



More than **sensors + automation**



Beverage Technology

Innovative solutions for your success





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Dear Reader,

Drinking is essential for maintaining the right balance of water in the body. Popular beverages include water, juice, milk, coffee, tea, wine, and beer. However, only a manufacturer of these drinks knows to what extent their manufacture and processing depends on efficient procedures and precise measuring technology.

JUMO, your reliable partner, is at your side to help when you have questions and to provide you with quick solutions. We do so whether you are monitoring pressure, temperature, conductivity, or the pH-value for your process. Of course we also help you with managing cleaning or lowering production costs.

So how do we do it? Years of experience and technical expertise: for over 60 years JUMO has been one of the leading manufacturers in the measurement and control technology sector and consequently also a reliable partner for the beverage industry.

We place great value on regular new developments, constant improvement of existing products, and on production methods that are increasingly more economical – because only this path allows us to achieve the highest degree of innovation for you.

The beverage industry is another area in which we at JUMO offer you only the best – in particular, a multitude of solutions for the most varied applications.

Our solutions support you in implementing HACCP concepts or the IFS standard.

With this in mind I hope that you find many interesting new approaches in this brochure.

Yours sincerely,
Christina Hoffmann

PS: For detailed information about our products arranged by type and group number, please visit www.industry.jumo.info.

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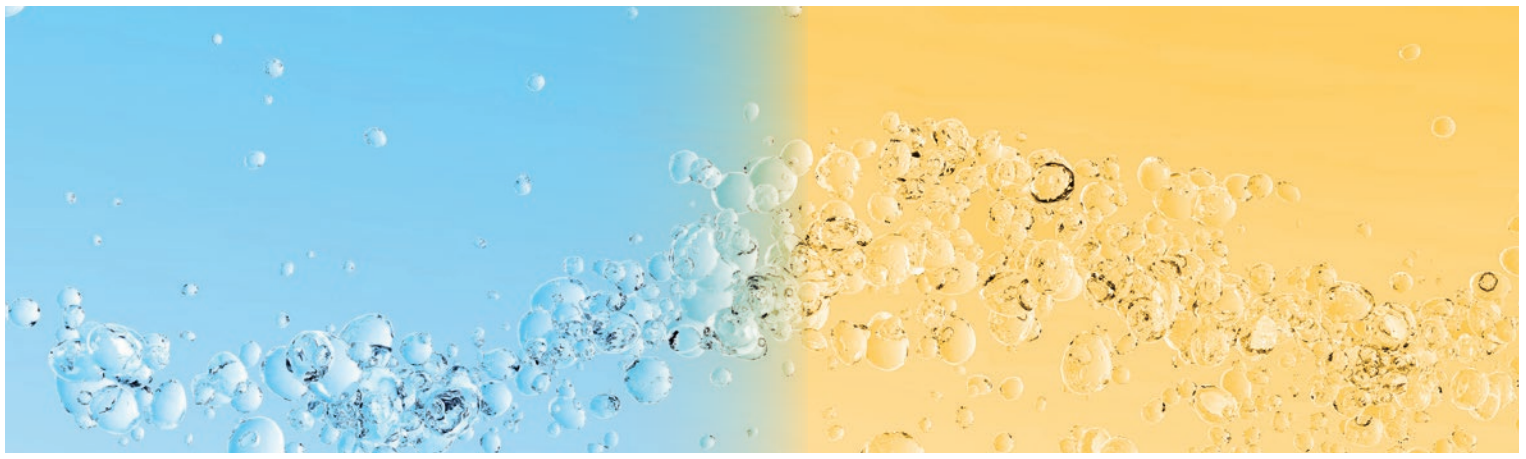
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Mineral water and soft drinks

Each person should drink 1.5 to 2 liters of fluids every day. To ensure beverages exhibit a consistent level of quality, various quality and process checks must be performed during production. This is where the first-rate measuring and control equipment from JUMO comes into play.



Level measurement in water wells

The level height is measured regularly for changes in hydrostatic pressure in well water using a level probe. The JUMO MAERA S28 with its piezo-resistive measuring cell is particularly suitable for this type of application. The cell features an integrated overvoltage protection, which protects the electronic components of the level probe from an indirect lightning strike. With the additional high overload resistance and long-term stability the JUMO MAERA S28 offers a high level of security.

Conductivity measurement in mineral water

The conductivity measurement can be performed as an incoming goods inspection, after the water from the water well has been transported to the plant. The conductivity value is dependent on the level of water mineralization. The more minerals that dissolve from the rock layers, the higher the conductivity value. The JUMO CTI-750 in stainless steel version is used for measuring conductivity. The integrated temperature measurement enables fast and precise temperature compensation, which is particularly significant when measuring conductivity. Additional functions, such as the combined toggling of measuring range and temperature coefficient, enable optimum use in CIP processes.

JUMO CTI-750

Conductivity transmitter
Stainless steel case
Type 202756



JUMO AQUIS touch S/P

Modular multichannel measuring devices with integrated controller and paperless recorder
Types 202581, 202580



JUMO DELOS SI

Precision pressure transmitter
Type 405052



JUMO LOGOSCREEN fd

Paperless recorder for FDA-compliant data recording
Type 706585



JUMO Dtrans T100

Screw-in RTD temperature probe
Type 902815



JUMO DELOS T

Electronic temperature switch with display and analog output
Type 902940



JUMO tecLine Ci

Hygienic inductive conductivity and temperature sensor
Type 202941



JUMO dTRANS p30

Pressure transmitter
Type 404366



JUMO MAERA S28

Level probe
Type 404392



JUMO mTRON T – central processing unit

Measuring, control, and automation system with controller module and input/output modules
Type 705000



