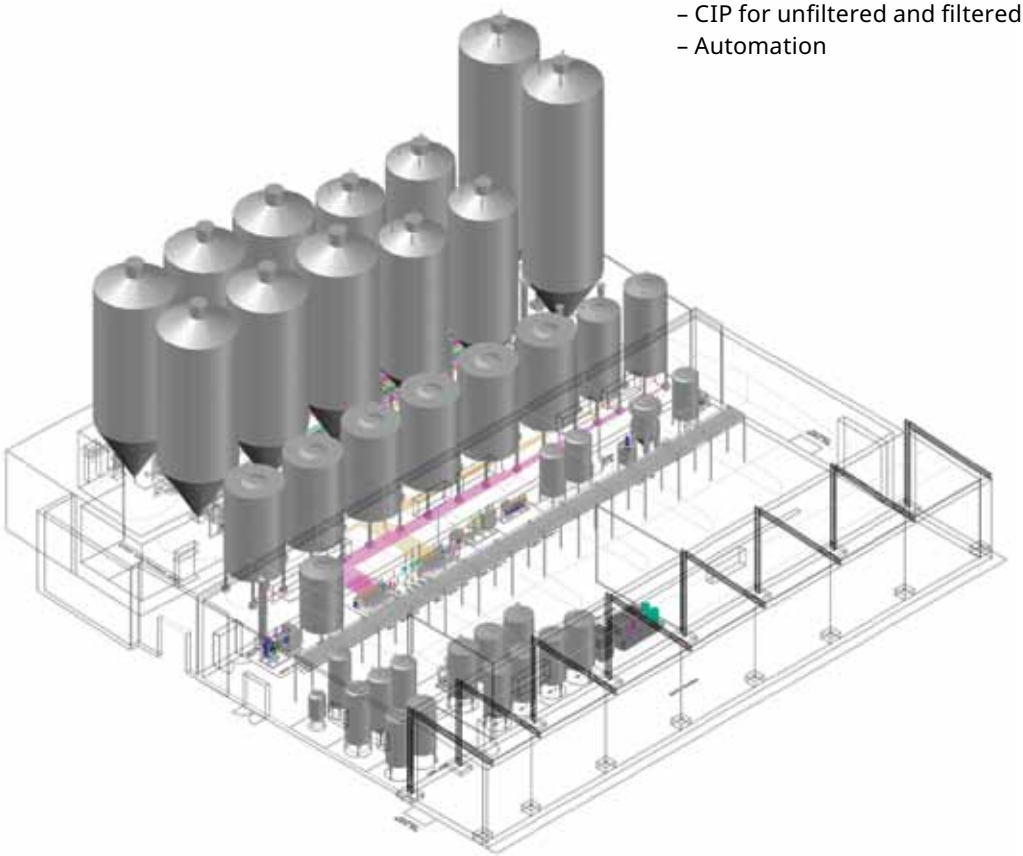
No matter if it´s Manual, Semiautomatic or Automatic system, you will always receive an excellent technology increasing the efficiency of your operation from its first day of use.

A typical Cold Block includes following production operations

– Yeast plant & Beer recovery
– Fermentation & Maturation Cellar
– Filtration & Bright beer Cellar
– Water Deaeration & Blending
– CIP

We are strong, single source and highly qualified supplier for your Cold Block equipment

– Yeast propagation, recovery and pitching
– Spent yeast
– Beer recovery
– Beer filtration and stabilization
– Deaerated water production, storage and distribution
– Blending
– Carbonation
– Nitrogenation
– Additive dosing
– BBT and CCT
– CIP for unfiltered and filtered area
– Automation

