



More than **sensors + automation**



Brewery technology

Innovative solutions for your success





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Dear reader,

Brewing beer is an art in itself. As a brewer, you depend on your technical knowledge as well as reliable and accurate measurements with monitoring and a central control unit.

JUMO, your reliable partner, is always at your side to help when you have questions and to provide quick solutions, whether you want to monitor the quality of your beer by pressure, temperature, conductivity or the pH value, or whether you want to control cleaning or reduce production costs.

How can we accomplish that for you? Through many years of experience and professional competence. JUMO has been a leading manufacturer of measurement and control systems for more than fifty years. This has helped us become a competent partner for the beverage industry.

We place special importance on regular new development cycles, continuous improvements in existing products and continually making production methods more economical. This is the only way we will achieve the highest level of innovation. JUMO also offers only the best for you in brewery technology: a wide range of solutions for the most diverse applications.

Brewing incorporates many time-honored elements, for example in Germany the Reinheitsgebot or "Purity Law", which dates to 1516 and limits the ingredients of beer to water, barley and hops. Today quality is also achieved through instrumentation and controlling engineering at the latest state of the art.

This brochure will give you an overview of JUMO products and systems for brewery technology. Of course we would also be happy to develop individual solutions for you, completely customized to your requirements.

The ultimate result of these solutions is consistently good beer quality!

Christina Hoffmann

A handwritten signature in blue ink that reads "Christina Hoffmann".

P.S.: Detailed information about our products can be found under the specified type/product group number at www.industry.jumo.info

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The Malting Process

As an experienced brewer you know that the quality of beer depends on many factors. If you work with reliable JUMO automation systems in the early phase of production, the malting process, you can rely on producing a high-quality malt at the end of the process.



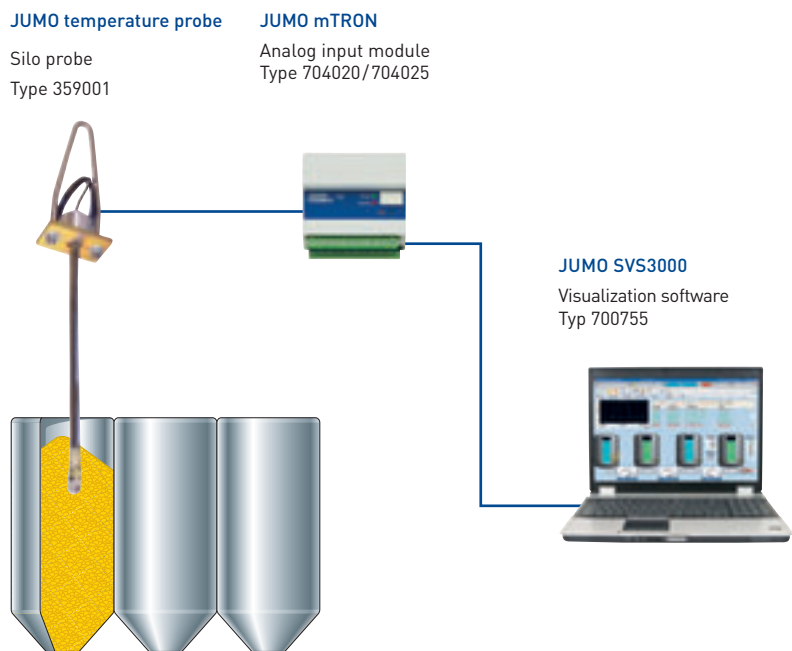
The Malting Process

Storing Steeping Germination Kilning

Storing

Exact temperature monitoring of barley and malt with JUMO silo probes

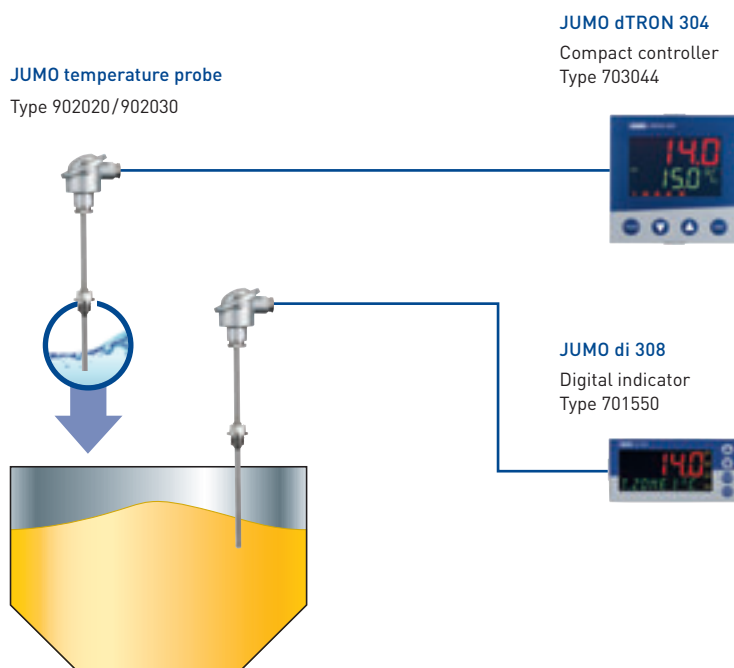
JUMO silo probes feature several Pt100 or Pt1000 sensors, fitted at regular intervals. This makes it possible to measure the temperature at several places in the silo at the same time, using only one probe. The modules of the JUMO mTRON automation system process the data and forward it to the SVS3000 plant visualization program, which displays the data in real time and triggers an alarm immediately if the temperature changes.