JUMO RTD temperature probe

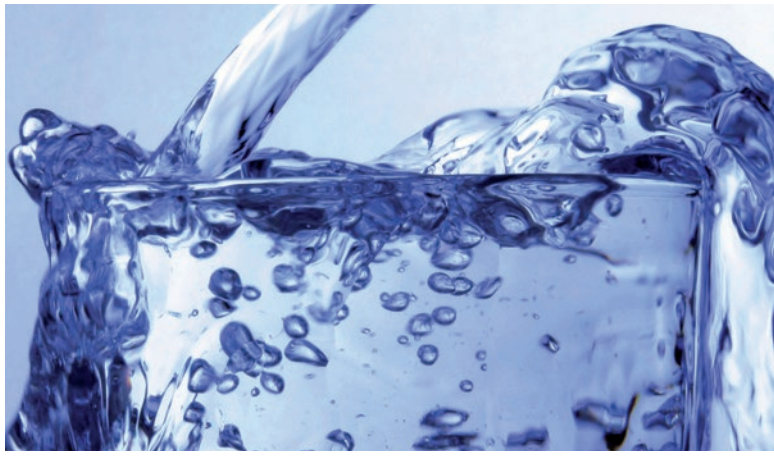
Type 902810



JUMO Wtrans p

Pressure transmitter with wireless data transmission
Type 402060



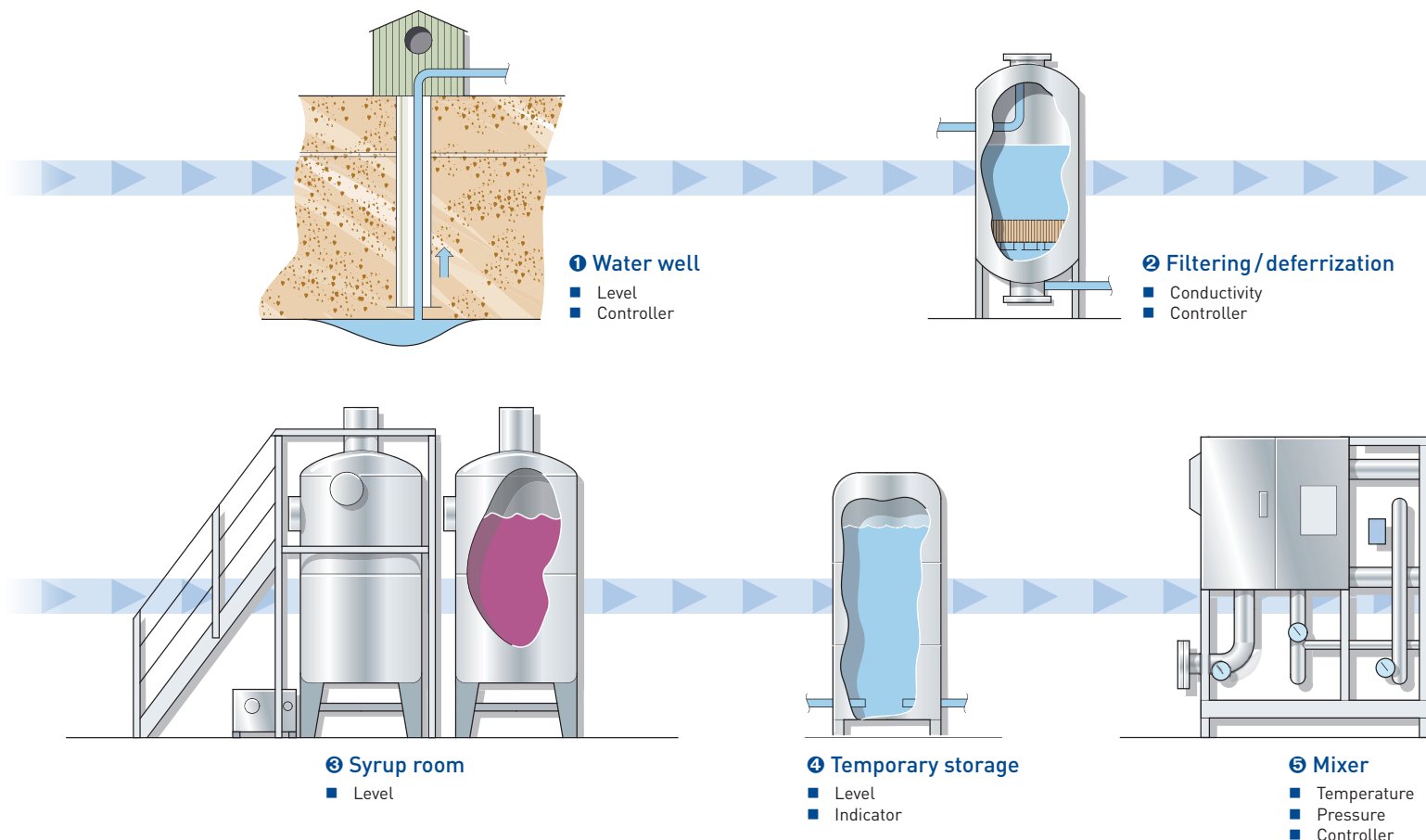


Mineral water

According to the mineral and bottled water regulation, mineral water is a type of groundwater with specific characteristics. It must originate from an underground water source and be completely pure. Mineral water is bottled directly at the source or water well and requires official recognition. While it is permissible to intervene in the context of approved procedures when preparing drinking water, mineral water should be changed as little as possible from its original composition. Only iron, manganese, sulphuric, and arsenic compounds as well as fluoride may be withdrawn.

Only carbon dioxide (CO_2) may be added, whereby carbonic acid (H_2CO_3) is created in the water. Deferrization is often brought about using ozone. It is carried out for many types of mineral water to prevent a brown coloring from entering the water over time. Most types of mineral water show a much lower carbonic acid content at the outlet location than they do after bottle filling. The carbonic acid, amongst other things, ensures durability as it provides a stable antimicrobial environment through the process of acidification.