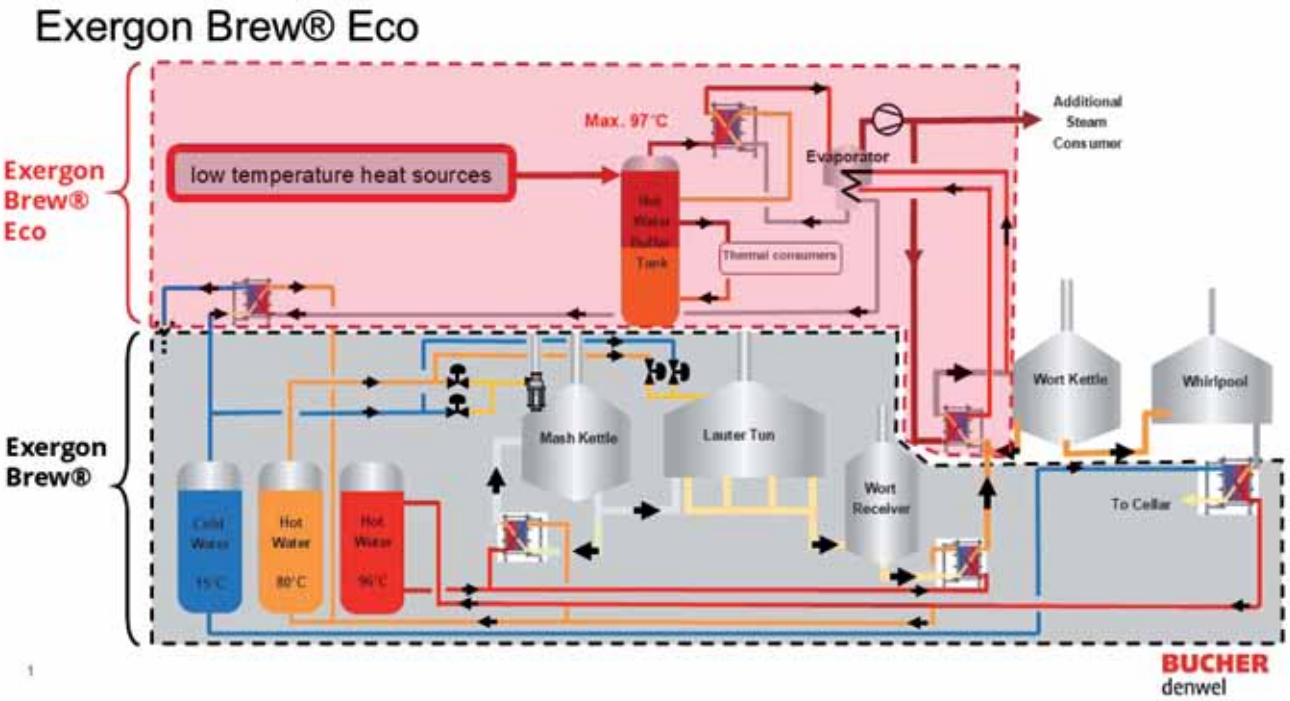


Energy Management

A pioneering concept for sustainable production

Tailored to your brewery requirements

– Lowering primary energy consumptions to a minimum
– Modular concept for energy recovery and energy production
– Holistic solution for the entire brewery operation
– Customized system



Applications

We rely on sustainable technologies to minimize environmental impact and maximize energy efficiency in your brewery. Our energy management systems are modular in design. The basis is the Exergon Brew® system for heat recovery in the brewhouse. The Exergon Brew® Eco System can supply the entire brewery with thermal energy. Various heat sources can be used for this purpose. Due to its high efficiency, complete electrification and thus complete decarbonization is possible. The principles of the energy management systems are not limited to use in breweries and can also be applied to the production of other beverages and liquid foods.

The systems can be customized for both new and existing brewhouses and actively contribute to reducing energy consumption and CO_2 emissions.

Principle

The Exergon Brew® basic system recovers heat from the brewing process at the highest possible temperature level in order to achieve the highest possible working capacity of the thermal energy (=exergy). The heat transfer medium is brewing water in an open system, which is fed with cold brewing water. The thermal energy is stored at two temperature levels: 80°C and 96-98°C. In order to achieve high recuperation efficiencies and minimize losses, the stored heat energy is either recirculated by adding the 96°C brewing water to the mash or through external heat exchangers. The use of external heat exchangers and layering of mash or wort ensures a constant temperature difference on the product side and the hot water side. With the constant return temperature, the heat cycle remains in balance with the highest possible usability of the recovered heat energy.

With the additional Exergon Brew® Eco module, the thermal energy for the entire brewery can be generated, thus replacing fossil heat generators. The thermal energy is collected in a buffer storage tank at approx. 97°C. This storage tank is fed by sustainable and flexible energy sources such as wood chips, pellets, solar thermal energy, district heating, geothermal energy, combined heat and power (CHP) and green electricity. In addition, low-temperature waste heat from refrigeration systems, compressed air generation and waste water can also be reused.

Many appliances can be supplied directly from the 97°C storage tank, such as bottle washers, pasteurizers and CIP systems. A central component is steam generation by means of a vapor compressor. The 97°C storage water is evaporated in a vacuum and low-pressure steam (approx. 0.5 bar) as a result of compression. This steam supplies consumers with temperature requirements above 100°C, e.g. for sterilization. This steam can also be used to heat the wort to boiling temperature. In boiling mode, the heat from the vapors is fed back into the vacuum evaporator via a secondary circuit, so that wort boiling does not require any additional thermal energy. The Exergon Brew® Eco system can be individually adapted to existing systems and, depending on the infrastructure and target, can even be implemented for CO_2-neutral beer production.

Turnkey Projects

Breweries from a single supplier

Every detail for your project

– Basic and detailed engineering
– Project management
– Installation and commissioning

Equipment

We offer complete turnkey brewery solutions – from malt intake to bottled beer. Our team takes care of planning, implementation, installation and commissioning, so you can focus on what matters most: producing high-quality beers.

From brewhouse to bright beer cellar we rely on innovative and unique Bucher Denwel technologies . Our process solutions increase the efficiency of your brewery while reducing energy consumption – for sustainable and future-oriented production. For systems outside the Bucher Denwel portfolio we rely on longterm partnerships with third party suppliers to implement the best overall solution for your requirements.

Project management and technical support

Bucher Denwel project management coordinates all trades and is your single point for all project matters. Our holistic approach enables us to ensure smooth processing.

