Brewery Solutions

A range of quality and cost-effective brewing technologies from Europe

- Beer filtration
- Cider filtration
- Beer recovery from yeast
- Water deaeration
- Wort aeration
- Carboblending
- Carbonation
- Nitrogenation
- CIP
Brewing the finest beer takes equipment to match.

Whether you’re running a macro brewery, or you’re a boutique craft brewer, you want your end result to be truly outstanding in the market-place.

Bucher shares your passion, with a key focus on specialist brewer’s equipment. The very finest European technology meets traditional method in this highly reliable, robust, and long-lasting range.

You’ll also have peace of mind that down-time will be kept to an absolute minimum, thanks to excellent technical support and expertise when you need it most.

For equipment that matches expert brewer’s expectations, contact Bucher on +64 9 573 1333 or brewtech@bucheralimentech.com
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Craft Brewery Solutions

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Larger Brewery Solutions

Large Pre-coat Candle Filter
Bucher Synox® 2.0 PF is a new generation pre-coat filter with benefits including; reduced beer losses, ability to handle small batches, reduced pre-run, reduced interphase between brands, and reduced cleaning water consumption. Various models available for 60 to 1185 hl/hr.

Candle Filter for PVPP Stabilisation
Bucher Synox 2.0 PS is a candle-filter for use with PVPP (polyvinylpolypyrrolidone). PVPP is used to haze-stabilise beer and ensure its brightness for a longer shelf-life. The PVPP can be regenerated in-situ, reducing operating costs, and offering a good payback. Various models available for 50 to 1200 hl/hr.

Beer Recovery from surplus yeast
Bucher Cerinox® BR is a cross-flow filtration plant with ceramic membranes. Roughly 2 to 3% of a brewery's output is surplus yeast – and half of this volume is beer! Recovery of this beer has a good payback and can also reduce environmental impact, trade-waste loads and charges.

Ceramic Cross-flow filtration for various applications
Bucher Cerinox® MF is a compact skid-mounted cross-flow micro filtration plant with ceramic membranes. Applications can include wine, cider, fruit juice, vinegar, and other liquid products. The robustness of the ceramic materials guarantees very long membrane life, high availability, and low maintenance costs.

Cross-flow beer and cider filtration with ceramic membranes
Bucher Cerinox® BF is a new technology for beer and cider filtration. This reliable solution requires no DE (diatomaceous earth powder), and can produce yeast-free product by using robust ceramic membranes. Ceramic membranes can also be retrofitted into polymeric filters in some instances.

Final Filter cartridge housing
Bucher Securox® BF is a filter cartridge housing for final particle filtration after precoat filters. It consists of two chambers for optimised operation and cleaning.

Filter Service and support package
Bucher Filtrocare® is a tailor-made service package for your filters that can consist of; 24/7 Help Desk, Quality spare parts, filtration audits, inspections, training, retrofits and upgrades.

Excellence in Process Technology
Denwel provides a wide range of specialised equipment and engineering solutions.

Brewing Engineering
Denwel can provide basic and detailed engineering, feasibility studies, tender documents, technical audits and process automation.
**Inline Wort Aeration / Oxygenation**
The *Denwel Automatic Aeration / Oxygenation skid* is a fully hygienic design and ensures micro bubble size for instant saturation. An inline analyser monitors oxygen level, and a PLC accurately controls the air or oxygen dosing. Various models available for 20 to 1000 hl/hr.

**Inline Carboblender**
The *Denwel Automatic Carboblender skid* is a single skid for finely adjusting final gravity and carbonation. Various models available from 20 to 1000 hl/hr.

**Inline Carbonation**
The *Denwel Automatic Carbonation skid* is a single skid which can carbonate at levels up to 6 g/l. Precise carbonation is achieved with an inline analyser and PLC control. Various models available from 20 to 1000 hl/hr.

**Batch Carbonation**
The *Denwel Batch Carbonation / High Concentration Skid* is a single skid for carbonation / nitrogenation and cooling of small batches of products. It is suitable for all types of beverages, and has integrated CIP (Clean-in-place) and integrated cooling. Two models available for batch volumes 30 to 300 litres.

**CIP (Clean-in-Place) Mobile Skid**
The *Denwel Mobile CIP Skid* consists of two vessels with integrated heating and pumping. The system can be used for cleaning-in-place for brewery and other beverage equipment. Three models available for 20 to 150 hl/hr.

**CIP (Clean-in-Place) Plant**
*Denwel CIP Plants* can be tailored exactly to your specific project needs. These systems can include recovery tanks, heat exchangers, pumps and instrumentation necessary for automated cleaning of process plants, filling lines and tanks.

**Dosing : Compact Skid**
The *Denwel Compact Dosing Skids* provide continuous and precise dosing of one or more additives into beverage, water, or cleaning solutions. For example; Color, Fruit Syrup, Fructose, Bitterness, Iso Hops, Tetra Hops, Kieselguhr, Hydragel, and Silica gel. Various models available from 30 to 500 hl/hr.

**Flash Pasteurisation : Automatic Skid**
The *Denwel Flash Pasteurisation skid* can be used to reduce harmful organisms in beer, including after carbonation. With intelligent control, the skid can match variations in filler demand whilst maintaining pasteurisation. Various models available from 5 to 250 hl/hr.

**Inline Gas Injector**
The *Denwel Gas Injector* is for Air, Oxygen, Carbon dioxide and nitrogen. Various models available for 10 to 1000 hl/hr.
KG / PVPP Preparation
The Denwel Kieselguhr / PVPP Preparation and Dearation vessel is equipped with a DENWEL axial agitator which, when running at high speed ensures homogenisation and dearation. Oxygen concentration down to 30 ppb can be achieved.

Inline Nitrogenation – Automatic
The Denwel Automatic Nitrogenation skid is an efficient, hygienic design and ensures micro bubble size for instant saturation, thus improving foam stability. Various models available for 20 to 1000 hl/hr.

Inline Nitrogenation – High Concentration Skid
The Denwel Inline Nitrogenation (High Concentration) skid removes carbon dioxide in the first membrane, and then adds nitrogen in the second membrane. Nitrogenised beer has a creamy head and “avalanche” effect when poured. Three models available for 16 to 200 hl/hr.

Reconnection Lantern – Automatic Skid
The Denwel Reconnection Lantern safely transfer beverages from cellar to filter, or BBT to filling line and removes air automatically. Flowing through the lantern, air bubbles are released from beer and vented out by pneumatic valve. Various models available for 30 to 500 hl/hr.

Water Dearation Column – Cold
The Denwel Cold Water Dearation Column uses a flow of carbon dioxide or nitrogen gas to strip out oxygen from cold water via a high efficiency structured packing, down to 10 ppb of oxygen. The operating temperature is 10 to 30 degrees celcius, and consumes a fraction of the energy compared to other methods. Various models available for 4 to 300 hl/hr.

Water Dearation Column - Hot
The Denwel Hot Water Dearation Column uses a flow of carbon dioxide or nitrogen to strip out oxygen from cold water via a high efficiency structured packing, down to 5ppb of oxygen. The incoming water is heated and sterilised and dearated. Then, using a three-zone heat-exchanger, the outgoing water is cooled back down with incoming water, ensuring heat-recovery of up to 96%. The operating temperature is 1 to 90 degrees celcius, and has uncompromising sanitary design and is fully CIP cleanable. Various models available for 4 to 300 hl/hr.

Water Dearation Membrane Skid
The Denwel Water Dearation Membrane skid uses a flow of carbon dioxide or nitrogen to strip out oxygen from cold water via a hydrophobic hollow fibre membrane system. The operating temperature is 10 to 30 degrees celcius. Various models available for 4 to 200 hl/hr.

Yeast Plant
The Denwel Yeast Plant is designed for the propagation, storage, and pitching of various strains of yeast.
Craft Brewery Solutions
SECUJET® 2.0
Precoat candle filter

The smart candle filter for precoat filtration

- Compact design
- Easy handling
- High flexibility
**Characteristics**
The SECUJET® 2.0 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 SECUJET® 2.0 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
Bucher Filtrox – Let’s be clear!

Bucher Filtrox is the world leading manufacturer of turn-key filtration systems for the beverage industries. Apart from the well-known candle filter for the pre-coat filtration with kieselguhr and PVPP, Bucher Filtrox also develops, designs, and manufactures other advanced technologies such as filters for sugar syrup and gelatine filtration, filter systems for beer-recovery and many more.

Bucher Filtrox is a business partner with a long-term industrial focus, committed to fair partnership with our customers, employees, and business associates.

All dimensions in mm.
Bucher Filtrox is part of Bucher Unipektin AG, which belongs to Bucher Industries. Bucher Unipektin AG provides market leading process technology for the fruit and vegetable juice, concentrate and puree production, for the filtration of beer, sugar syrup and gelatine, for the production of milk powder, for the vacuum or freeze drying (lyophilisation) of malt, coffee and other extracts.