Process flow for mineral water / soft drinks*



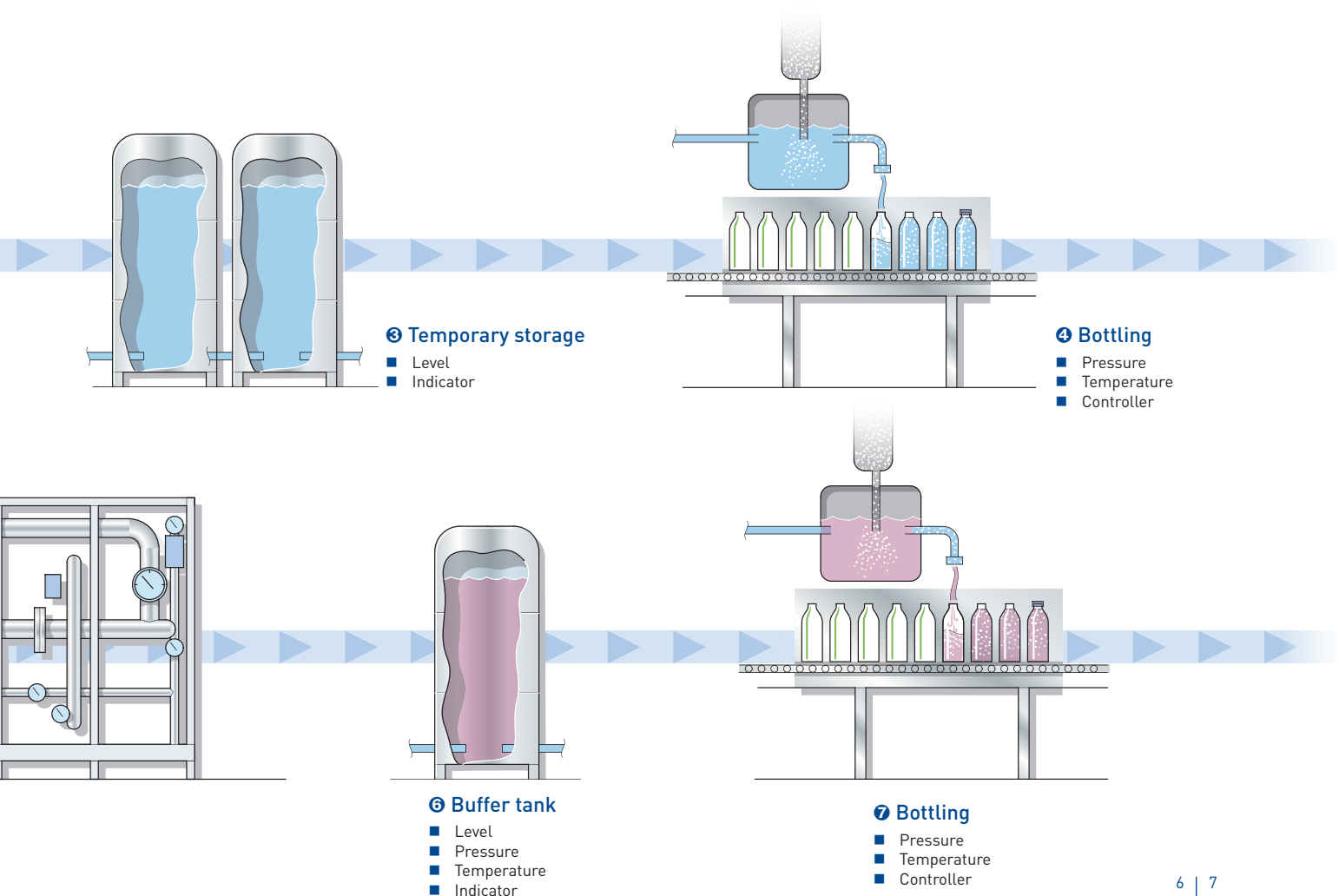
*Process flow for soft drinks in point 1 and 2 identical with process flow for mineral water.

Soft drinks

The food industry produces many types of cold soft beverages which are generally flavored with a sweet-and-sour taste and carbonic acid.

These are water-based beverages with flavorings according to the German Foodstuffs Code as well as the international Codex Alimentarius. In addition, the beverages may contain carbonic acid, minerals, vitamins, sugar, fruit concentrate, flavorings,

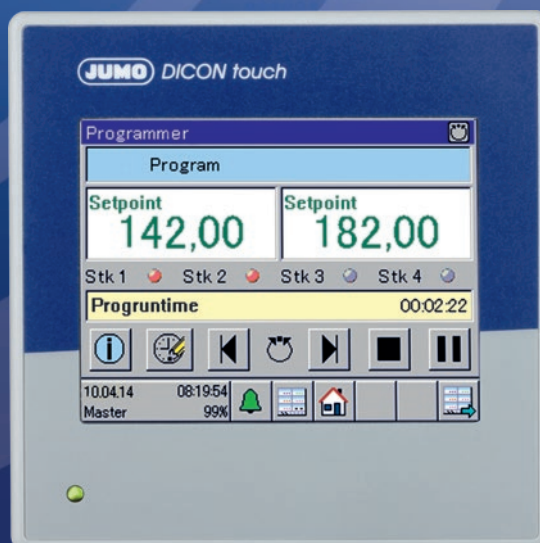
sweeteners, and further ingredients. Fruit juices, carbonated fruit juices, lemonades, and sodas are among the most popular soft drinks. During the manufacture of soft drinks, mineral water is mixed with a precise quantity of juice or syrup and then bottled. To maintain a consistent level of quality across all beverages, it is vital that the quantity of juice or syrup and the CO₂ content is always the same.





Fruit and vegetable juice

Fruit and vegetable juices are considered everyday beverages such as water and coffee. Furthermore, fruit juices are currently also a frequent ingredient in carbonated fruit drinks. For juice manufacture various processes are involved depending on whether pure juice or fruit juice concentrate is being produced. JUMO temperature probes and controllers are particularly suited for quality and process inspection purposes.