Steeping

Precise control of the air and water supply to the steep with JUMO dTRON controllers

In the steep, the barley is soaked and aerated at regular intervals to promote germination. The increasing respiration caused by the added oxygen produces more CO_2 , which constantly has to be removed. The temperature in the steep is also recorded for monitoring and displayed directly on site when required. You can use the JUMO dTRON compact controller for exact and reliable control of air and water supply. But there's more: Depending on the size and requirement, you can also represent and continuously monitor the entire steeping tank with the SVS3000 plant visualization software.





Germination

Reliable temperature monitoring during germination with the JUMO mTRON automation system

During germination, the enzymes that will later be needed to make the beer are formed. It is crucial that the air being introduced has been sufficiently moistened to prevent the barley from drying out and instead to maintain a relatively constant moisture content. That is exactly what the JUMO mTRON does. You can use it to monitor the temperature of the outside air simply and easily and then show the results

with the visualization program. JUMO mTRON modules also provide control of turners and an additional wetting plant.

Reliable display and monitoring of test points with the SVS3000

You can integrate the entire malthouse with our SVS3000 plant visualization software. This will give you a quick overview of the entire plant so you always have information about all relevant processes.

JUMO di 308

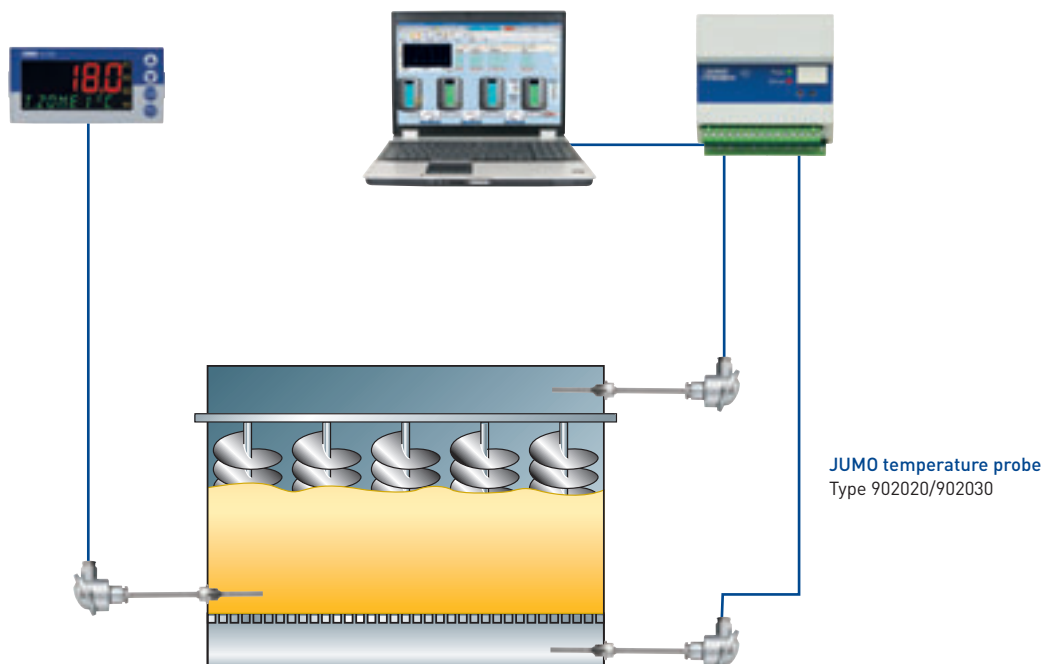
Digital indicator
Type 701550

JUMO SVS3000

Visualization software
Type 700755

JUMO mTRON

Analog input module
Type 704030/704040



The Malting Process

Storing

Steeping

Germination Kilning



Kilning

Optimum temperature control in the malt kiln

During kilning, the malt is dried until it is stable for storing. Constant temperature control is extremely important as this is the only way to ensure that the malt is completely dried through and does not burn, which would destroy the enzymes in the malt. The sections are controlled by the JUMO IMAGO 500 multi-channel process and program controller. It controls the dampers in relation to the temperature above the rack. It also adjusts the ratio of fresh air to circulating

air, thereby ensuring optimum drying. You can record the vacuum as an additional measurement value with the JUMO dTRANS p30 to verify the seal of the heat exchanger. This will prevent burner exhaust gas from getting into the product.