Part of its business is also process technology for the dewatering of municipal and industrial sludge as well as industrial process waste water.

Bucher Unipektin AG
www.bucherunipektin.com

Bucher Industries AG
www.bucherindustries.com
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 (6 bar) according to DGR regulations
- spray tube for optimal CIP
- available with manual or automatic control system

<table>
<thead>
<tr>
<th>Filter area / Volume</th>
<th>Available element pitch mm</th>
<th>Effective filter area m²</th>
<th>Sludge volume liter</th>
<th>Volume of dosing vessel liter</th>
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<th>Weights / connections</th>
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</table>

**Applications**

This filter is widely used in all parts of the world for the following applications:
- sugar sirup (with active carbon)
- tea (extraction and filtration)
- wine (with various filter aids)
- gelatine
- soya sauce
Bucher Filtrox – Let’s be clear!

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Part of its business is also process technology for the dewatering of municipal and industrial sludge as well as industrial process waste water.

Bucher Unipektin AG
www.bucherunipektin.com

Bucher Industries AG
www.bucherindustries.com
INLINE AERATION/OXYGENATION

Manual Skid

- Micro bubble size
- Instant saturation
- Sterile gas and steam filters
**Principle**

Oxygen or air is injected into the wort through 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)
- **O₂ 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 120°C, 248°F
- **Connection:** Tri-clamp; other connections upon request
- **Dimensions:** from Height 0.8m, 31.5”; Width 0.9m, 35.4”; Depth 0.2m, 6.5”
- **Weight:** from 25 kg, 55 lb
- **Material:** Stainless Steel 304, EPDM, PSU, PP
- **Models:** Aeration DASxxxM; Oxygenation DOSxxxM; Aeration and Oxygenation DOAxxxM

<table>
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<tr>
<th>Model</th>
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<th>Connection</th>
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<th>GPM</th>
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<td>40 to 100 hl/h</td>
<td>18 to 44 gpm</td>
<td>35 to 85 bbls/h</td>
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</table>
INLINE CARBONATION

Mobile Manual Skid

- Micro bubble size
- Instant saturation
- No CO₂ and flavor loss
- Efficient, hygienic design
IN LINE CARBONATION

Principle

CO₂ is injected into the beverage through DENWEL Injector, which splits the gas into micro bubbles. Most efficient and instant dissolution of CO₂ 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 CO₂ injection adjustment using beer flow determination always maintains carbonation at desired level. The integrated a pressure holding valve keeps the injected CO₂ 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 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 0.8m, 31.5”; Width 1.1m, 43.3”; Depth 0.2m, 6.5”
Weight: from 25 kg, 55 lb
Material: Stainless Steel 304, EPDM, PSU, PP
Models:

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</table>
INLINE CARBONATION

Semi-Automatic Skid

- Micro bubble size
- Instant saturation
- Precise CO₂ injection
- CO₂ ratio controlled
**INLINE CARBONATION**

**Principle**

CO₂ is injected into the beverage through DENWEL Injector, which splits the gas into micro bubbles. Most efficient and instant dissolution of CO₂ is achieved with only a minimal pressure drop, no gas loss and a fully hygienic design. No static mixer, sinter candles are needed.

Precise CO₂ 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 1.9m, 6.2’; Width 2.0m, 6.5’; Depth 0.6m, 2’
- **Weight:** from 200 kg, 440 lb
- **Material:** Stainless Steel 304, EPDM, 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
- **DCS1000S** DN 150 6” 400 to 1000 hl/h 176 to 440 gpm 341 to 852 bbls/h
CIP
Compact Skid

- Caustic, acid and water recovery vessel
- For tanks, pipes and equipment cleaning
- Automatic CIP sequencing
- Optimal cleaning performance
The CIP Compact Skid 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 temperature, flow or pressure.

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 1.8m, 71”; Width 4.5m, 177”; Depth 1.5m, 59”
Weight: from 500 kg, 1100 lb
Material: Stainless Steel 304, EPDM,
Models:

DCP100C  DN 40  1½”  40 to 100 hl/h  18 to 44 gpm  35 to 85 bbls/h
3x 10 hl vessels with heating 115 kW

DCP150C  DN 50  2”  60 to 150 hl/h  27 to 66 gpm  52 to 127 bbls/h
3x 15 hl vessels with heating 175 kW

DCP300C  DN 65  2½”  120 to 300 hl/h  53 to 132 gpm  103 to 225 bbls/h
3x 30 hl vessels with heating 345 kW

DCP400C  DN 80  3”  160 to 400 hl/h  71 to 176 gpm  137 to 340 bbls/h
3x 40 hl vessels with heating 460 kW
INLINE GAS INJECTOR

AIR, O2, CO2, N2

- Micro bubble size
- Instant saturation
- No gas and flavour loss
- Efficient, hygienic design
- Maintenance free
**INLINE GAS INJECTOR**

**Principle**

The DENWEL Injector splits the gas into micro bubbles. Individually designed for each application, it combines turbulent flow and increased pressure for an optimal mass transfer rate from gas to liquid.

Most efficient and instant dissolution of gas is achieved with only minimal pressure drop and no gas and flavour loss. No static mixer, sinter candle or recirculation tank is required. Designed for CIP, no parts of the Injector have to be removed for sanitation.

**Technical data**

- **Aeration:** up to 15 mg/l
- **Oxygenation:** up to 50 mg/l
- **Carbonation:** up to 6 g/l
- **Nitrogenation:** up to 20 ppm
- **Pressure:** operating 2 to 5 barg, 30 to 72 psig
- **Temperature:** operating 0 to 12°C, 32 to 55°F
- **CIP:** 2 to 5 barg, 30 to 72 psig; max. 90 °C, 200 °F
- **Connection:** Tri-clamp; other connections upon request
- **Material:** Stainless Steel 304
- **Models:** DGIxxxA for AIR, DGIxxxO for O₂, DGIxxxC for CO₂; DGIxxxN for N₂

<table>
<thead>
<tr>
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<td>69 to 170</td>
</tr>
<tr>
<td>DGI300_</td>
<td>DN 80</td>
<td>3”</td>
<td>120 to 300</td>
<td>53 to 132</td>
<td>103 to 225</td>
</tr>
<tr>
<td>DGI500_</td>
<td>DN 100</td>
<td>4”</td>
<td>200 to 500</td>
<td>88 to 220</td>
<td>171 to 426</td>
</tr>
<tr>
<td>DGI750_</td>
<td>DN 125</td>
<td>5”</td>
<td>300 to 750</td>
<td>132 to 330</td>
<td>256 to 639</td>
</tr>
<tr>
<td>DGI1000_</td>
<td>DN 150</td>
<td>6”</td>
<td>400 to 1000</td>
<td>176 to 440</td>
<td>341 to 852</td>
</tr>
</tbody>
</table>
INLINE NITROGENATION

Mobile Manual Skid

- Improves foam stability
- Micro bubble size
- Instant saturation
- Efficient, hygienic design
IN LINE NITROGENATION

Principle

$N_2$ is injected into the beverage through 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 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 0.8m, 31.5”; Width 1.1m, 43.3”; Depth 0.2m, 6.5”
- Weight: from 25 kg, 55 lb
- Material: Stainless Steel 304, EPDM, PSU, PP
- Frame: Mobile or Wall-mount

Models:

- DNS050S DN 40 1½” 20 to 50 hl/h 9 to 22 gpm 18 to 42 bbls/h
- DNS075S DN 40 1½” 30 to 75 hl/h 14 to 33 gpm 26 to 63 bbls/h
- DNS100S DN 50 2” 40 to 100 hl/h 18 to 44 gpm 35 to 85 bbls/h
- DNS150S DN 65 2½” 60 to 150 hl/h 27 to 66 gpm 52 to 127 bbls/h
- DNS200S DN 65 2½” 80 to 200 hl/h 36 to 88 gpm 69 to 170 bbls/h
- DNS300S DN 80 3” 120 to 300 hl/h 53 to 132 gpm 103 to 225 bbls/h
- DNS500S DN 100 4” 200 to 500 hl/h 88 to 220 gpm 171 to 426 bbls/h
- DNS750S DN 125 5” 300 to 750 hl/h 132 to 330 gpm 256 to 639 bbls/h
- DNS1000S DN 150 6” 400 to 1000 hl/h 176 to 440 gpm 341 to 852 bbls/h
Larger Brewery Solutions
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**