Temperature measurement and control for juice production

During juice manufacture, the temperature in various processes is measured and controlled.

When manufacturing fruit juice concentrate, the most important measuring point is the temperature measurement taken during evaporation or when adding flavorings.

If the volatile flavored compounds are extracted from the juice either before or during the concentration process – and if these are stored in a cool place separate from the de-flavored fruit juice concentrate – then any undesirable mixing with other juice components is essentially impossible. Each fruity flavor consists of a number of components which differ to a greater or lesser extent from one another in terms of quantity, solubility, and boiling point. The quantity of vapor to be evaporated in the vaporizer depends on the type of juice, the operating conditions, and the intended flavor yield. The flavored concentrate is cooled to a clear liquid and removed from the plant.

Both in the manufacture of fruit juice from fruit juice concentrate and the manufacture of pure juice, the juice is pasteurized before it is bottled. The temperature measurement is also an important quality criterion here for guaranteeing the shelf life of the juice. When it comes to safely documenting the temperature reached in a comprehensible way, the tamper-proof paperless recorder JUMO LOGOSCREEN fd is the perfect device for the job.

JUMO tecLine pH

pH combination electrode
Type 201020



JUMO dTRANS pH 02

Transmitter/controller series
Type 202551



JUMO dTRANS p30

Pressure transmitter
Type 404366



JUMO LOGOSCREEN fd

Paperless recorder for FDA-compliant data recording
Type 706585



JUMO Dtrans T100

Screw-in RTD temperature probe
Type 902815



JUMO DELOS T

Electronic temperature switch with display and analog output
Type 902940



JUMO ecoTRANS pH 03

Transmitter/switching device for pH-value/redox potential and temperature
Type 202723



JUMO AQUIS touch S/P

Modular multichannel measuring devices with integrated controller and paperless recorder
Types 202581, 202580



JUMO DELOS SI

Precision pressure transmitter
Type 405052



JUMO mTRON T – central processing unit

Measuring, control, and automation system with controller module and input/output modules
Type 705000



JUMO RTD temperature probe

Type 902810



JUMO DICON touch

Two-channel process and program controller with paperless recorder and touchscreen
Type 703571



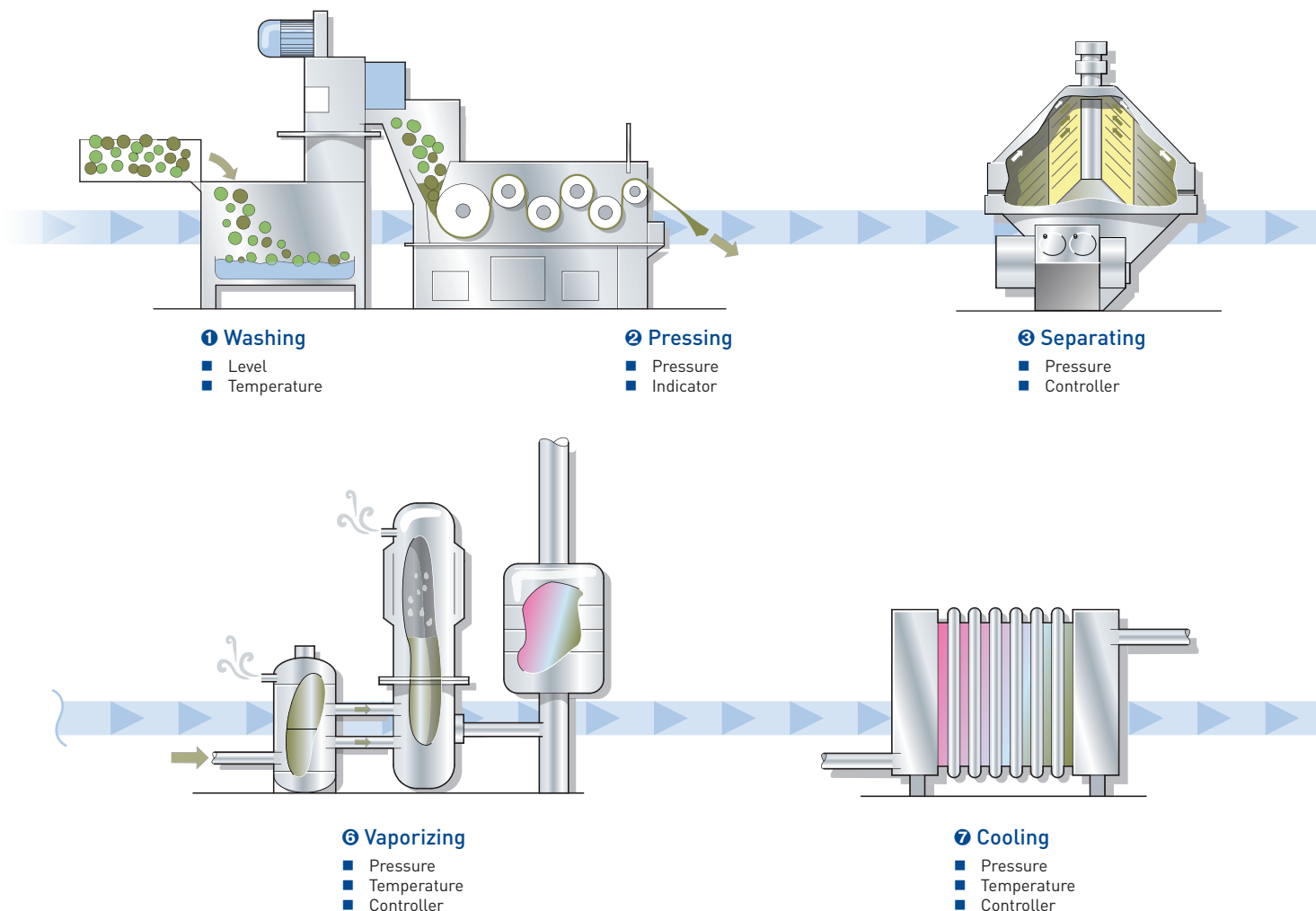


Juice

For the manufacture of fruit juice, only ripe, washed fruit is used. Citrus fruits are pressed in special citrus presses. Other fruits are pulverized to a mash in a grinder and then mechanically pressed. The addition of special enzymes can alleviate the flow of juice from the sacs and increase the overall juice yield. For stone fruit and soft fruit, the stones and stems are removed before pressing. The separating and filtering process turns the naturally cloudy, pulpy juice to a clear fruit juice.

