



Customized fluidic solutions for efficient fish farming

OPTIMAL GROWTH THROUGH EXACT DOSING OF MEDIA
GUARANTEE MAXIMUM YIELDS

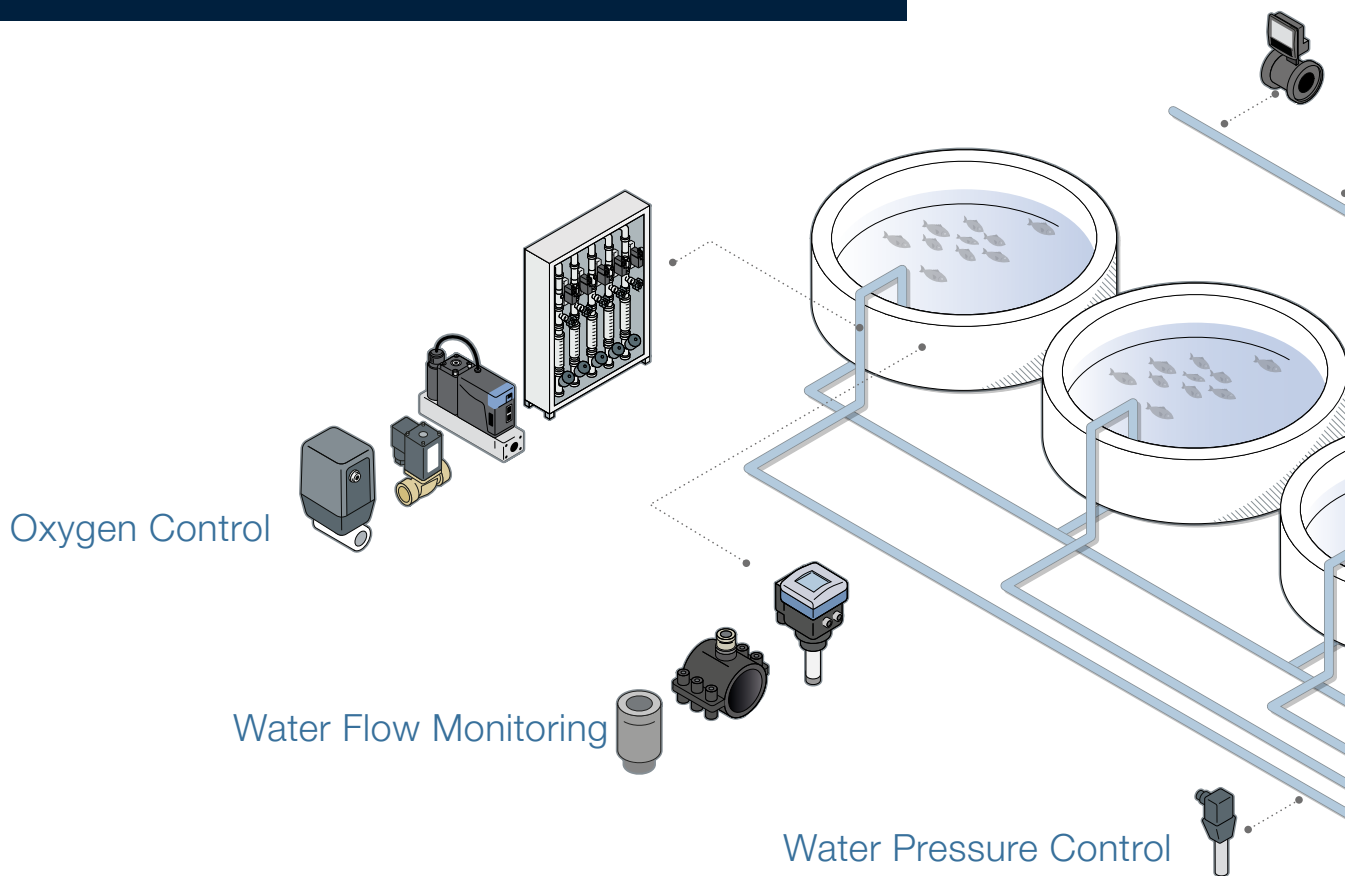
We make ideas flow.