JUMO LOGOSCREEN nt

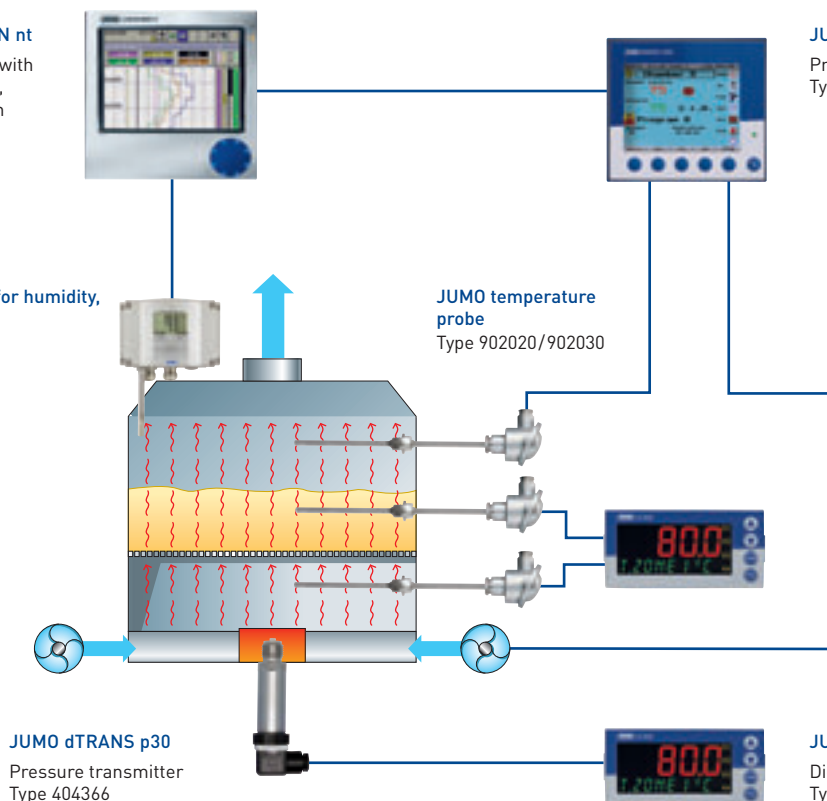
Paperless recorder with stainless steel front, operation with touch panel and Ethernet
Type 706581

JUMO transducers for humidity, temperature
Type 907023

JUMO temperature probe
Type 902020/902030

JUMO IMAGO 500

Program controller
Type 703590



JUMO dTRANS p30
Pressure transmitter
Type 404366

JUMO di 308
Digital indicator
Type 701550



The Brewing Process

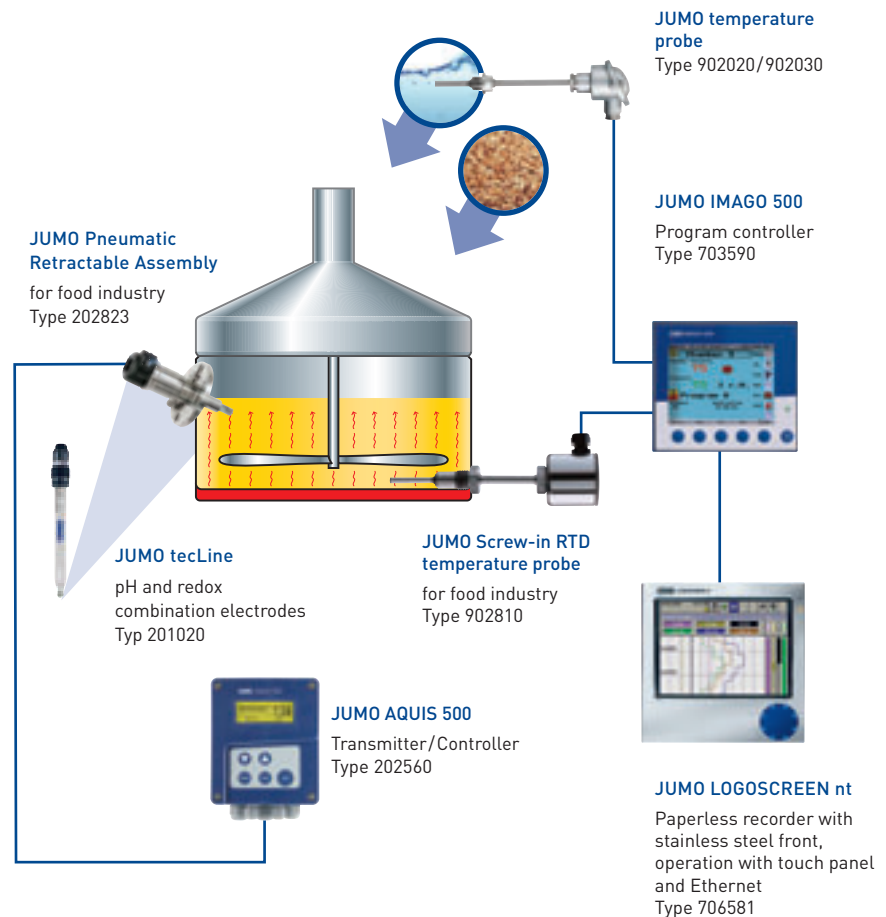
The brewing process requires time. It consists of a large number of individual details, starting with mashing and lautering, then boiling and cooling the wort and finally fermentation and filtration. In all of these individual processes you rely on precise monitoring of temperature, pressure, the pH value or conductivity, etc. Top-class JUMO automation systems have been proven over many years in this application. They provide perfect support in these monitoring tasks along the entire process chain.