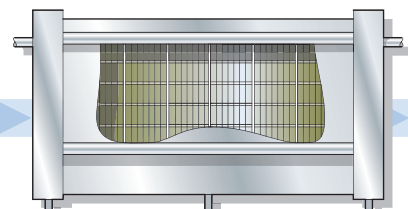
There are two basic procedures within fruit juice production: the manufacture of fruit juice from concentrate and from pure juice. To create fruit juice concentrate, the flavor and water must be extracted from the freshly pressed juice at low temperatures and in vacuumed conditions. The fruit juice is then compressed by up to approximately a sixth of its original volume. Fruit juice concentrate and flavoring are stored and transported separately from one another in tanks. Orange juice

Process flow for juice



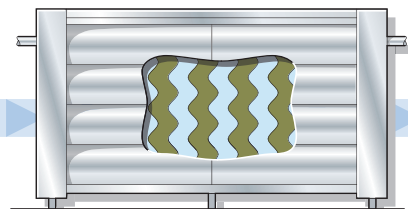
concentrate, for example, is stored at -15°C . To obtain juice from the concentrate, water and the relevant fruit flavor are added along with pulp and fruit sacs if necessary. This process offers both the advantage of cost savings for transportation as well as independence from the fruit season for manufacturers. To prolong shelf life, the juice is pasteurized for a few seconds at 85°C . Pure juice is processed immediately after pressing. It is first filtered, before being pasteurized between 80 and 85°C

to prolong shelf life. This prevents fermentation from taking place and guarantees the shelf life of the juice. The pure juice is then bottled or stored in a sterile condition in a tank for bottling later on.



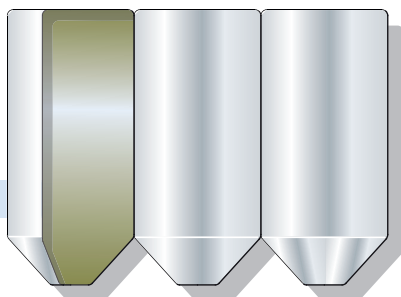
④ Filtering

- Pressure
- Controller



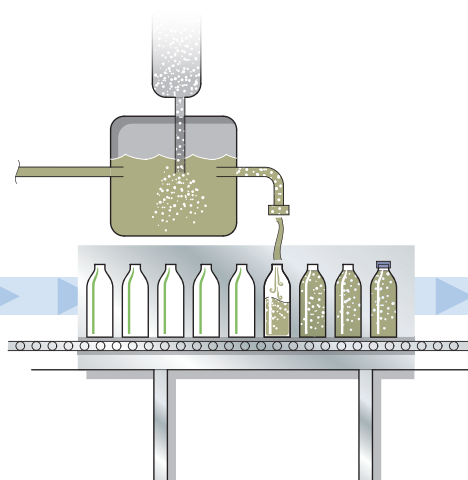
⑤ Pasteurizing

- Temperature
- Pressure
- Controller
- Recording



⑧ Storing

- Level
- Temperature
- Indicator



⑨ Bottling

- Pressure
- Temperature
- Controller



Wine

Wine is considered to be one of humanity's most ancient cultural goods and has played a significant role since antiquity as an agricultural product, both for the economy as well as for society. In wine production, especially during fermentation and storage, measurement and control devices from JUMO come into play and ensure a consistent quality of wine across the board.



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

The wine filtration process consists of first cutting out turbid substances and removing any potentially harmful yeasts and/or bacteria before bottling. During sheet filtration, the cloudy wine is pressed through layers of cellulose, diatomaceous earth, and perlite. During membrane filtration, however, a thin plastic film filters the wine so that it becomes clear. The additional filtration prior to bottling is also called sterile filtration; it makes the already very bright wine completely sterile. During filtration, the pressure on the filter gradually increases. This pressure is related to a certain degree to the purity of the wine. With the JUMO dTRANS p20 DELTA differential pressure transmitter, you can measure precisely how long the filter will last by determining the increase of differential pressure. This enables you to ensure the quality of your wine and to use your filter to its best advantage.

Temperature-controlled fermentation

This process includes checking the alcoholic fermentation, the process of changing sugar from the grapes into alcohol at low temperatures. To retain as much flavor as possible in the wine, the grape juice is cooled during fermentation to approximately 15°C. The fermentation then takes longer, allowing maximum flavor to be retained. The JUMO Dtrans T100, a compact temperature probe with an integrated transmitter, is ideally suited for the temperature check.