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

**Main dimensions**

**Dimensions (mm)**

<table>
<thead>
<tr>
<th>SYNOX 2.0° PF</th>
<th>DOSIMAT®</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>800</td>
<td>250</td>
<td>800</td>
<td>3156</td>
<td>3543</td>
<td>3100</td>
<td>1700</td>
<td>–</td>
<td>906</td>
</tr>
<tr>
<td>1100</td>
<td>500</td>
<td>1120</td>
<td>3544</td>
<td>3931</td>
<td>3500</td>
<td>1900</td>
<td>–</td>
<td>906</td>
</tr>
<tr>
<td>1300</td>
<td>500</td>
<td>1300</td>
<td>3829</td>
<td>4235</td>
<td>3800</td>
<td>2000</td>
<td>1291</td>
<td>906</td>
</tr>
<tr>
<td>1500</td>
<td>500</td>
<td>1500</td>
<td>3999</td>
<td>4444</td>
<td>4000</td>
<td>2200</td>
<td>1390</td>
<td>906</td>
</tr>
<tr>
<td>1800</td>
<td>800</td>
<td>1800</td>
<td>4221</td>
<td>4665</td>
<td>4500</td>
<td>2500</td>
<td>1540</td>
<td>906</td>
</tr>
<tr>
<td>2000</td>
<td>800</td>
<td>2000</td>
<td>4385</td>
<td>4933</td>
<td>4700</td>
<td>2700</td>
<td>1641</td>
<td>906</td>
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<tr>
<td>2300</td>
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<td>4638</td>
<td>5228</td>
<td>5200</td>
<td>3000</td>
<td>1790</td>
<td>1256</td>
</tr>
</tbody>
</table>

**Bucher Filtrox – Let’s be clear!**

*Bucher Filtrox* is the world leading manufacturer of turn-key filtration systems for the beverage industries. Apart from the well-known candle filter for the pre-coat filtration with kieselguhr and PVPP, *Bucher Filtrox* also develops, designs, and manufactures other advanced technologies such as filters for sugar syrup and gelatine filtration, filter systems for beer-recovery and many more.

*Bucher Filtrox* is a business partner with a long-term industrial focus, committed to fair partnership with our customers, employees, and business associates.

Technical changes reserved.
Bucher Filtrox worldwide

Bucher Filtrox is part of Bucher Unipektin AG, which belongs to Bucher Industries. Bucher Unipektin AG provides market leading process technology for the fruit and vegetable juice, concentrate and puree production, for the filtration of beer, sugar syrup and gelatine, for the production of milk powder, for the vacuum or freeze drying (lyophilisation) of malt, coffee and other extracts.

Part of its business is also process technology for the dewatering of municipal and industrial sludge as well as industrial process waste water.

Bucher Unipektin AG
www.bucherunipektin.com

Bucher Industries AG
www.bucherindustries.com
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

<table>
<thead>
<tr>
<th>SYNOX 2.0® PS size</th>
<th>Filter volume (litres)</th>
<th>Filtration capacity (hl/hr)</th>
<th>max. PVPP load (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>800</td>
<td>770</td>
<td>50–90</td>
<td>50</td>
</tr>
<tr>
<td>1100</td>
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<td>1300</td>
<td>3200</td>
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<td>225</td>
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<td>1500</td>
<td>4600</td>
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</tr>
<tr>
<td>2300</td>
<td>10 600</td>
<td>600–1200</td>
<td>&gt; 700</td>
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</tbody>
</table>

Main dimensions

Dimensions (mm)

<table>
<thead>
<tr>
<th>SYNOX 2.0® PS</th>
<th>DOSIMAT®</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>800</td>
<td>1100G</td>
<td>800</td>
<td>2700</td>
<td>3200</td>
<td>3800</td>
<td>2160</td>
<td>1256</td>
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</tr>
<tr>
<td>1100</td>
<td>1700G</td>
<td>1120</td>
<td>3240</td>
<td>3740</td>
<td>4130</td>
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<td>2923</td>
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<tr>
<td>1500</td>
<td>6000G</td>
<td>1500</td>
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<td>4850</td>
<td>5950</td>
<td>3700</td>
<td>2010</td>
<td>3685</td>
</tr>
<tr>
<td>1800</td>
<td>9000G</td>
<td>1800</td>
<td>4620</td>
<td>5120</td>
<td>6450</td>
<td>3850</td>
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<td>4685</td>
</tr>
<tr>
<td>2000</td>
<td>12000G</td>
<td>2000</td>
<td>4770</td>
<td>5270</td>
<td>6940</td>
<td>4240</td>
<td>2300</td>
<td>4745</td>
</tr>
<tr>
<td>2300</td>
<td>12000G</td>
<td>2300</td>
<td>5135</td>
<td>5635</td>
<td>7240</td>
<td>4390</td>
<td>2300</td>
<td>4745</td>
</tr>
</tbody>
</table>

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Part of its business is also process technology for the dewatering of municipal and industrial sludge as well as industrial process waste water.

Bucher Unipektin AG
www.bucherunipektin.com

Bucher Industries AG
www.bucherindustries.com
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 15 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.

**Working principle**

The cross-flow principle as shown in the following picture is characterised by the flow directions of the unfiltered and filtered liquid, which are perpendicular to each other. The preferably-turbulent flow of the unfiltered liquid, which is parallel to the membrane’s surface, prevents particles from depositing on the membrane or carries away already deposited substances. Hence the throughput of filtered liquid through the membrane is kept high.

A pressure gradient across the membrane forces the filtered liquid to penetrate the membrane.

**Characteristics of the membranes**

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

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel diameter</td>
<td>8 mm</td>
</tr>
<tr>
<td>Pore size</td>
<td>0.3 µm</td>
</tr>
<tr>
<td>Pressure resistance</td>
<td>30 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>&gt; 90 °C</td>
</tr>
<tr>
<td>pH</td>
<td>0–14</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbidity of filtrate</td>
<td>&lt; 08. EBC (90° angle)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yeast cells in filtrate</td>
<td>&lt; 5 cells / 100 ml</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bacteria reduction</td>
<td>&gt; 10⁵</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 is 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 m² filter area, the other one with 48 m², and hence by modularly increasing filter area, an optimal plant design for all required brewery sizes is possible.

Space requirements
The maximum height of these plants amounts to 3.3 metres. The required floor space for the CIP station is around 2.5 x 1.0 m. The required floor space depends on the number and type of dual-flow modules installed. Some typical values for plants with the bigger type of module are:

<table>
<thead>
<tr>
<th>No. of modules</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter area / m²</td>
<td>48</td>
<td>96</td>
<td>144</td>
</tr>
<tr>
<td>*Yeast / hl/day</td>
<td>240</td>
<td>480</td>
<td>720</td>
</tr>
<tr>
<td>Space / m</td>
<td>2.2 x 2.0</td>
<td>3.0 x 2.0</td>
<td>3.0 x 3.0</td>
</tr>
</tbody>
</table>

* depending on dry matter and gravity; incl. diafiltration

Process
CERINOX® for beer recovery works according to the “batch principle”. While the yeast is recirculated through the plant and the batch (feed) tank, beer is recovered. Thanks to the batch tank, the concentration of the yeast increases slowly so that the plant works only for a very short period with the maximum concentration. The specific flow rate is increased by this type of process. A semi-continuous operation can be achieved by substituting the volume of the recovered beer by fresh feed yeast slurry until the tank is filled with highly-concentrated yeast. Diafiltration can be applied for increasing extract yield and, hence, increasing the economical benefit. For these purposes, recovered beer is substituted by deaerated water. The remaining beer in the yeast slurry is continuously diluted so that beer with slowly decreasing gravity is recovered.

Bucher Filtrox – Let’s be clear!

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Part of its business is also process technology for the dewatering of municipal and industrial sludge as well as industrial process waste water.

Bucher Unipektin AG
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Bucher Industries AG
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Competence Center Filtration
Moosmühlestrasse 8
CH-9000 St. Gallen
Switzerland
Phone +41 44 857 2900
Fax +41 44 857 2990
www.bucherfiltrox.com
CERINOX® MF
Cross-flow filtration plant with ceramic membranes

For wine, cider, fruit juice, vinegar and other food products

- Standardized units
- Skid mounted
- Ready to use
**Characteristics**

CERINOX® is a compact cross-flow filtration plant equipped with ceramic tubular membranes. There are standard units available as well as custom-designed installations. 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 guarantee high economical benefit and high filtrate quality. The high durability of the membranes, together with a well proven process based on 15 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 makes the CERINOX® a standard solution for microfiltration of food products.

**Working principle**

The cross-flow principle as shown on the following picture is characterised by the flow directions of the unfiltered and filtered liquid, which are perpendicular to each other. The preferably-turbulent flow of the unfiltered liquid, which is parallel to the membrane’s surface, prevents particles from depositing on the membrane or carries away already deposited substances. Hence the throughput of filtered liquid through the membrane is kept high. A pressure gradient across the membrane forces the filtered liquid to penetrate the membrane.