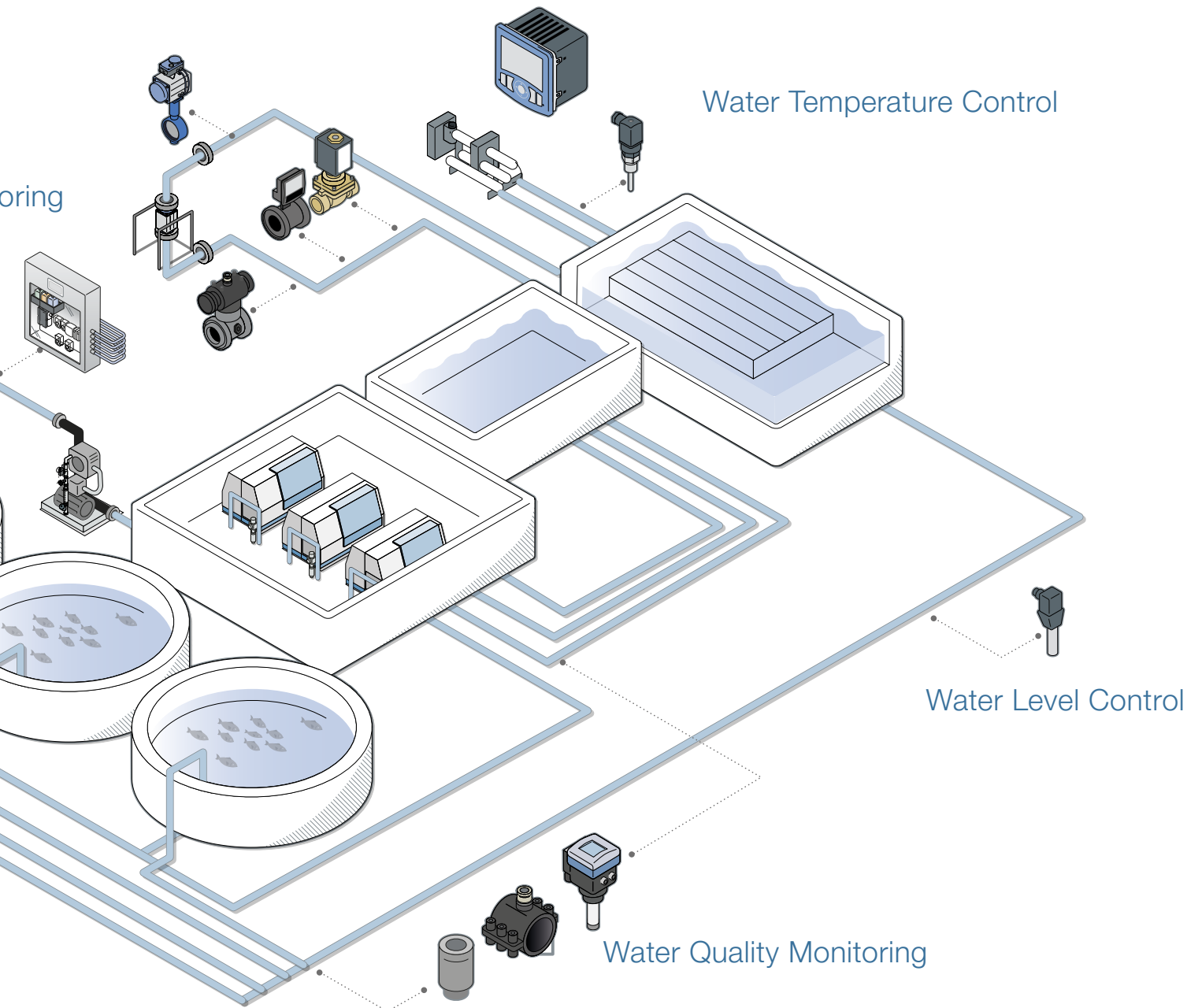
bürkert
FLUID CONTROL SYSTEMS

Fish farming application with Bürkert

- We support you with components, but also work with you to develop customised fluidics solutions for your plant
- With precisely working products, we help you to achieve maximum yields and avoid rejects
- Bürkert solutions help you to make your fish farming sustainable and ecological.
- Intelligent products and systems enable you to farm fish in an environmentally friendly way, e.g. the RAS
- System solutions make it possible to save you costs and, above all, time, as you only have one supplier or contact person and the system is completely tested.