Mashing

Reliable temperature control of the mashing process

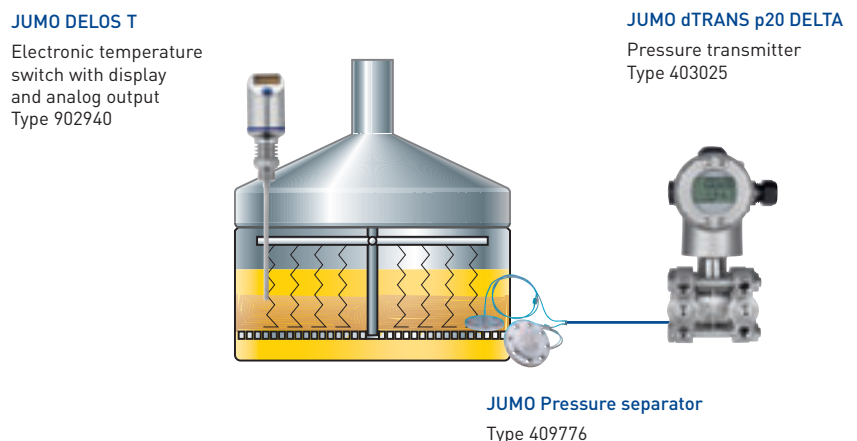
During the mashing process the starches derived from the barley are broken down by the enzymes into sugar. Because enzyme are highly sensitive to temperature, the most important factors during mashing are temperature and time. The JUMO IMAGO 500 ensures optimum control: It works with a screw-in resistance thermometer with connection head and tapered test prod for faster response times. JUMO also has a trusty expert for reliable documentation of the mashing process: JUMO LOGOSCREEN nt.



Lautering

Precise control of lautering with the JUMO dTRANS p20 DELTA differential pressure transmitter

During lautering, the position of the cutting blades is controlled by differential pressure between the upper and lower halves of the lautur tun. To ensure that no vacuum is produced here, the difference in pressure that forms above the false base and spent grains must not be allowed to become too great. The JUMO dTRANS p20 DELTA differential pressure transmitter is especially suitable for this purpose: It ensures precise control of the cutting blades, subject to the measured differential pressure forming below the false base and above the spent grains and as a result also ensures consistent wort quality.





Boiling the Wort

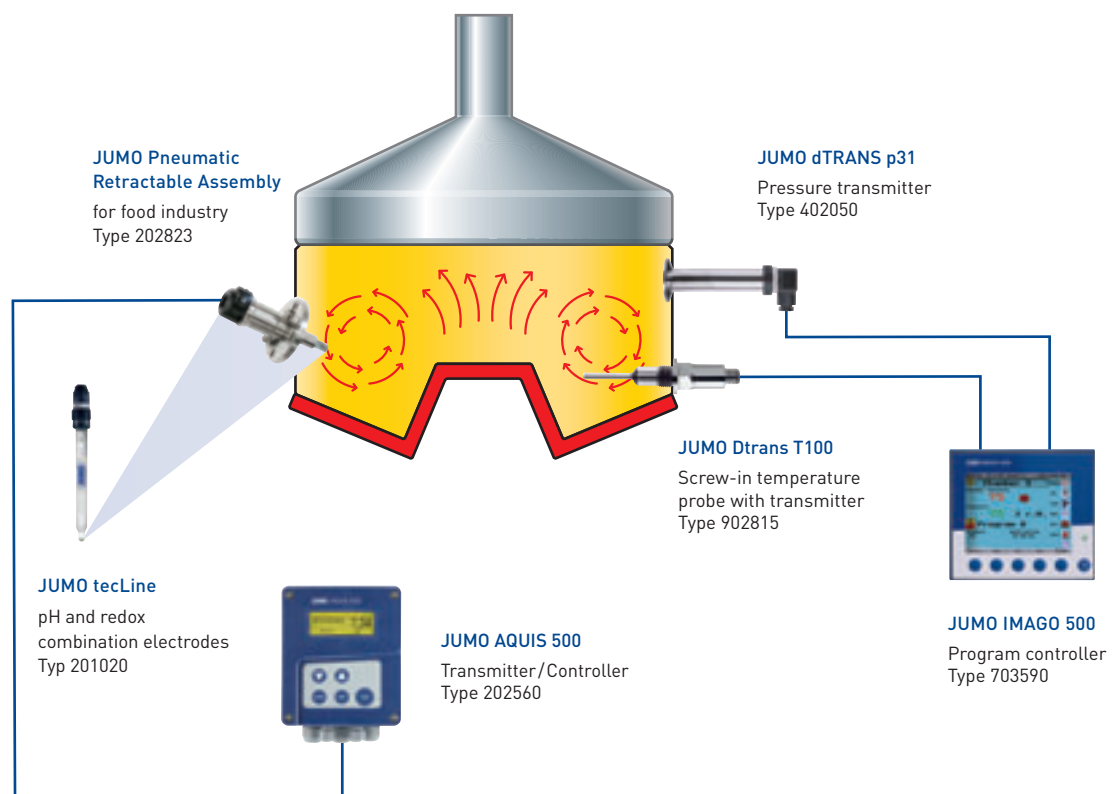
Precise temperature and pressure control with the JUMO IMAGO 500 multi-channel process and program controller