**Characteristics of the membranes**

For every specific process tailor-made ceramic membranes in tubular multi channel elements have been developed:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel diameter</td>
<td>1.35–8 mm</td>
</tr>
<tr>
<td>Pore size</td>
<td>0.2–0.8 µm</td>
</tr>
<tr>
<td>Pressure resistance</td>
<td>30 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>&gt; 90 °C</td>
</tr>
<tr>
<td>pH</td>
<td>0–14</td>
</tr>
</tbody>
</table>

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

**Applications**

There have been systems sold for various applications all over the world:

<table>
<thead>
<tr>
<th>Product</th>
<th>Membrane type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wine</td>
<td>2.4 mm</td>
<td>45 / 110 m²</td>
</tr>
<tr>
<td>Cider</td>
<td>2.4–2.8 mm</td>
<td>30–150 m²</td>
</tr>
<tr>
<td>Fruit juice</td>
<td>2.4–6 mm</td>
<td>30–200 m²</td>
</tr>
<tr>
<td>Vinegar</td>
<td>2.4–6 mm</td>
<td>60–250 m²</td>
</tr>
<tr>
<td>Food products</td>
<td>2.4–8 mm</td>
<td>36–… m²</td>
</tr>
</tbody>
</table>

The CERINOX® with ceramic membranes is very well suited for new applications, which cannot be served with other membrane materials.
**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.

**Space requirements**

The maximum height of these plants amounts to 3.3 metres. The required floor space depends on the number and type of dual-flow modules installed. Some typical values for plants with the bigger type of module are:

<table>
<thead>
<tr>
<th>No. of modules</th>
<th>1</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter area / m²</td>
<td>50</td>
<td>110</td>
<td>220</td>
</tr>
<tr>
<td>Module type</td>
<td>450</td>
<td>660</td>
<td>660</td>
</tr>
<tr>
<td>Space / m²</td>
<td>2.2 x 2.0</td>
<td>3.0 x 2.0</td>
<td>3.0 x 3.0</td>
</tr>
</tbody>
</table>

**Process**

CERINOX® for crossflow microfiltration works according to the “batch principle”. While the unfiltrate is recirculated through the plant and the batch (feed) tank, filtrate is produced. Thanks to the batch tank, the concentration of the filtrate increases slowly so that the plant works only for a very short period with the maximum concentration. The specific flow rate is increased by this type of process. A semi-continuous operation can be achieved by substituting the volume of the filtrate by fresh feed slurry until the tank is filled with high-concentrate. Diafiltration can be applied for increasing extract yield and, hence, increasing the economical benefit. For this purpose, filtrate is substituted by deaerated water.

**The dual-flow module**

Thanks to this concept, a maximum of packing density and a minimum of pipe connections are achieved. Complete venting and draining is guaranteed by discharging the liquid through the top and bottom plate. This concept allows easy maintenance by simply taking away the top cover of the housing.

With two different sizes of dual-flow modules, filtrationsurface from 30 m² filter up to 200 m², and hence by modularly increasing filter area, an optimal plant design for all required application is possible in one module.

---

**Bucher Filtrox – Let’s be clear!**

Bucher Filtrox is the world leading manufacturer of turn-key filtration systems for the beverage industries. Apart from the well-known candle filter for the precoat filtration with kieselguhr and PVPP, Bucher Filtrox also develops, designs, and manufactures other advanced technologies such as filters for sugar syrup and gelatine filtration, filter systems for beer-recovery and many more.

Bucher Filtrox is a business partner with a long-term industrial focus, committed to fair partnership with our customers, employees, and business associates.
Bucher Filtrox is part of Bucher Unipektin AG, which belongs to Bucher Industries. Bucher Unipektin AG provides market leading process technology for the fruit and vegetable juice, concentrate and puree production, for the filtration of beer, sugar syrup and gelatine, for the production of milk powder, for the vacuum or freeze drying (lyophilisation) of malt, coffee and other extracts.

Part of its business is also process technology for the dewatering of municipal and industrial sludge as well as industrial process waste water.

Bucher Unipektin AG
www.bucherunipektin.com

Bucher Industries AG
www.bucherindustries.com
CERINOX® BF
Cross-flow beer filtration with ceramic membranes

- Absolutely yeast free beer
- Sterilization 85°C possible
- Long life time of membranes
- No frequent membrane change
- No expensive cleaning agents
**Bucher Filtrox presents the first reliable solution for membrane filtration of beer and other fermented beverages**

Bucher Filtrox, which is part of Bucher Unipektin AG, presents the first reliable solution for crossflow beer filtration with ceramic membranes.

With the CERINOX® BF a truly reliable solution for the crossflow membrane filtration of beer and other fermented beverages like e.g. cider is presented.

Based on the great competence in beer filtration and the long experience with CERINOX® BR cross-flow systems for beer recovery from tank bottoms, Bucher Filtrox is in an excellent position to provide solutions for mainstream beer filtration, which fulfill all requirements of the brewing industry.

With the latest generation of ceramic membranes with 1.4 mm channels it is now possible to reach the same packed density as the polymer membranes, which allows also retrofitting existing systems like the Microstar, which is still widely used in wineries.

Whether it is consulting, engineering, project realization with integrated control systems or upgrade of existing filter systems, with Bucher Filtrox you have the right partner. The know-how and the long time experience of our employees allow us to establish tailor made solutions from one hand and serve our customers the best way possible.
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 an 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, variation A

<table>
<thead>
<tr>
<th>SECUROX® BF</th>
<th>30/10</th>
<th>40/14</th>
<th>40/20</th>
<th>60/32</th>
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<td>7</td>
<td>7</td>
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<tr>
<td>Max. operating temperature</td>
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<td>100</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Volume of filter – without pipe system</td>
<td>70</td>
<td>152</td>
<td>152</td>
<td>275</td>
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<tr>
<td>Weight of perforated plate – with cartridges</td>
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<td>56</td>
<td>56</td>
<td>103</td>
<td>103</td>
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<tr>
<td>Number of cartridges</td>
<td>10</td>
<td>14</td>
<td>20</td>
<td>32</td>
<td>46</td>
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<td>Material quality filter</td>
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<td>316 L</td>
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<tr>
<td>Material quality gaskets</td>
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<td>EPDM</td>
<td>EPDM</td>
<td>EPDM</td>
<td>EPDM</td>
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<tr>
<td>Material quality pipe system, valves, etc.</td>
<td>1.4301</td>
<td>1.4301</td>
<td>1.4301</td>
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<table>
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<th>Option 316 L</th>
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<tr>
<td>A</td>
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<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
<tr>
<td>E</td>
</tr>
<tr>
<td>DN</td>
</tr>
</tbody>
</table>

![Diagram of SECUROX® BF system]

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Technical changes reserved.
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Bucher Unipektin AG
www.bucherunipektin.com

Bucher Industries AG
www.bucherindustries.com
FILTROCARE®
Tailor-made service packages

Helping you to be more competitive

- Qualified services
- Training and audits
- Original spare parts
Our goal is to maintain a long-term relationship with our customers and therefore we offer services beyond design and project realization.

In order to serve our customers comprehensively, we designed the FILTROCARE® service package based on five (5) basic modules, easily adjustable to the individual needs of our customers.

Filtration is our business. This vast experience allows us to offer you an efficient and outstanding service. In two words: Total assistance. Give us a chance to prove it!

**FILTROCARE® – we support you wherever you are**

Filtration plants are becoming more and more sophisticated requiring specialized knowledge in terms of design, technology, mechanics, automation and maintenance. FILTROCARE® is our customer service program to assist and support the end user throughout the entire lifecycle of a filtration plant.

The FILTROCARE® service package is based on our long-term experience in planning and optimization of filtration processes. FILTROCARE® is offered to the individual customer as a tailor-made solution.

The FILTROCARE® service package ensures both product- and process-security, helps to improve the performance of your filtration plants, assures your production schedule and helps your competitiveness.

**FILTROCARE® – we bring our experience close to you – worldwide**

---

1. **Help desk – around the clock ready for you!**

   We are available whenever you need us. Because most of our customers work 24/7, we offer a week-end hotline for emergencies.

2. **Spare parts – original quality**

   Plants work best with original spare parts. We have an extensive stock of spare parts for all of our filters. Our qualified staff is happy to help you with your need.
3. Prevention – better safe than sorry
Our module “prevention” is based on different levels: Process, automation and mechanical.

Filtration-audits focus on the process and make sure your filtration processes remain state-of-the-art.

An inspection by one of our specialists ensures your plant runs safely and gets you the performance you need in the future.

Maintenance contracts
Your plant is preventively maintained at required intervals. This avoids shut-downs and unwanted surprises and helps you to plan your maintenance budget.

4. Training – dedicated specialists
Well-trained operators lead to higher productivity and safety. We make our filtration expertise available to you. We offer various training modules – on-site or at our training-center in St. Gallen.

5. Retrofits and upgrades
In many cases, the FILTROCARE® Retrofit package has helped our customers with changes in their filtration set-up, for example:
- Full-scale retrofitting of existing filtration plants and control systems
- Mechanical retrofitting
- Retrofitting of the process control system
- Dismantling, transport, installation and re-commissioning of a filtration plant at a new site
- Limited detailed process and/or plant optimization

We are pleased to make you a tailor-made offer. Please contact us.