JUMO dTRANS p20 DELTA

Differential pressure transmitter with display
Type 403022



JUMO DELOS SI

Precision pressure transmitter
Type 405052



JUMO dTRON 304

Compact controllers
Type 703044



JUMO mTRON T – central processing unit

Measuring, control, and automation system with controller module and input/output modules
Type 705000



JUMO LOGOSCREEN fd

Paperless recorder for FDA-compliant data recording
Type 706585



JUMO RTD temperature probe

Type 902810



JUMO dTRANS p30

Pressure transmitter
Type 404366



Dial thermometers

Industry version
Type 608002



JUMO DICON touch

Two-channel process and program controller with paperless recorder and touchscreen
Type 703571



JUMO LOGOSCREEN 500 cf

Paperless recorder
Type 706510



JUMO Dtrans T100

Screw-in resistance thermometer
Type 902815



JUMO humidity and temperature measuring probe

Type 907023





Wine

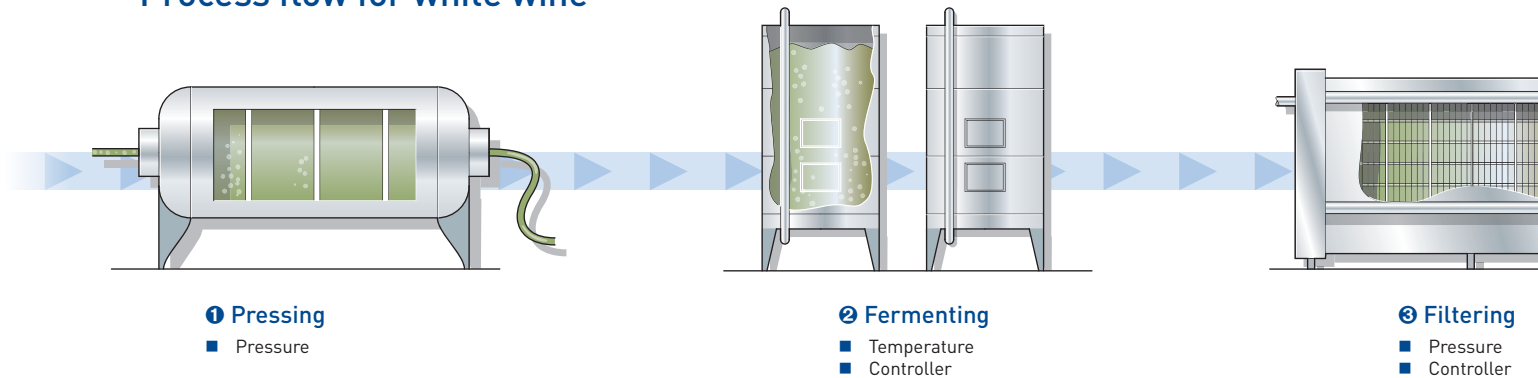
Wine is an alcoholic beverage, made from the fermented juice of grapes. The most popular wines are red, white, and rosé. Sparkling wine is made from wine that has undergone a second fermentation process. Lightly sparkling wines are known as semi-sparkling wines and generally have carbonic acid added to them.

The main difference between the manufacture of white wine and red wine is the order of the workflow. In the manufacture of red wine, the mash rather than the grape juice (pressed juice)

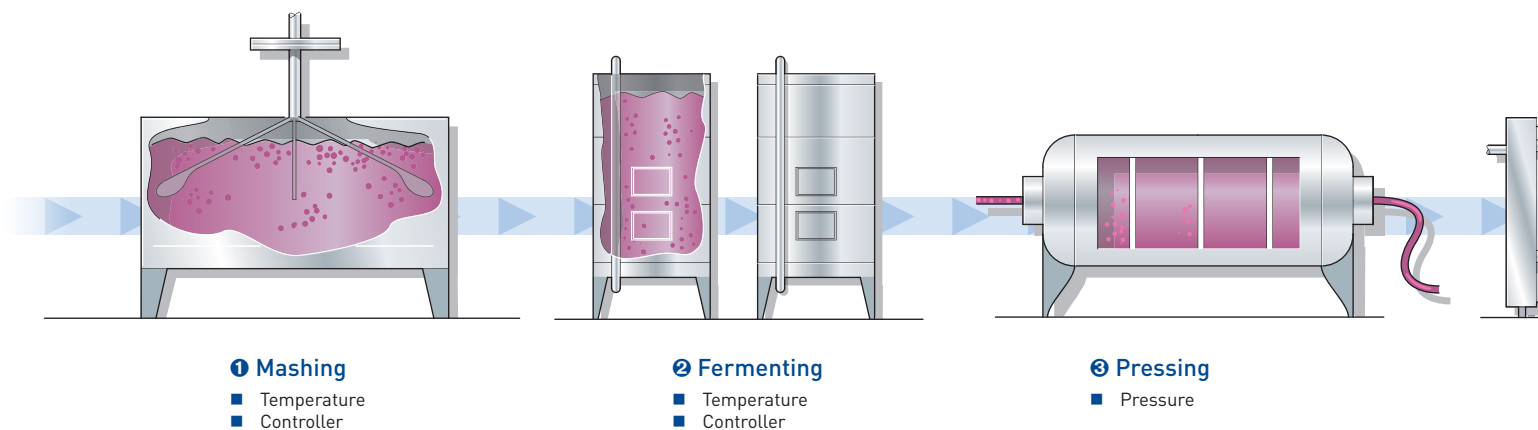
is fermented between 20 and 30°C. This is because almost all the dyes are found in the skin of the grapes. These dyes are separated from the skin of the fruit during the fermenting of the existing alcohol mash.

The most important steps in the manufacture of red wine are de-stemming, mashing, pressing, and fermenting. The most important work steps in the mashing process are the immersion of the pomace (which can be performed either manually or mechanically), the carbonic maceration, and the heating of