The processes that occur when boiling the wort are crucial to the subsequent quality of the beer. So here too, it is a matter of precise adherence to the temperature/time program. The JUMO IMAGO 500 is exactly the right choice for this. With its great versatility it effortlessly masters the full range of tasks in beer brewing. It also provides perfect control for the pressure required while boiling the wort. Here the JUMO dTRANS p31 pressure transmitter is truly in its element,

since it is specially designed for elevated medium temperatures and is thus optimally suited for use in this range.

pH Measurement in the Wort Pan

Crucial factors such as the taste and color of the beer are determined by the pH value during wort boiling. Here the pneumatic retractable assembly gives you the option of cleaning the electrodes automatically outside the process.



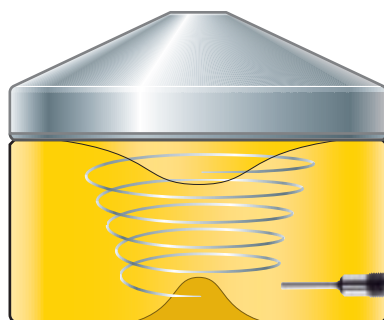


Whirlpool

Temperature control in the whirlpool with JUMO Dtrans T100

To remove the hot cooler sludge, the wort is tangentially pumped into the whirlpool. The rotating flow that is produced moves the sludge to the middle of the whirlpool in a cone-shaped mass. The duration of the break is about 20-30 minutes. To ensure that the wort retains its quality properties, the thermal load of the wort should be kept as low as possible. You can control the temperature of the wort exactly

with a digital display device. The values in the display provide continuous reliable control and an alarm message is generated if the temperature is too high. What about more complex control tasks? We also have a diverse range of products available for you in this area, extending from simple compact controllers to high-quality multi-functional program controllers. We have developed temperature sensors with hygienic process connections which will also work reliably in your process after cleaning.