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**Bucher Unipektin AG**
www.bucherunipektin.com

**Bucher Industries AG**
www.bucherindustries.com

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Bucher Filtrox worldwide

Bucher Unipektin AG
Competence Center Filtration
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CH-9000 St. Gallen
Switzerland
Phone +41 44 857 2900
Fax +41 44 857 2990
www.bucherfiltrox.com
DENWEL provides a wide range of specialized equipment and engineering solutions dedicated to helping our customers optimizing their processes. Combining experience and innovation with high quality components we supply customer-designed technologies for the beverage, pharmaceutical and chemical industry.

We understand your process. Together we define the technical parameters and evaluate actual and future requirements, respecting safety, environment and costs. The result is a process unit designed to your specifications, easy to operate and increasing the efficiency from the first day of use.

Our comprehensive after sales service provides immediate and effective support; the integrated PLC communication interface allows remote help and online software upgrades. Preventive maintenance contract controls the cost of parts and repairs, while reducing breakdown risk and prolonging equipment lifetime.
ENGINEERING

Brewing

- Basic and Detailed Engineering
- Feasibility Studies
- Documentation for Tenders
- Technical and Technological Audits
- Process Automation
ENGINEERING BREWING

Engineering and Automation

Our engineers provide consulting, feasibility studies, project documentation for tenders, basic and detailed engineering, technical and technological audits. We deliver automation solutions based on PLC and SCADA. We manufacture PCC, LCC and pneumatic cabinets.

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 is focused on performance and successful realization. Customer satisfaction is our goal.

Technical support

Our comprehensive after sales service provides immediate and effective support as we understand service as the key to our success.
**INLNE AERATION/OXYGENATION**

**Automatic Skid**

- Micro bubble size
- Instant saturation
- \( \text{O}_2 \) analyzer controlled

Brewing yeast needs oxygen to multiply. While insufficient aeration results in reduced yeast reproduction, over-dosing 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, DENWEL provides a fully automated solution for continuous wort aeration.
IN L I N E  
A E R A T I O N / O X Y G E N A T I O N

Principle
Oxygen or Air is injected into the wort through 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 O₂ analyzer continuously monitors the O₂ concentration. The output signal is processed by the PLC to control the O₂ 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)
O₂ 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 1.9m, 6.2’; Width 2.0m, 6.5’; Depth 0.6m, 2’
Weight: from 100 kg, 220 lb
Material: Stainless Steel 304, EPDM, PSU, PP
Models: Aeration DASxxxA; Oxygenation DOSxxxA; Aeration and Oxygenation DOAxxxA

<table>
<thead>
<tr>
<th>Model</th>
<th>Connection</th>
<th>Flow Rate</th>
<th>Pressure</th>
<th>Temperature</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Material</th>
<th>Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>D__050S</td>
<td>DN 40</td>
<td>1½”</td>
<td>20 to 50 hl/h</td>
<td>9 to 22 gpm</td>
<td>18 to 42 bbls/h</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>D__075S</td>
<td>DN 40</td>
<td>1½”</td>
<td>30 to 75 hl/h</td>
<td>14 to 33 gpm</td>
<td>26 to 63 bbls/h</td>
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</tr>
<tr>
<td>D__100S</td>
<td>DN 50</td>
<td>2”</td>
<td>40 to 100 hl/h</td>
<td>18 to 44 gpm</td>
<td>35 to 85 bbls/h</td>
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<tr>
<td>D__150S</td>
<td>DN 65</td>
<td>2½”</td>
<td>60 to 150 hl/h</td>
<td>27 to 66 gpm</td>
<td>52 to 127 bbls/h</td>
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<tr>
<td>D__200S</td>
<td>DN 65</td>
<td>2½”</td>
<td>80 to 200 hl/h</td>
<td>36 to 88 gpm</td>
<td>69 to 170 bbls/h</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>D__300S</td>
<td>DN 80</td>
<td>3”</td>
<td>120 to 300 hl/h</td>
<td>53 to 132 gpm</td>
<td>103 to 225 bbls/h</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D__500S</td>
<td>DN 100</td>
<td>4”</td>
<td>200 to 500 hl/h</td>
<td>88 to 220 gpm</td>
<td>171 to 426 bbls/h</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D__750S</td>
<td>DN 125</td>
<td>5”</td>
<td>300 to 750 hl/h</td>
<td>132 to 330 gpm</td>
<td>256 to 639 bbls/h</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D__1000S</td>
<td>DN 150</td>
<td>6”</td>
<td>400 to 1000 hl/h</td>
<td>176 to 440 gpm</td>
<td>341 to 852 bbls/h</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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, DENWEL provides a fully automated solution for continuous blending ensuring consistent product quality.
**IN L I N E  C A R B O  B L E N D E R**

**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 1.9m, 6.2’; Width 2.0m, 6.5’; Depth 0.6m, 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
- **DBC1000A**
  - DN 150 6”
  - 400 to 1000 hl/h
  - 176 to 440 gpm
  - 341 to 852 bbls/h
CO₂ 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 CO₂ content also influences beer foam structure and its stability. Therefore, consistent and accurate CO₂ is one of the main quality factors in the production of beer and soft drinks. Designed for fast and accurate injection and dissolution of CO₂, DENWEL provides a fully automated solution for continuous carbonation.
**I N L I N E C A R B O N A T I O N**

**Principle**

CO₂ is injected into the beverage through DENWEL Injector, which splits the gas into micro bubbles. Most efficient and instant dissolution of CO₂ 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 CO₂ analyzer continuously monitors the CO₂ concentration. The output signal is processed by the PLC to control the CO₂ dosing. A high precision control valve accurately adjusts the CO₂ 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 CO₂ 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 1.9m, 6.2’; Width 2.0m, 6.5’; Depth 0.6m, 2’
Weight: from 200 kg, 440 lb
Material: Stainless Steel 304, EPDM, PSU, PP
Models:

<table>
<thead>
<tr>
<th>Model</th>
<th>DN</th>
<th>Size</th>
<th>Flow Rate (hl/h)</th>
<th>GPM</th>
<th>Bbls/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCS050A</td>
<td>40</td>
<td>1½”</td>
<td>20 to 50</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>DCS075A</td>
<td>40</td>
<td>1½”</td>
<td>30 to 75</td>
<td>14</td>
<td>26</td>
</tr>
<tr>
<td>DCS100A</td>
<td>50</td>
<td>2”</td>
<td>40 to 100</td>
<td>18</td>
<td>35</td>
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<tr>
<td>DCS150A</td>
<td>65</td>
<td>2½”</td>
<td>60 to 150</td>
<td>27</td>
<td>52</td>
</tr>
<tr>
<td>DCS200A</td>
<td>65</td>
<td>2½”</td>
<td>80 to 200</td>
<td>36</td>
<td>69</td>
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<tr>
<td>DCS300A</td>
<td>80</td>
<td>3”</td>
<td>120 to 300</td>
<td>53</td>
<td>103</td>
</tr>
<tr>
<td>DCS500A</td>
<td>100</td>
<td>4”</td>
<td>200 to 500</td>
<td>88</td>
<td>171</td>
</tr>
<tr>
<td>DCS750A</td>
<td>125</td>
<td>5”</td>
<td>300 to 750</td>
<td>132</td>
<td>256</td>
</tr>
<tr>
<td>DCS1000A</td>
<td>150</td>
<td>6”</td>
<td>400 to 1000</td>
<td>176</td>
<td>341</td>
</tr>
</tbody>
</table>
BATCH CARBONATION

High Concentration Skid

- All types of beverages
- Precise CO₂ / N₂ dosing
- Integrated CIP
- Integrated cooling
- Direct connection to the filler
Batch carbonator is a skid 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 Denwel Injector during circulation process. Requested pressure and temperature is kept in the product tank during carbonation and nitrogenation.

The skid is equipped with integrated CIP tank.

### Technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbonation</td>
<td>up to 10 g/l, 5 V/V</td>
</tr>
<tr>
<td>Nitrogenation</td>
<td>up to 60 ppm, mg/l</td>
</tr>
<tr>
<td>Capacity</td>
<td>batch production</td>
</tr>
<tr>
<td>Temperature</td>
<td>product cooled down to 2°C, 35°F</td>
</tr>
<tr>
<td>CIP</td>
<td>integrated CIP vessel and heating up to 90 °C, 200 °F</td>
</tr>
<tr>
<td>Connection</td>
<td>Tri-clamp</td>
</tr>
<tr>
<td>Dimensions</td>
<td>from Height 2.3m, 75”; Width 2.2m, 72”; Depth 0.9m, 29”</td>
</tr>
<tr>
<td>Material</td>
<td>Stainless Steel 304, EPDM, PSU, PP</td>
</tr>
<tr>
<td>Frame</td>
<td>Mobile</td>
</tr>
</tbody>
</table>

### Models

<table>
<thead>
<tr>
<th>Model</th>
<th>DN</th>
<th>Size</th>
<th>Capacity</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCS120B</td>
<td>25</td>
<td>1&quot;</td>
<td>30 to 120 l</td>
<td>7.5 to 30 gal</td>
</tr>
<tr>
<td>DCS300B</td>
<td>40</td>
<td>1½&quot;</td>
<td>75 to 300 l</td>
<td>19 to 75 gal</td>
</tr>
</tbody>
</table>
C I P

Mobile Skid

- Three sizes of caustic and acid vessels
- For tanks, pipes and equipment cleaning
- Automatic temperature control
- Optimal cleaning performance
C I P

Principle
The Mobile CIP Skid 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 Skid consists of a 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 1.6m, 63”; Width 2.0m, 79”; Depth 0.7m, 28” |
| Weight: | from 100 kg, 220 lb |
| Material: | Stainless Steel 304, EPDM, |

Models:

- **DCP050M** DN 25 1” 20 to 50 hl/h 9 to 22 gpm 18 to 42 bbls/h 2x 250 l vessels with heating 4,5 kW + 4,5 kW as option
- **DCP100M** DN 40 1½” 40 to 100 hl/h 18 to 44 gpm 35 to 85 bbls/h 2x 450 l vessels with heating 7,5 kW + 7,5 kW as option
- **DCP150M** DN 50 2” 60 to 150 hl/h 27 to 66 gpm 52 to 127 bbls/h 2x 650 l vessels with heating 15 kW+ 15 kW as option
CIP Plant

- 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
The production of high quality beer using modern production techniques requires effective and careful cleaning of process equipment. DENWEL offers CIP plant designed exactly to customer’s specific project needs. The DENWEL CIP is a fully automatic system, programmed to achieve optimal cleaning 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. The CIP program covers the complete cleaning cycle: detergent or water selection, detergent concentrations and cycle temperatures and times are fully automated. The DENWEL CIP plant is fully integrated into process plants, filling lines and tanks.
DOSING
Compact Skid

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

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

Principle

The Compact Dosing Skid 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 are dosed from homogenizing vessels.

Technical Specifications

| 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
FLASH PASTEURIZATION

Automatic Skid

- Gentle and precise heat treatment
- Consistent Pasteurization
- Heat recovery up to 96%

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.
**FLASH PASTEURIZATION**

**Principle**

The cold beer enters the regenerative zone of the plate heat exchanger and is gently pre-heated by the already pasteurized product. In the heating zone, the beer is then heated up to the request pasteurization temperature and held in the holding tube during the requested pasteurization time. The pasteurized beer is then cooled down in the regenerative zone and if required, cooled in the cooling zone to the requested filling temperature. The regenerative zone counts up to 96% of the heating and cooling demand and makes the system run at the most economical costs.

A frequency controlled pump at the inlet of the heat exchanger regulates the flow, while a second pump between the regenerative and the heating zone raises the pressure up to 14 bar in order to keep the CO\(_2\) in the liquid. A back pressure valve at the outlet of the heat exchanger and a pressurized buffer tank make sure that constant pressure is maintained in the system and no CO\(_2\) is lost.

Flash Pasteurization is typically installed in front of the filler and the filler speed often varies considerably. To keep the required pasteurization units (PU) within tight limits, DENWEL uses 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, too. Lower flow means longer holding time and therefore the pasteurization temperature has to be decreased to keep the same PU. The system reduces the flow according to the heat exchanger temperature 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 guaranteed.

\[
PU = \frac{t}{60} \times 1.393 (T - 60)
\]

**Pasteurization Units PU**

- \(t\): Holding time [seconds]
- \(T\): Temperature [°C]

**Technical specifications**

- **PU range**: 10 – 150 PU
- **Control accuracy**: ± 1 PU

**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
INLINE GAS INJECTOR
AIR, O2, CO2, N2

- Micro bubble size
- Instant saturation
- No gas and flavour loss
- Efficient, hygienic design
- Maintenance free
**INLINE GAS INJECTOR**

Principle

The DENWEL Injector splits the gas into micro bubbles. Individually designed for each application, it combines turbulent flow and increased pressure for an optimal mass transfer rate from gas to liquid.

Most efficient and instant dissolution of gas is achieved with only minimal pressure drop and no gas and flavour loss. No static mixer, sinter candle or recirculation tank is required. Designed for CIP, no parts of the Injector have to be removed for sanitation.

---

**Technical data**

- **Aeration:** up to 15 mg/l
- **Oxygenation:** up to 50 mg/l
- **Carbonation:** up to 6 g/l
- **Nitrogenation:** up to 20 ppm
- **Pressure:** operating 2 to 5 barg, 30 to 72 psig
- **Temperature:** operating 0 to 12°C, 32 to 55°F
- **CIP:** 2 to 5 barg, 30 to 72 psig; max. 90 °C, 200 °F
- **Connection:** Tri-clamp; other connections upon request
- **Material:** Stainless Steel 304
- **Models:** DGIxxxA for Air, DGIxxxO for O₂, DGIxxxC for CO₂; DGIxxxN for N₂

<table>
<thead>
<tr>
<th>Model</th>
<th>DN</th>
<th>Connection</th>
<th>Maximum Flowrate</th>
<th>Maximum GPM</th>
<th>Maximum BBLS/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGI025_</td>
<td>25</td>
<td>1&quot;</td>
<td>10 to 25 hl/h</td>
<td>5 to 11 gpm</td>
<td>9 to 21 bbls/h</td>
</tr>
<tr>
<td>DGI040_</td>
<td>40</td>
<td>1½&quot;</td>
<td>16 to 40 hl/h</td>
<td>8 to 17 gpm</td>
<td>14 to 34 bbls/h</td>
</tr>
<tr>
<td>DGI050_</td>
<td>40</td>
<td>1½&quot;</td>
<td>20 to 50 hl/h</td>
<td>9 to 22 gpm</td>
<td>18 to 42 bbls/h</td>
</tr>
<tr>
<td>DGI075_</td>
<td>40</td>
<td>1½&quot;</td>
<td>30 to 75 hl/h</td>
<td>14 to 33 gpm</td>
<td>26 to 63 bbls/h</td>
</tr>
<tr>
<td>DGI100_</td>
<td>50</td>
<td>2&quot;</td>
<td>40 to 100 hl/h</td>
<td>18 to 44 gpm</td>
<td>35 to 85 bbls/h</td>
</tr>
<tr>
<td>DGI150_</td>
<td>65</td>
<td>2½&quot;</td>
<td>60 to 150 hl/h</td>
<td>27 to 66 gpm</td>
<td>52 to 127 bbls/h</td>
</tr>
<tr>
<td>DGI200_</td>
<td>65</td>
<td>2½&quot;</td>
<td>80 to 200 hl/h</td>
<td>36 to 88 gpm</td>
<td>69 to 170 bbls/h</td>
</tr>
<tr>
<td>DGI300_</td>
<td>80</td>
<td>3&quot;</td>
<td>120 to 300 hl/h</td>
<td>53 to 132 gpm</td>
<td>103 to 225 bbls/h</td>
</tr>
<tr>
<td>DGI500_</td>
<td>100</td>
<td>4&quot;</td>
<td>200 to 500 hl/h</td>
<td>88 to 220 gpm</td>
<td>171 to 426 bbls/h</td>
</tr>
<tr>
<td>DGI750_</td>
<td>125</td>
<td>5&quot;</td>
<td>300 to 750 hl/h</td>
<td>132 to 330 gpm</td>
<td>256 to 639 bbls/h</td>
</tr>
<tr>
<td>DGI1000_</td>
<td>150</td>
<td>6&quot;</td>
<td>400 to 1000 hl/h</td>
<td>176 to 440 gpm</td>
<td>341 to 852 bbls/h</td>
</tr>
</tbody>
</table>

---

**In-Line Gas Injector**

The DENWEL Injector splits the gas into micro bubbles. Individually designed for each application, it combines turbulent flow and increased pressure for an optimal mass transfer rate from gas to liquid.

Most efficient and instant dissolution of gas is achieved with only minimal pressure drop and no gas and flavour loss. No static mixer, sinter candle or recirculation tank is required. Designed for CIP, no parts of the Injector have to be removed for sanitation.