Process flow for white wine

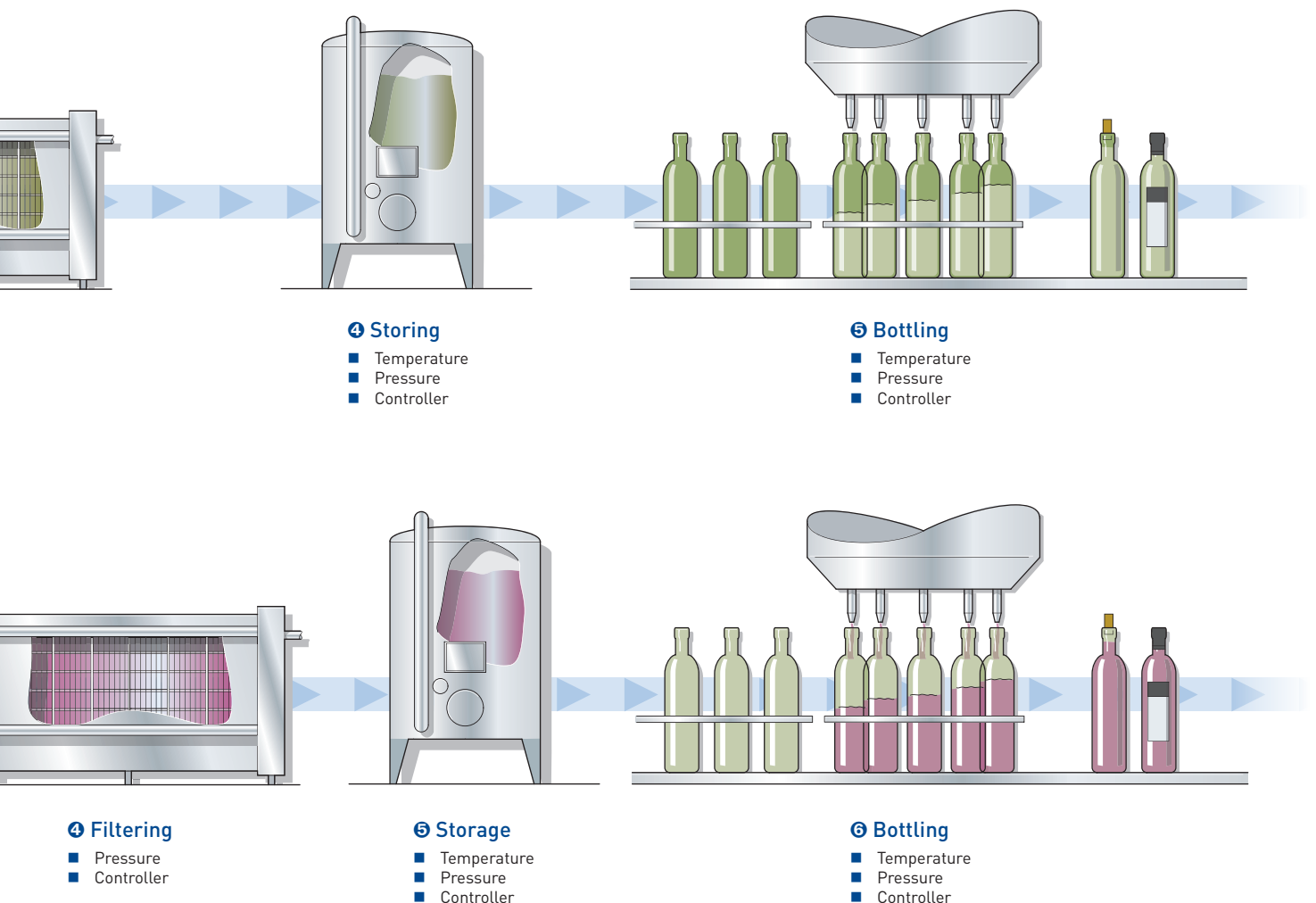


Process flow for red wine



the mash. To produce a full-bodied red wine, as intense a color yield as possible must be achieved and the correct quantity of tannin from the skins should be introduced into the wine. To achieve optimum extraction, the skins and the grape juice must remain constantly in contact with one another; for this reason, the floating layer of mash is mechanically immersed repeatedly in the juice. Alternatively, the mash can be heated to accelerate the process.

Following fermentation, the red wine is developed. This maturing process can be performed in barrels, barriques, or tanks of varying sizes. Depending on the type, quality, potential, and year of manufacture of the wine, the time it takes to mature can be between several weeks and years. Finally, the wine is bottled.





CIP cleaning

The basis for every good process is a hygienic, thoroughly cleaned plant. This is guaranteed by "CIP cleaning", or "Cleaning in Place". In this area JUMO also offers first-class systems and solutions that you can rely on.



Measuring – controlling – displaying – recording

New possibilities with the JUMO AQUIS touch S

The JUMO AQUIS touch S, a modular multichannel measuring device, provides new approaches to CIP cleaning.