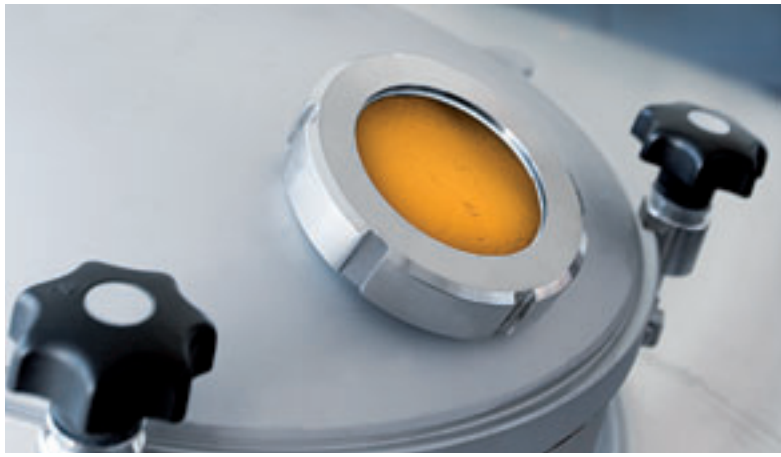
JUMO di 308

Digital indicator
Type 701550



JUMO Dtrans T100

Screw-in temperature probe
with transmitter
Type 902815

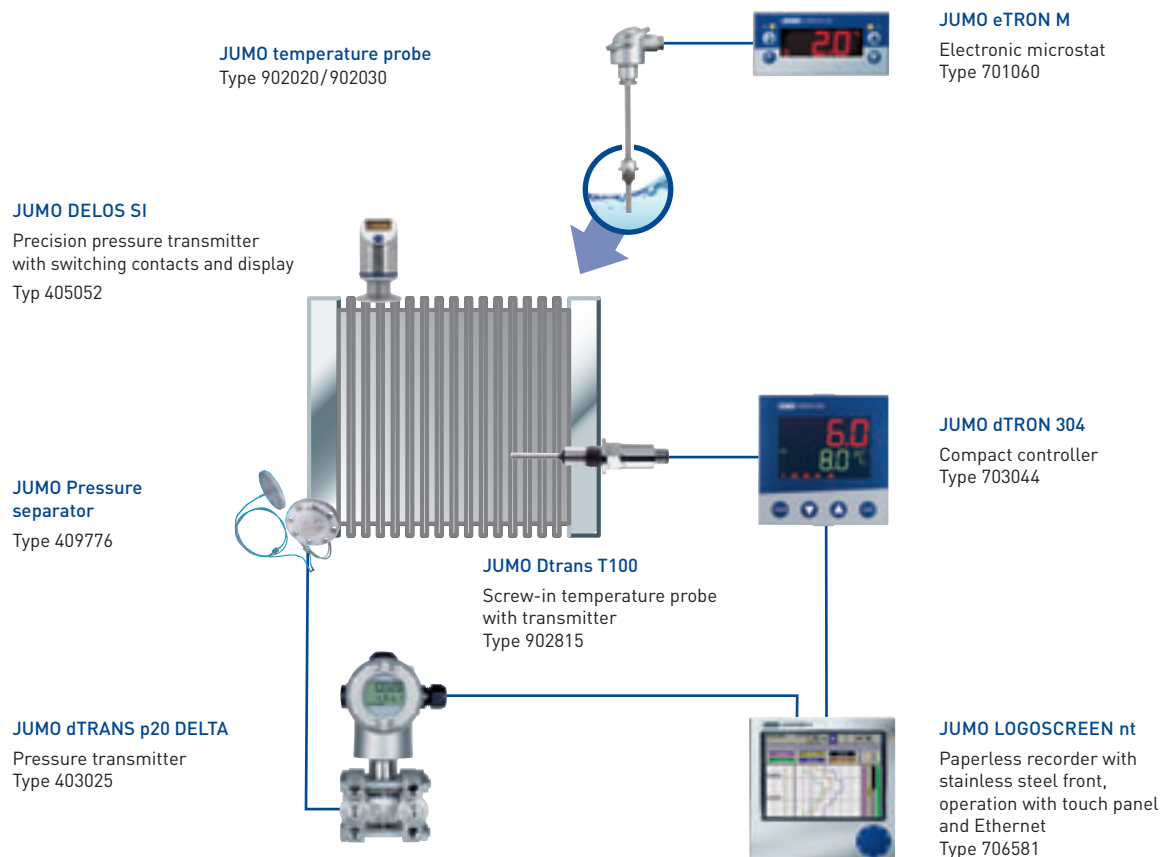


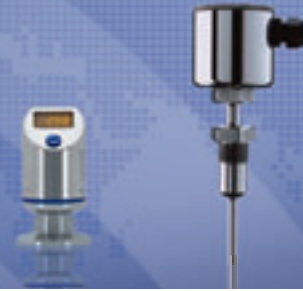
Cooling the Wort

Comprehensive control of wort cooling with JUMO dTRON

The flow rate of beer is controlled by its temperature: The warmer the beer, the more slowly it flows through the cooler. To ensure meticulous control, you should carefully monitor the temperature of the beer and the differential pressure with a recording instrument. This is

the perfect job for JUMO LOGOSCREEN nt. Because of its versatile functionality, it can generate an alarm in case of malfunction or even total failure of the cooling system, thus ensuring high efficiency and availability of the plant.





Fermenting/Storing

Reliably determining CO₂ top pressure with the JUMO DELOS SI pressure transmitter

Fermentation produces carbon dioxide, which collects in the top of the tank and is removed to a CO₂ recovery plant above a certain pressure. Our JUMO DELOS SI electronic pressure transmitter with display and hygienic process connection provides ideal support for this process.

Precise Monitoring of Cooling Zones with the JUMO cTRON Process Controller

There are several cooling zones in the CCV (cylindro-conical vessel) with different temperatures to ensure that the "green" beer is agitated during the storing phase. JUMO cTRON perfectly controls the exact temperature of individual cooling zones for this task, thereby ensuring the quality of the beer.

JUMO dTRON 304
Compact controller
Type 703044



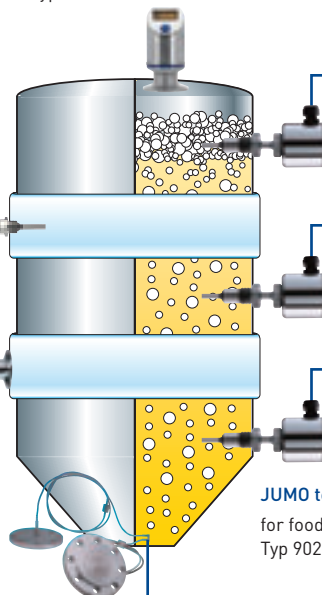
JUMO temperature probe
Type 902020/902030

JUMO dTRANS p30
Pressure transmitter
Type 404366

JUMO Pressure separator
Type 409776



JUMO DELOS SI
Precision pressure transmitter
with switching contacts and display
Typ 405052