---

**Technical data**

- **Aeration:** up to 15 mg/l
- **Oxygenation:** up to 50 mg/l
- **Carbonation:** up to 6 g/l
- **Nitrogenation:** up to 20 ppm
- **Pressure:** operating 2 to 5 barg, 30 to 72 psig
- **Temperature:** operating 0 to 12°C, 32 to 55°F
- **CIP:** 2 to 5 barg, 30 to 72 psig; max. 90 °C, 200 °F
- **Connection:** Tri-clamp; other connections upon request
- **Material:** Stainless Steel 304
- **Models:** DGIxxxA for Air, DGIxxxO for O₂, DGIxxxC for CO₂; DGIxxxN for N₂

**Technical data**

- **Aeration:** up to 15 mg/l
- **Oxygenation:** up to 50 mg/l
- **Carbonation:** up to 6 g/l
- **Nitrogenation:** up to 20 ppm
- **Pressure:** operating 2 to 5 barg, 30 to 72 psig
- **Temperature:** operating 0 to 12°C, 32 to 55°F
- **CIP:** 2 to 5 barg, 30 to 72 psig; max. 90 °C, 200 °F
- **Connection:** Tri-clamp; other connections upon request
- **Material:** Stainless Steel 304
- **Models:** DGIxxxA for Air, DGIxxxO for O₂, DGIxxxC for CO₂; DGIxxxN for N₂

---

**Technical data**

- **Aeration:** up to 15 mg/l
- **Oxygenation:** up to 50 mg/l
- **Carbonation:** up to 6 g/l
- **Nitrogenation:** up to 20 ppm
- **Pressure:** operating 2 to 5 barg, 30 to 72 psig
- **Temperature:** operating 0 to 12°C, 32 to 55°F
- **CIP:** 2 to 5 barg, 30 to 72 psig; max. 90 °C, 200 °F
- **Connection:** Tri-clamp; other connections upon request
- **Material:** Stainless Steel 304
- **Models:** DGIxxxA for Air, DGIxxxO for O₂, DGIxxxC for CO₂; DGIxxxN for N₂

---

**Technical data**

- **Aeration:** up to 15 mg/l
- **Oxygenation:** up to 50 mg/l
- **Carbonation:** up to 6 g/l
- **Nitrogenation:** up to 20 ppm
- **Pressure:** operating 2 to 5 barg, 30 to 72 psig
- **Temperature:** operating 0 to 12°C, 32 to 55°F
- **CIP:** 2 to 5 barg, 30 to 72 psig; max. 90 °C, 200 °F
- **Connection:** Tri-clamp; other connections upon request
- **Material:** Stainless Steel 304
- **Models:** DGIxxxA for Air, DGIxxxO for O₂, DGIxxxC for CO₂; DGIxxxN for N₂
KG/PVP Preparation

Compact Skid

- Final Oxygen below 30 ppb
- CO₂/N₂ and energy savings
- Safe & hygienic design
- Turnkey unit or upgrade
**K G / P V P P**

**P R E P A R A T I O N**

**Compact Skid**

**Principle**

The Kieselguhr/PVPP Preparation & Deaeration vessel is equipped with DENWEL axial agitator, developed in cooperation with the technical university. High speed is applied for fast homogenization and deaeration of the suspension. Once the required parameters are reached, the agitator speed slows down for significant energy saving.

A single CO$_2$ inlet aligned to the stirrer blades ensures the highest stripping efficiency and low gas consumption.

The enhanced homogeneity provides fast filtration cake setting and consistent pre-coating; the low oxygen improves the flavor stability of the final product.

**Technical data**

- **Vessel capacity:** 300 to 3 000 l
- **O$_2$ concentration:** down to 30 ppb
- **Stripping gas:** CO$_2$ or N$_2$
- **Material:** 1.4301
IN LINE NITROGENATION

Automatic Skid

- Efficient, hygienic Injector
- Micro bubble size
- Instant N₂ dissolution
- PLC controlled

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.
INLINE NITROGENATION

Principle

$N_2$ is injected into the beverage through 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 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 0.8m, 31.5”; Width 0.5m, 19.7”; Depth 0.2m, 6.5”
Weight: from 25 kg, 55 lb
Material: Stainless Steel 304, EPDM, PSU, PP
Models:

<table>
<thead>
<tr>
<th>Model</th>
<th>DN</th>
<th>Size (Inches)</th>
<th>Flow Rate (hl/h)</th>
<th>GPM</th>
<th>Bbls/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNS050A</td>
<td>40</td>
<td>1½”</td>
<td>20 to 50</td>
<td>9 to 22</td>
<td>18 to 42</td>
</tr>
<tr>
<td>DNS075A</td>
<td>40</td>
<td>1½”</td>
<td>30 to 75</td>
<td>14 to 33</td>
<td>26 to 63</td>
</tr>
<tr>
<td>DNS100A</td>
<td>50</td>
<td>2”</td>
<td>40 to 100</td>
<td>18 to 44</td>
<td>35 to 85</td>
</tr>
<tr>
<td>DNS150A</td>
<td>65</td>
<td>2½”</td>
<td>60 to 150</td>
<td>27 to 66</td>
<td>52 to 127</td>
</tr>
<tr>
<td>DNS200A</td>
<td>65</td>
<td>2½”</td>
<td>80 to 200</td>
<td>36 to 88</td>
<td>69 to 170</td>
</tr>
<tr>
<td>DNS300A</td>
<td>80</td>
<td>3”</td>
<td>120 to 300</td>
<td>53 to 132</td>
<td>103 to 225</td>
</tr>
<tr>
<td>DNS500A</td>
<td>100</td>
<td>4”</td>
<td>200 to 500</td>
<td>88 to 220</td>
<td>171 to 426</td>
</tr>
<tr>
<td>DNS750A</td>
<td>125</td>
<td>5”</td>
<td>300 to 750</td>
<td>132 to 330</td>
<td>256 to 639</td>
</tr>
<tr>
<td>DNS1000A</td>
<td>150</td>
<td>6”</td>
<td>400 to 1000</td>
<td>176 to 440</td>
<td>341 to 852</td>
</tr>
</tbody>
</table>
INLINE NITROGENATION

High Concentration Skid

- Creamy head and avalanche effect
- Long-lasting foam stability
- Efficient and precise nitrogen control
IN LINE NITROGENATION

Principle
The first membrane contactor is used to remove CO₂, while the second dissolves N₂ into beer. The internal fibers of the membranes form a large contact area between gas and liquid ensuring instant and efficient dissolution.

The removal of CO₂ is set by the level of vacuum applied to the first membrane. The nitrogen addition is adjusted by the N₂ pressure applied to the second membrane.

The nitrogenation is typically installed between two BBTs. The centrifugal pump transfers beer from the first tank into the unit, where its pressure, temperature and flow are monitored. The outlet valve is used to set up required beer pressure and flow. Nitrogenized beer is pushed to the second tank.

Technical data
CO₂ removal: up to 3 g/l, 1.5V/V (P & T dependent)
N₂ addition: up to 80 ppm (P & T dependent)
Pressure: Operating 1 to 5 barg, 15 to 70 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: Height 1.9m, 75”; Width 1.4m, 55”; Depth 0.7m, 28”
Weight: from 100 kg, 220 lb
Material: Stainless Steel 304, EPDM, PSU, PP
Frame: Mobile or Skid
Models:

<table>
<thead>
<tr>
<th>Model</th>
<th>DN</th>
<th>Size</th>
<th>Flow Rate</th>
<th>Pressure</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNS040H</td>
<td>40</td>
<td>1½”</td>
<td>16 to 40 hl/h</td>
<td>8 to 17 gpm</td>
<td>14 to 34 bbls/h</td>
</tr>
<tr>
<td>DNS100H</td>
<td>50</td>
<td>2”</td>
<td>40 to 100 hl/h</td>
<td>18 to 44 gpm</td>
<td>35 to 85 bbls/h</td>
</tr>
<tr>
<td>DNS200H</td>
<td>65</td>
<td>2½”</td>
<td>80 to 200 hl/h</td>
<td>36 to 88 gpm</td>
<td>69 to 170 bbls/h</td>
</tr>
</tbody>
</table>
RECONNECTION LANTERN

Automatic Skid

- Safe beverage transfer
- Automatic air removal
- Minimizes extract losses
- Instant reconnection from empty to selected tank
- Controlled beer flow to minimize oxygen pickup
RECONNECTION LANTERN

Principle
The Deaeration Lantern safely transfers beverage from cellar to filter, or BBT to filling line and removes air automatically. Flowing through the lantern, air bubbles are released from beer and vented out by pneumatic valve.

When the connected tank slowly becomes empty, the beer flow is automatically reduced and air pickup is minimized. Then the lantern reconnects the next full tank. This way several tanks can be connected at the same time.

The modular layout is expandable from two to eight lanterns. The system comes assembled on a compact frame, is tested and rapidly put into operation.

Optionally the output pump can be controlled.