Result

With our turnkey projects we create efficient plants that are perfectly tailored to your individual requirements. Together we lay build the foundation for a successful and sustainable brewery of the future.

Engineering

Brewing

Engineering services

– Basic and Detailed Engineering
– Feasibility Studies
– Documentation for Tenders
– Technical and Technological Audits
– Process Automation

Consulting

The success of a project begins with a precise understanding of the requirements. We listen carefully in order to find customized solutions that are optimally tailored to individual needs. Customer satisfaction is our goal. We work with you to find the right solution to meet your needs. We take into account your technological quality demands, planned production quantities and future developments, interfaces and local conditions.

1. New systems

For individual systems, we take into account integration into the existing system and coordination with current production. For complete systems, we ensure that all system components are perfectly coordinated and that efficient production is guaranteed.

2. Modernizations

As part of technical and technological audits, we analyse your existing plant holistically and can thus create the basis for a decision as to whether modernization or new construction makes sense as a first step. We show you the possibilities for increasing yields, reducing product losses, improving product quality, increasing production capacities and saving raw materials, energy and water.

Engineering

Our effective project management ensures that the project runs on time and within the budget, meets all service level commitments, keeps the team motivated and focused on performance and success realization. Customer satisfaction is our goal.

Automation

We deliver automation solutions based on PLC and SCADA. We manufacture PCC, LCC and pneumatic cabinets based on different standards, e.g. Siemens and Allen Bradley. Automation of manual processes helps you reduce labor cost.

After Sales

After successful commissioning and acceptance by the customer, the project does not end for us. From this point onwards, our after-sales engineers seamlessly take over the support and ensure reliable and efficient system operation in the long term. To achieve this, we support our customers with reliable spare parts management and service contracts. Depending on your production volume, we keep an eye on service intervals and required wear parts so that you can concentrate on the essentials: brewing high-quality beer!

Your success is our mission

Bucher Unipektin is your partner and supplier for single units as well as complete lines for the solid-liquid separation, filtration, juice treatment and concentrate production. These beverage technologies are mainly used for the production of fruit juices and purées as well as in brewing beer. But also, for vegetable and citrus juices, flavors and plant extract recovery within the pharmaceutical industry we offer solutions. Further we design and construct industrial vacuum and freeze dryers (lyophilisation). These are, among other fields, used for the production of instant-soups and -beverages.

Another business area is environmental technology, where we achieve successful results in sewage sludge and industrial sludge dewatering as well as in the solid-liquid separation of drinking water treatment plants.

First class products and services form the base of our market leading position. We operate with high motivation and flexibility with our customers, based on defined needs as well as new market-trends' innovative solutions and products are developed. Thereby ecological aspects are respected.

Our vision

We seek to achieve superior profitability and a sound balance sheet through technological leadership, a strong market position and strict cost management. We will continue to build the Group through organic growth and innovation, as well as by acquiring and integrating selected, complementary businesses. We invest to reduce our ecological footprint.

Practical Brewery Conversions

Approximate Caloric Value of Average Beer	Is Equal To (in calories)
8 oz.	85
10 oz.	140
12 oz.	170

Metric Equivalent	Is Equal To
1 U.S. beer bbl	1.173 hl
1 U.S. gallon	3.785 L
1 quart	0.946 L
1 pint	473.2 ml
12 fl. oz.	354.9 ml
8 fl. oz.	236.6 ml
7 fl. oz.	207.0 m
1 fl. oz.	29.6 ml

Metric Equivalent	Is Equal To
3.28 ft	1.00 m
1 ft	30.48 cm
1 inch	25.4 mm
1 sq. ft.	929 sq. cm.
1 cubic ft.	28.32 L
1 pound	453.6 g
1 atm	14.7 psi
1 grain/gal (U.S.)	17.1 ppm
1 grain/gal (British)	14.2 ppm
1 lb/100 bbls	38.6 ppm
1 lb/100 bbls	3.86 g/hl
1 g/hl	0.258 lbs/100 bbls
1 hl	0.852 U.S. bbls
1 L	0.264 U.S. gallons
1 L	1.057 quarts
1 m	1.094 yards
1 cm	0.0328 feet
1 ml	0.0610 cubic in.
1 kg	2.2 lbs

Conversion Factors	Is Equal To
1 U.S. beer barrel	31 gallons
	124 quarts
	248 pints
	3,968 oz
	4.144 cubic feet
	7,161 cubic inches
	258.70 lbs water at 39.2 °F
	257.16 lbs water at 95 °F
	247.93 lbs water at 212 °F
	271 lbs of 12% wort (approximately)
	262 lbs of beer of 3% AE
1 U.S. gallon	128 fl. oz.
	8.345 lbs water at 39.2 °F
	8.296 lbs water at 95 °F
	7.998 lbs water at 212 °F
	231 cubic inches of malt liquor at 39.2 °F
1 quart	57.749 cubic inches
1 pint	28.875 cubic inches
1 fl. oz.	1.805 cubic inches
1 bushel	1.244 cubic feet
1 cubic foot	1,728 cubic inches
	7.48 gal
	62.43 lbs water at 39.2 °F

2509-01-200

Part of Bucher Unipektin

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