JUMO temperature probe
for food industry
Typ 902810

JUMO cTRON
Compact controller
Typ 702070



JUMO dTRANS p20 DELTA
Pressure transmitter
Type 403025



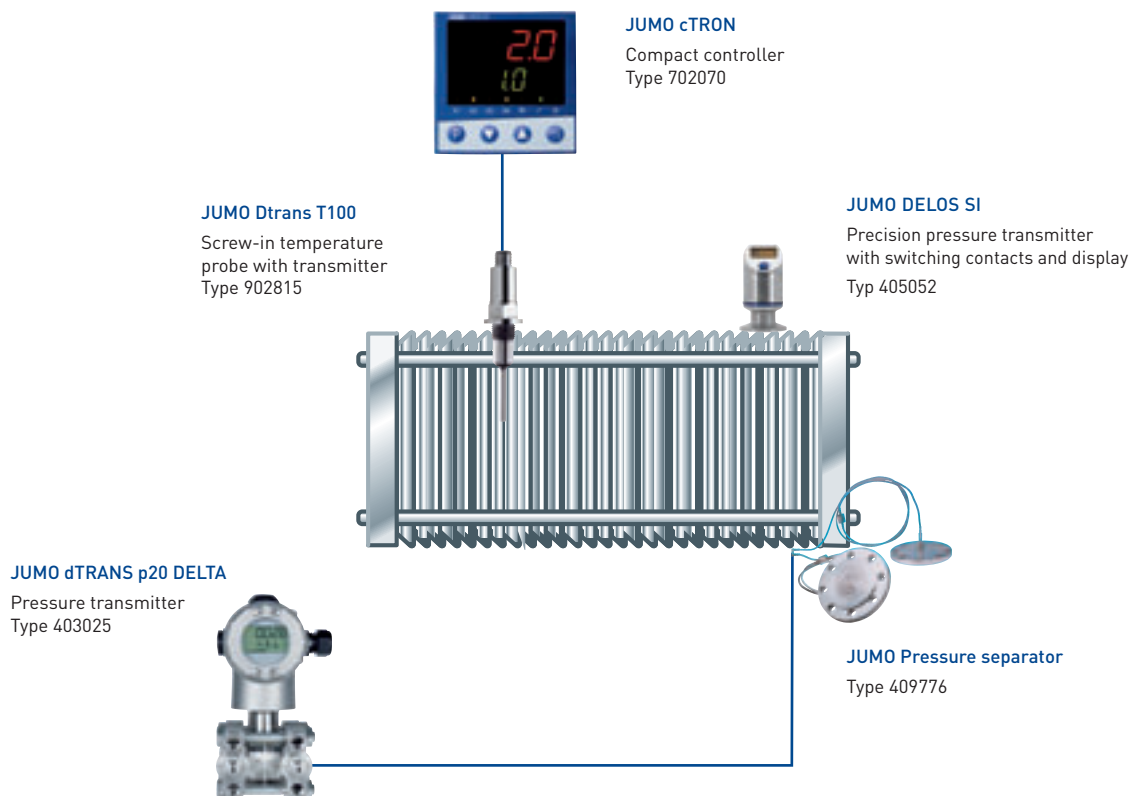


Filtration

Efficient monitoring of filtration with the JUMO dTRANS p20 DELTA differential pressure transmitter.

After the yeast has been extracted, the beer is moved to filtration, where it is made durable by removing residual yeast cells and other particles that cause turbidity. The filtration may be based on layer or sieve filters. Filter materials include diatomaceous earth, although it is being gradually replaced by newer technologies such as crossflow filtration

with membrane filters. During filtration, the pressure increases gradually at the filter. To a certain extent, this pressure is related to the purity of the beer. You can use the JUMO dTRANS p20 DELTA differential pressure transmitter to measure precisely how long the filter can still be used by determining the increase in differential pressure. In this way you can ensure the quality of your beer and make optimum use of your filters.





Cleaning Bottles

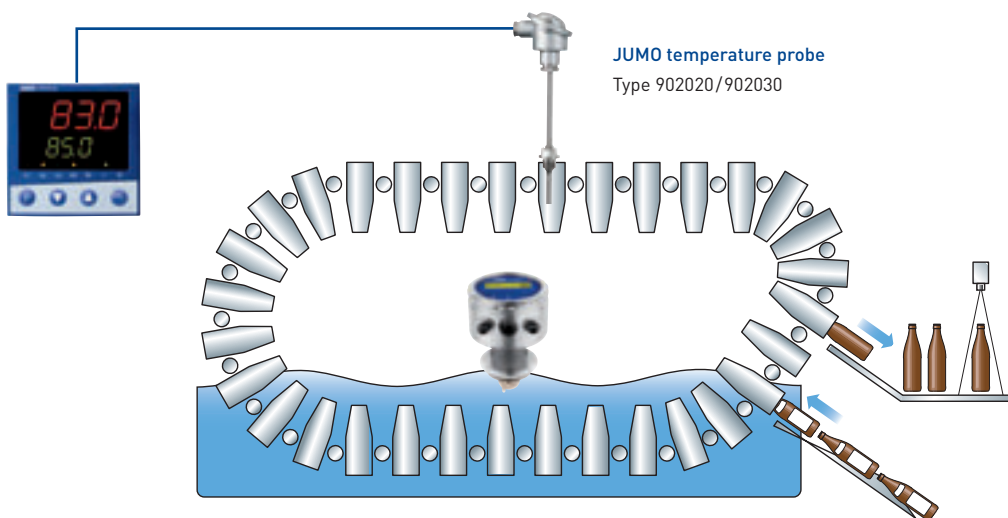
Optimum setting and monitoring with the conductivity transmitter JUMO CTI-750