Water Quality Monit





From idea to series

If you want sustainable solutions for your individual requirements, Bürkert is your partner. Our experience teams combine the necessary know-how from applications, development and series production. We will support you throughout the entire value-added chain – from the first idea to start-up and controlled operation. We can therefore guarantee maximum cost and process reliability. We will considerably shorten your time-to-market with our great production depth.



Idea & concept

- Demonstrably creative, quick, reliable, integrated and economical
- With guide price offer and project plan

1

System development

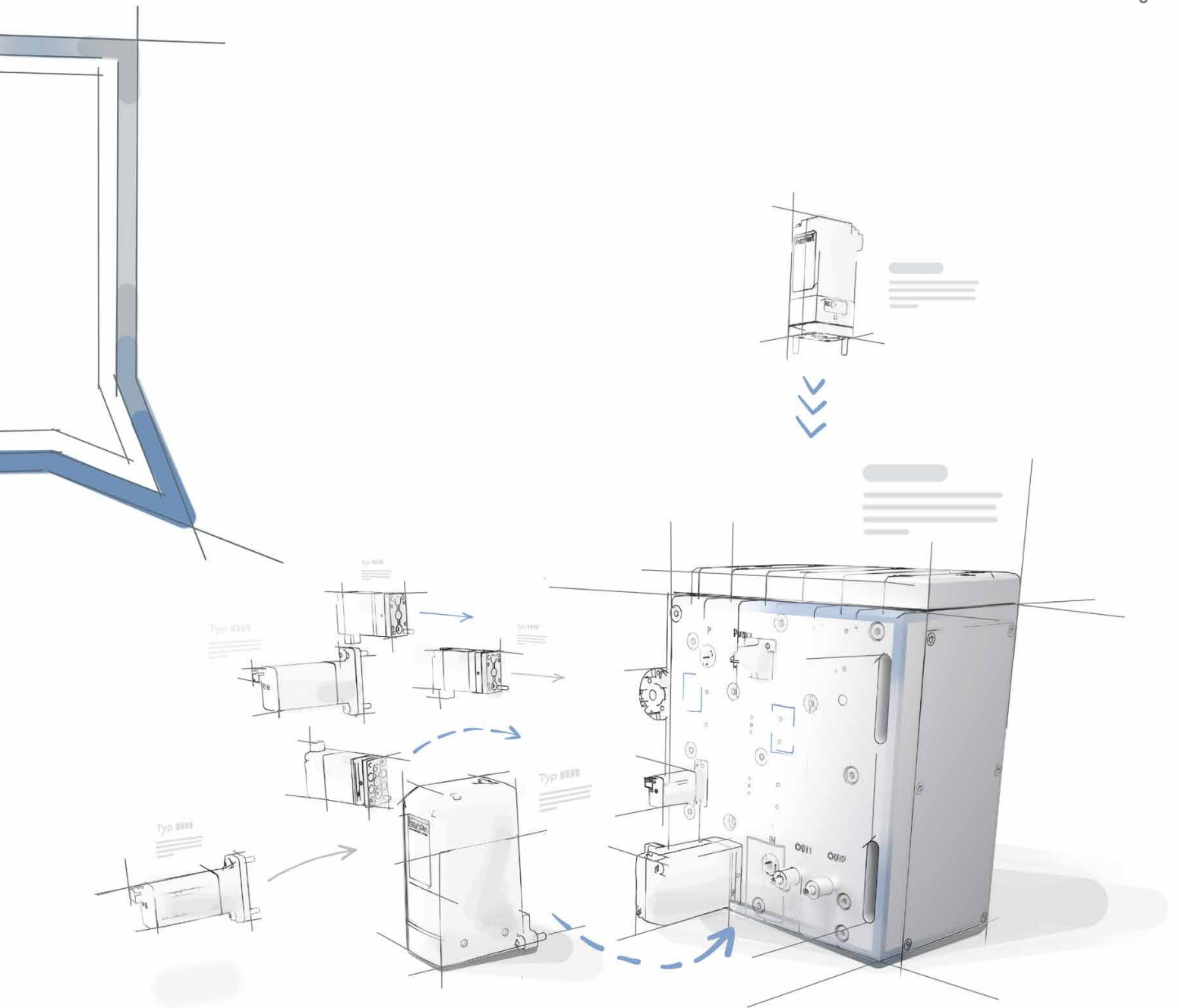
- Series design
- Pilot series and tool production