Technical data
Connected tanks: 2 to 8
Temperature: 0 to 10°C
Pressure: 2 to 8 bar

Models:

<table>
<thead>
<tr>
<th>Model</th>
<th>DN</th>
<th>Size</th>
<th>Flow Rate (hl/h)</th>
<th>GPM</th>
<th>Bbls/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLS075D</td>
<td>40</td>
<td>1½”</td>
<td>30 to 75</td>
<td>14</td>
<td>26 to 63</td>
</tr>
<tr>
<td>DLS100D</td>
<td>50</td>
<td>2”</td>
<td>40 to 100</td>
<td>18</td>
<td>35 to 85</td>
</tr>
<tr>
<td>DLS200D</td>
<td>65</td>
<td>2½”</td>
<td>80 to 200</td>
<td>36</td>
<td>69 to 170</td>
</tr>
<tr>
<td>DLS300D</td>
<td>80</td>
<td>3”</td>
<td>120 to 300</td>
<td>53</td>
<td>103 to 225</td>
</tr>
<tr>
<td>DLS500D</td>
<td>100</td>
<td>4”</td>
<td>200 to 500</td>
<td>88</td>
<td>171 to 426</td>
</tr>
</tbody>
</table>
WATER DEAERATION

Column Cold Skid

- Final oxygen below 10 ppb
- Carbonation of deaerated water
- No vacuum required
- Low CO₂/N₂ consumption
WATER DEAERATION

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.

This technology is distinguished by high efficiency and reliability and consumes just a fraction of energy compared to other methods.

Technical data

Final Oxygen: down to 10 ppb
Pressure: operating 2 to 4 barg, 30 to 60 psig
Temperature: operating 10 to 30°C, 40 to 90°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 5m, 16.4’; Width 1.0m, 3.3’; Depth 0.5m, 1.6’
Weight: from 200 kg, 440 lb
Material: Stainless Steel 304, EPDM, PSU, PP
Models:

<table>
<thead>
<tr>
<th>Model</th>
<th>DN</th>
<th>Size (In.)</th>
<th>Flow Rate (hl/h)</th>
<th>Flow Rate (gpm)</th>
<th>Flow Rate (bbls/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DWD010C</td>
<td>25</td>
<td>1”</td>
<td>4 to 10</td>
<td>2 to 4</td>
<td>4 to 8</td>
</tr>
<tr>
<td>DWD015C</td>
<td>25</td>
<td>1”</td>
<td>6 to 15</td>
<td>3 to 6</td>
<td>6 to 12</td>
</tr>
<tr>
<td>DWD025C</td>
<td>25</td>
<td>1”</td>
<td>10 to 25</td>
<td>5 to 11</td>
<td>9 to 21</td>
</tr>
<tr>
<td>DWD050C</td>
<td>40</td>
<td>1½”</td>
<td>20 to 50</td>
<td>9 to 22</td>
<td>18 to 42</td>
</tr>
<tr>
<td>DWD075C</td>
<td>40</td>
<td>1½”</td>
<td>30 to 75</td>
<td>14 to 33</td>
<td>26 to 63</td>
</tr>
<tr>
<td>DWD100C</td>
<td>50</td>
<td>2”</td>
<td>40 to 100</td>
<td>18 to 44</td>
<td>35 to 85</td>
</tr>
<tr>
<td>DWD150C</td>
<td>50</td>
<td>2”</td>
<td>60 to 150</td>
<td>27 to 66</td>
<td>52 to 127</td>
</tr>
<tr>
<td>DWD200C</td>
<td>65</td>
<td>2½”</td>
<td>80 to 200</td>
<td>36 to 88</td>
<td>69 to 170</td>
</tr>
<tr>
<td>DWD250C</td>
<td>65</td>
<td>2½”</td>
<td>100 to 250</td>
<td>44 to 110</td>
<td>86 to 213</td>
</tr>
<tr>
<td>DWD300C</td>
<td>80</td>
<td>3”</td>
<td>120 to 300</td>
<td>53 to 132</td>
<td>103 to 225</td>
</tr>
</tbody>
</table>
WATER DEAERATION

Column Hot Skid

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

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.

DENWEL provides a fully automated solution able to economically achieve oxygen down to 5 ppb.
WATER DEAERATION

Principle
The deaeration column is filled with high efficient structured packing. Its internal surface of 500 m²/m³ ensures a maximal contact area between gas and liquid. Water is homogeneously distributed from the top and CO₂/N₂ is injected at the bottom of the column. While the water flows downwards through the packing, the CO₂/N₂ 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. The structured packing is from stainless steel and CIP compatible.

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
Connection: Tri-clamp; other connections upon request
Dimensions: from Height 5m, 16.4’; Width 1.5m, 4.9’; Depth 0.5m, 1.6’
Weight: from 300 kg, 660 lb
Material: Stainless Steel 304, EPDM, PSU, PP
Models:

<table>
<thead>
<tr>
<th>Model</th>
<th>DN</th>
<th>Nominal Size</th>
<th>Minimum Flow</th>
<th>Maximum Flow</th>
<th>Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>DWD010H</td>
<td>DN 25</td>
<td>1”</td>
<td>4 to 10 hl/h</td>
<td>2 to 4 gpm</td>
<td>4 to 8 bbls/h</td>
</tr>
<tr>
<td>DWD015H</td>
<td>DN 25</td>
<td>1”</td>
<td>6 to 15 hl/h</td>
<td>3 to 6 gpm</td>
<td>6 to 12 bbls/h</td>
</tr>
<tr>
<td>DWD025H</td>
<td>DN 25</td>
<td>1”</td>
<td>10 to 25 hl/h</td>
<td>5 to 11 gpm</td>
<td>9 to 21 bbls/h</td>
</tr>
<tr>
<td>DWD050H</td>
<td>DN 40</td>
<td>1½”</td>
<td>20 to 50 hl/h</td>
<td>9 to 22 gpm</td>
<td>18 to 42 bbls/h</td>
</tr>
<tr>
<td>DWD075H</td>
<td>DN 40</td>
<td>1½”</td>
<td>30 to 75 hl/h</td>
<td>14 to 33 gpm</td>
<td>26 to 63 bbls/h</td>
</tr>
<tr>
<td>DWD100H</td>
<td>DN 50</td>
<td>2”</td>
<td>40 to 100 hl/h</td>
<td>18 to 44 gpm</td>
<td>35 to 85 bbls/h</td>
</tr>
<tr>
<td>DWD150H</td>
<td>DN 50</td>
<td>2”</td>
<td>60 to 150 hl/h</td>
<td>27 to 66 gpm</td>
<td>52 to 127 bbls/h</td>
</tr>
<tr>
<td>DWD200H</td>
<td>DN 65</td>
<td>2½”</td>
<td>80 to 200 hl/h</td>
<td>36 to 88 gpm</td>
<td>69 to 170 bbls/h</td>
</tr>
<tr>
<td>DWD250H</td>
<td>DN 65</td>
<td>2½”</td>
<td>100 to 250 hl/h</td>
<td>44 to 110 gpm</td>
<td>86 to 213 bbls/h</td>
</tr>
<tr>
<td>DWD300H</td>
<td>DN 80</td>
<td>3”</td>
<td>120 to 300 hl/h</td>
<td>53 to 132 gpm</td>
<td>103 to 225 bbls/h</td>
</tr>
</tbody>
</table>
Final oxygen below 10 ppb
Water prefiltration
Expandable capacity

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, DENWEL provides a fully automated solution able to economically achieve oxygen levels below 10 ppb.
WATER DEAERATION

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: down to 10 ppb
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
Connection: Tri-clamp; other connections upon request
Dimensions: from Height 1.6m, 63”; Width 0.7m, 47”; Depth 0.6m, 24”
Weight: from 550 lb, 250kg
Material: Stainless Steel 304, EPDM, PE, PSU, PP
Models:

<table>
<thead>
<tr>
<th>Model</th>
<th>DN</th>
<th>Size</th>
<th>Flow Rate hl/h</th>
<th>GPM</th>
<th>Bbls/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>DWD010M</td>
<td>25</td>
<td>1”</td>
<td>4 to 10</td>
<td>2 to 4 gpm</td>
<td>4 to 8 bbls/h</td>
</tr>
<tr>
<td>DWD025M</td>
<td>25</td>
<td>1”</td>
<td>10 to 25</td>
<td>5 to 11 gpm</td>
<td>9 to 21 bbls/h</td>
</tr>
<tr>
<td>DWD040M</td>
<td>40</td>
<td>1½”</td>
<td>16 to 40</td>
<td>8 to 17 gpm</td>
<td>14 to 34 bbls/h</td>
</tr>
<tr>
<td>DWD075M</td>
<td>40</td>
<td>1½”</td>
<td>30 to 75</td>
<td>14 to 33 gpm</td>
<td>26 to 63 bbls/h</td>
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<tr>
<td>DWD100M</td>
<td>50</td>
<td>2”</td>
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<td>18 to 44 gpm</td>
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<td>DWD200M</td>
<td>65</td>
<td>2½”</td>
<td>80 to 200</td>
<td>36 to 88 gpm</td>
<td>69 to 170 bbls/h</td>
</tr>
</tbody>
</table>
YEAST PLANT
Propagation, Storage, Pitching

- Various yeast strains
- Flexible design
- Highest hygienic standard
YEAST PLANT