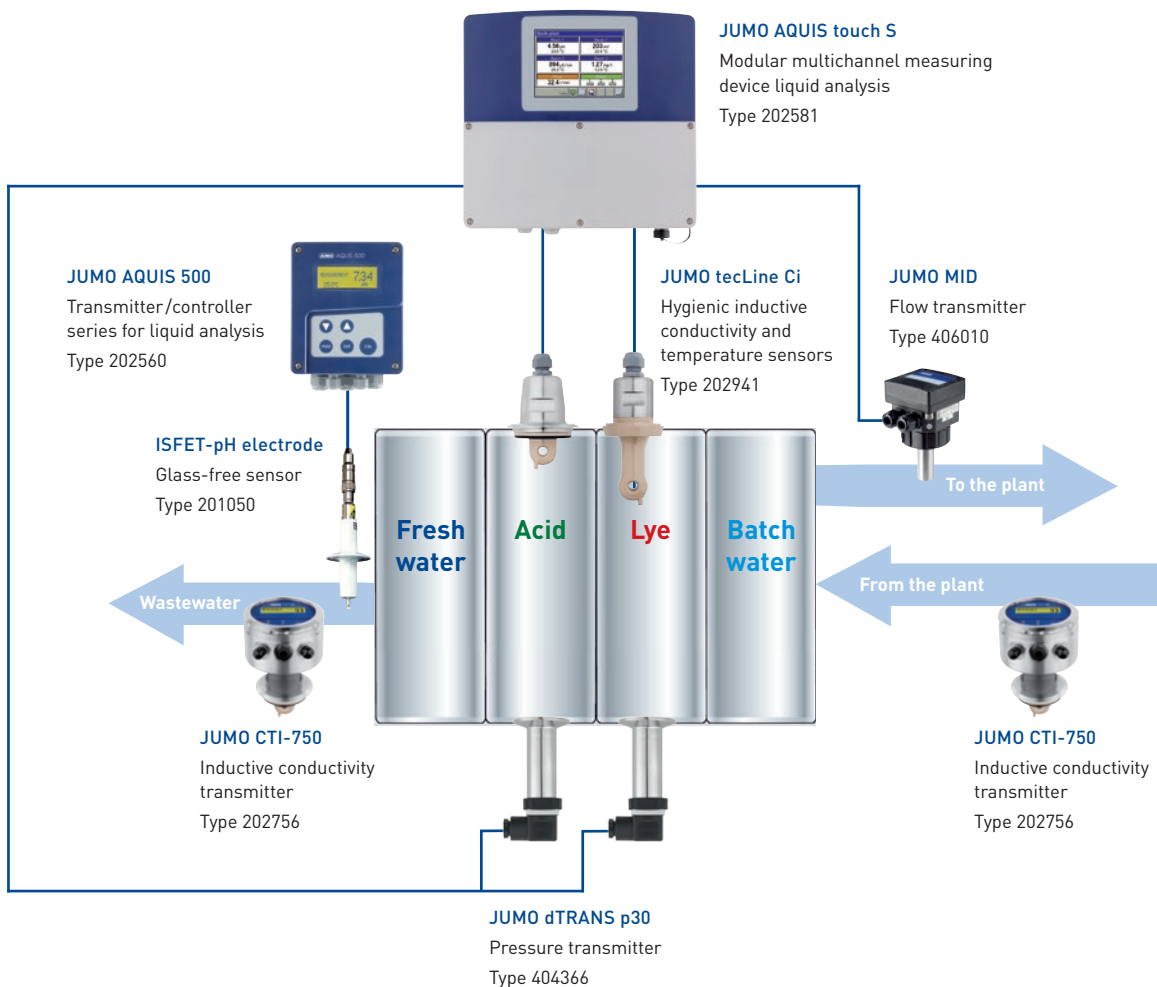
For instance, you can measure, control, and display/register on-site the concentration setting of acid and lye solutions, the level of both tanks, and the flow rate – all with a single device.

Essentially, a maximum of four analog analytic sensors and a total of up to ten parameters can be measured and managed simultaneously.

Besides countless simple alarm, limit value, or time-controlled switching functions, up to four higher-order control loops can be defined in the JUMO AQUIS touch S at the same time.

Conserve resources – reduce maintenance costs

Whichever system you decide on, whether it's the JUMO AQUIS touch S modular multichannel measuring device or the tried and tested JUMO CTI-750 inductive conductivity transmitter: both systems impress with their numerous benefits. For instance, the JUMO CTI-750 is the ideal solution if you wish to work with a PLC in the background. The JUMO AQUIS touch S on the other hand works as a stand-alone solution. The low-maintenance sensor and the highly precise measuring by the inductive transmitter help to conserve resources and reduce maintenance costs for your plant.



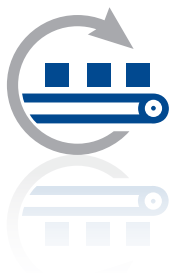


Services & Support

It is the quality of our products that is responsible for such a high level of customer satisfaction. But our reliable after-sales service and comprehensive support are also valued. Let us introduce you to the key services we provide for our innovative JUMO products. You can count on them – anytime, anywhere.

JUMO Services & Support – so that it all comes together!

Manufacturing Service



Are you looking for a competitive and efficient system or component supplier? Regardless of whether you seek electronic modules or perfectly fitting sensors – either for small batches or mass production – we are happy to be your partner. From development to production we can provide all the stages from a single source. In close cooperation with your business our experienced experts search for the optimum solution for your application and incorporate all engineering tasks. Then JUMO manufactures the product for you. As a result you profit from state-of-the-art manufacturing technologies and our uncompromising quality management systems.

Customer-specific sensor technology

- Development of temperature probes, pressure transmitters, conductivity sensors, or pH and redox electrodes according to your requirements
- A large number of testing facilities
- Incorporation of the qualifications into application
- Material management
- Mechanical testing
- Thermal test



Electronic modules

- Development
- Design
- Test concept
- Material management
- Production
- Logistics and distribution
- After-sales service



Metal technology

- Toolmaking
- Punching and forming technology
- Flexible sheet metal machining
- Production of floats
- Welding, jointing, and assembly technology
- Surface treatment technology
- Quality management for materials



More than **sensors + automation**



Information & Training



Would you like to increase the process quality in your company or optimize a plant? Then use the offers available on the JUMO website and benefit from the know-how of a globally respected manufacturer. For example, under the menu item “Services and Support” you will find a broad range of seminars. Videos are available under the keyword “E-Learning” about topics specific to measurement and control technology. Under “Literature” you can learn valuable tips for beginners and professionals. And, of course, you can also download the current version of any JUMO software or technical documentation for both newer and older products.

Product Service



We have an efficient distribution network on all continents available to all of our customers so that we can offer professional support for everything concerning our product portfolio. Our team of professional JUMO employees is near you ready to help with consultations, product selection, engineering, or optimum use of our products. Even after our devices are commissioned you can count on us. Our telephone support line is available to give you answers quickly. If a malfunction needs to be repaired on site our Express Repair Service and our 24-hour replacement part service are available to you. That provides peace of mind.

Maintenance & Calibration



Our maintenance service helps you to maintain optimum availability of your devices and plants. This prevents malfunctions and downtime. Together with the responsible parties at your company we develop a future-oriented maintenance concept and are happy to create all required reports, documentation, and protocols. Because we know how important precise measurement and control results are for your processes we naturally also professionally calibrate your JUMO devices – on site at your company or in our accredited DAkkS calibration laboratory for temperature. We record the results for you in a calibration certificate according to EN 10 204.



www.jumo.net