3

Prototyping & Simulation

- Prototype and design
- Specifications
- Series offer

2



System implementation

- Implementation of logistics
- Production handover

4

System & process qualification

- Zero series
- Preparation for series production

5

6

Controlled operation

- Customer training
- Installation and start-up

Oxygen Flow Control

Bürkert-competences

Flow control and measurement of oxygen

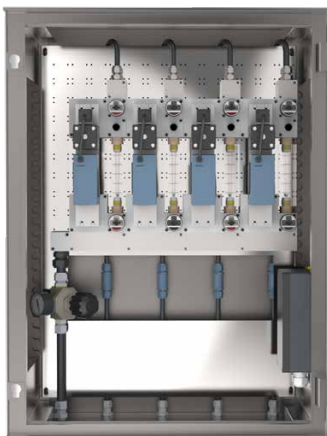
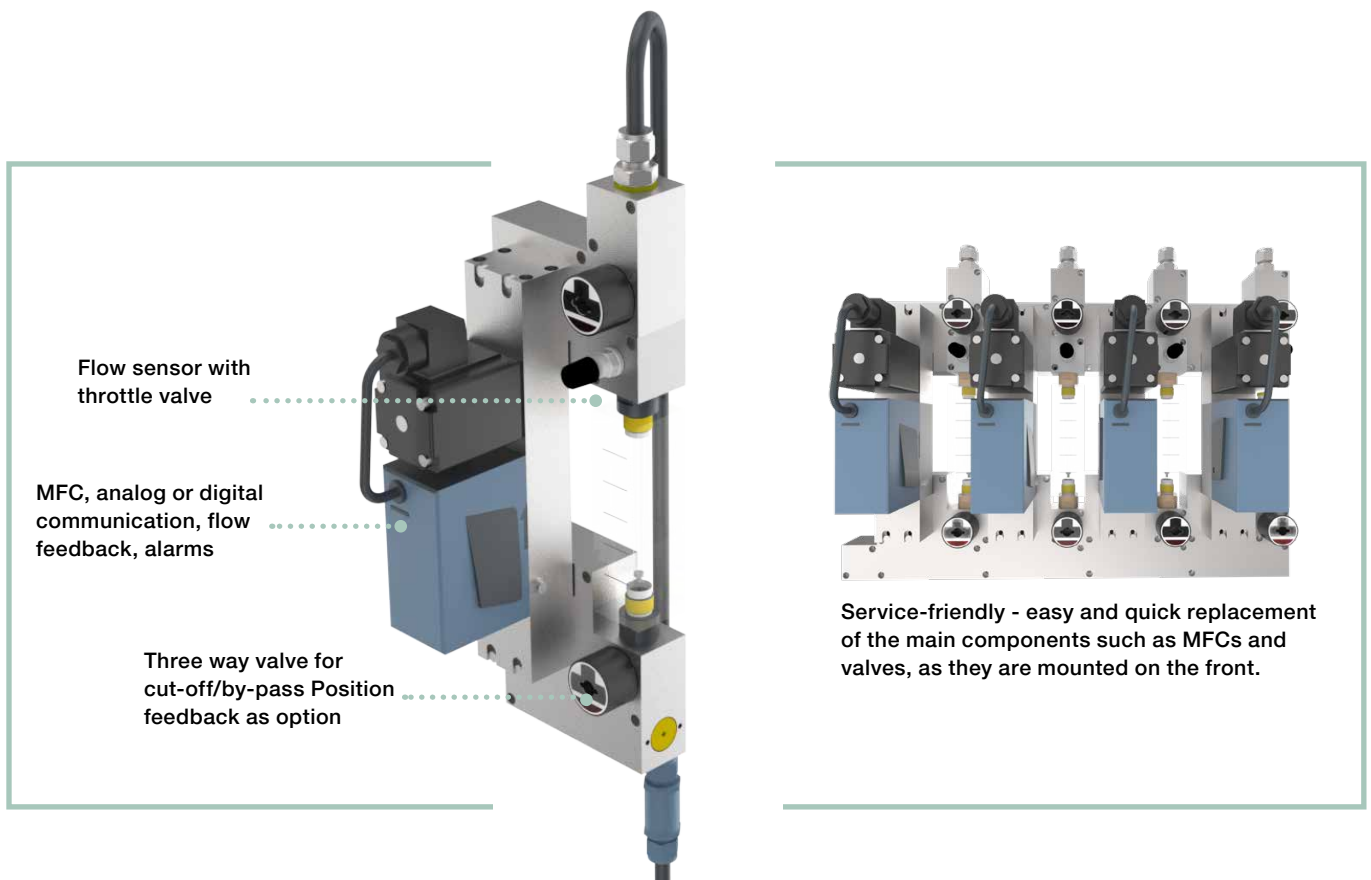