In the bottle cleaning plant, glass bottles are cleaned by a warm lye solution and then rinsed with water at a different temperature. However, the caustic solution is continually diverted by this process, which changes the concentration of the lye. The JUMO CTI-750 is at home for this task: It continually adjusts the concentration of the caustic solution based on conductivity. This ensures reliable cleaning of glass bottles with consistently high quality.

Temperature control in the bottle cleaning plant

Slow warming of glass bottles is important especially in winter. Special pre-rinsing baths are available for this in cleaning plants. The temperature rises slowly in these baths to minimize the danger of the glass breaking on contact with the caustic solution, which is at 80 °C. The JUMO cTRON compact controller is ideally suited for monitoring and controlling temperatures in the cleaning plant.

JUMO cTRON
Compact
controller
Type 702070



JUMO temperature probe
Type 902020/902030

JUMO CTI-750
Inductive conductivity transmitter
Type 202756



Cleaning in Place (CIP)

Hygienic and perfectly cleaned plants are the basis of any good beer brewing process. This is ensured by CIP or "Cleaning in Place". JUMO also offers top-class systems and solutions you can rely on for this application.



Cleaning in Place (CIP)

Reliability and cleanliness for your plant with the JUMO CTI-750 conductivity transmitter

CIP is used nowadays in all plants with modern technology. It saves time and money. The JUMO CTI-750 conductivity transmitter supports this process with accurate measurements to ensure that cleaning proceeds quickly and reliably. The JUMO CTI-750 also monitors and controls the concentration of your cleaning agent by measuring conductivity with an inductive conductivity probe.

Precise, accurate dosing with JUMO MID

The JUMO-MID flow rate transmitter measures and doses the flow of CIP media during the process, thus guaranteeing efficient and thorough cleaning.

LOGOSCREEN nt ensures reliability and speed by monitoring cleaning in place (CIP)

To document and monitor the CIP process reliably, all the important measurement variables should be recorded and evaluated by a single paperless recorder. The LOGOSCREEN nt from JUMO does just that: It allows you to track the process accurately, optimize it perfectly and thereby reduce your cleaning agent costs.



The Highlights at a Glance

JUMO is a competent partner at your side with the products and solutions presented in this brochure. But that's still not all ...



JUMO LOGOSCREEN nt

the paperless recorder with stainless steel front and touch control

- easy and intuitive operation
- high safety tolerance against aggressive media
- maximum security level
- process safety in an area where hygiene is critical
- integrated web server



JUMO CTI-750

in stainless steel housing with hygienic cell – inductive conductivity/concentration and temperature transmitter with switching contacts

- phase separation optimization
- reduces cleaning costs
- easy-clean
- flexible application possibilities



JUMO DELOS SI

Precision pressure transmitter with switching contacts and display

- easy operation
- process safety in an area where hygiene is critical
- easy-clean
- suitable for CIP/SIP applications
- compact design



JUMO Dtrans T100

screw-in resistance temperature probes with or without transmitter

- process connections with EHEDG certification
- integrated transmitter minimizes space required for installation
- secure transfer of measurement data over vast distances



JUMO PEKA

process connection adapter for pressure and temperature

- EHEDG certified
- easy handling
- easy-clean
- hygienic process connections
 - Welding socket
 - Clamp
 - Varivent
 - Aseptik
 - Orbital welding socket



JUMO offers more.

Our brewery assortment still includes additional products and services.

The JUMO product range offers you an entire measurement chain from sensor to automation solution for temperature, liquid analysis, pressure, liquid level, flow rate and humidity. Our goal is always to offer our customers worldwide the optimum solution in matters of process reliability, energy efficiency and cost optimization.

We therefore rely on our flawlessly operating After Sales Service for an extensive range of services.

Do you still have some questions, or would you like to know more about our products? If you do, please contact us.

Further industry brochures:

If you are interested in one of our additional industrial sectors, you can now order the corresponding brochure. Simply call us at +49 661-6003-0 or send an e-mail to mail@jumo.net.

A selection:

- Food technology
- Chemical engineering
- Pharmaceutical engineering
- Water and wastewater engineering
- Dairy technology
- Meat processing technology
- Wind Power Plants
- Plastics and packaging technology



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