Accurate dosage - optimal growth - higher yield.

Oxygen must be precisely dosed to optimise the development of the fish. Too low a dosage slows down growth. If the dosage is too high, the stress level for the fish increases and, in parallel, the oxygen must be removed again. To eliminate these negative effects, Bürkert has developed an automated oxygen control system. For you, the chance of maximum profit.

System solutions for oxygen control

Bürkert as a system specialist has developed an oxygen control system to suit your fish farming requirements. This holistic automated solution learns what the optimal amount of oxygen is to ensure the best possible growth of the fish. In addition, the system helps you to plan maintenance in advance and ensures rapid intervention in the event of error messages. This saves valuable time when it comes down to it. In contrast to manual operation, input errors can be avoided and your process runs efficiently.



HIGH END CABINET SOLUTION

4 oxygen lines with MFC (Mass Flow Controller) and by-pass

- The MFCs precisely control the flow rate in either l/minute or grams/minute. They receive the setpoint from the external control system.
- The system has a bypass which ensures that the oxygen supply is maintained in the event of a power failure or maintenance.
- Check valves can be integrated into the system to ensure safety
- The number of fittings and pipes is drastically minimised, as only a few connections are necessary.



Why system solutions?



- **Only one supplier.**

One contact for all questions regarding the fluidic solution. In addition, the bureaucratic process is drastically reduced.



- **Only one ID.**

For a fluidic system solution that meets all your requirements, you only need to create one product ID. This minimises your logistical effort and reduces stock.



- **Complete documentation from one supplier.**

From E-drawings, wiring diagrams, fluid schematics, manuals, declarations, CEE marking to tag numbering available in one package. From a single source.



- **Tested and ready to install**

The systems are delivered tested. This means that you can immediately install a tested system in your installation without any additional effort. A clear plus when it comes to the optimal use of resources.



- **Shortened development times.**

Based on your specifications and requirements, we develop the perfect system for your challenge. You save yourself lengthy development times. In addition, the components used are suitable for oxygen and work reliably.



- **Simplified maintenance.**

In case of maintenance, the components can be replaced easily and quickly. For example, in the oxygen control systems, all components can easily be replaced from the front. This allows you to devote yourself to your core competencies and saves valuable resources used for maintenance.

COMPONENTS FOR OXYGEN FLOW CONTROL



Types 8741, 8742, 8745, 8746

- High accuracy and high span
- Nominal flow range up to 2500 l per min
- Operating pressure up to 10 bar
- Very fast response times

MASS FLOW CONTROLLER (MFC) / MASS FLOW METER (MFM)

MFCs and MFMs are used for the precise flow control and measurement of oxygen and other gases with a high level of repeatability. MFCs are available with analogue and digital communication interfaces. Thanks to a CANopen-based interface, these devices are applicable for integration into existing CANopen networks, in combination with a Bürkert gateway, and for connection via industrial Ethernet.

SHUT OFF SOLENOID VALVES

The solenoid valves are suitable for the safe shut-off of oxygen on the one hand and for an emergency oxygen supply on the other. The additionally available kick and drop technology allows them to save up to 80 % energy and thus contributes to more sustainable processes and saves costs.



Types 6013, 6027, 6281

- Brass, stainless steel
- Customised manifold solutions
- High pressure rates
- NC/NO function
- 24 V DC, 230 V AC, 240 V AC, 115 AC

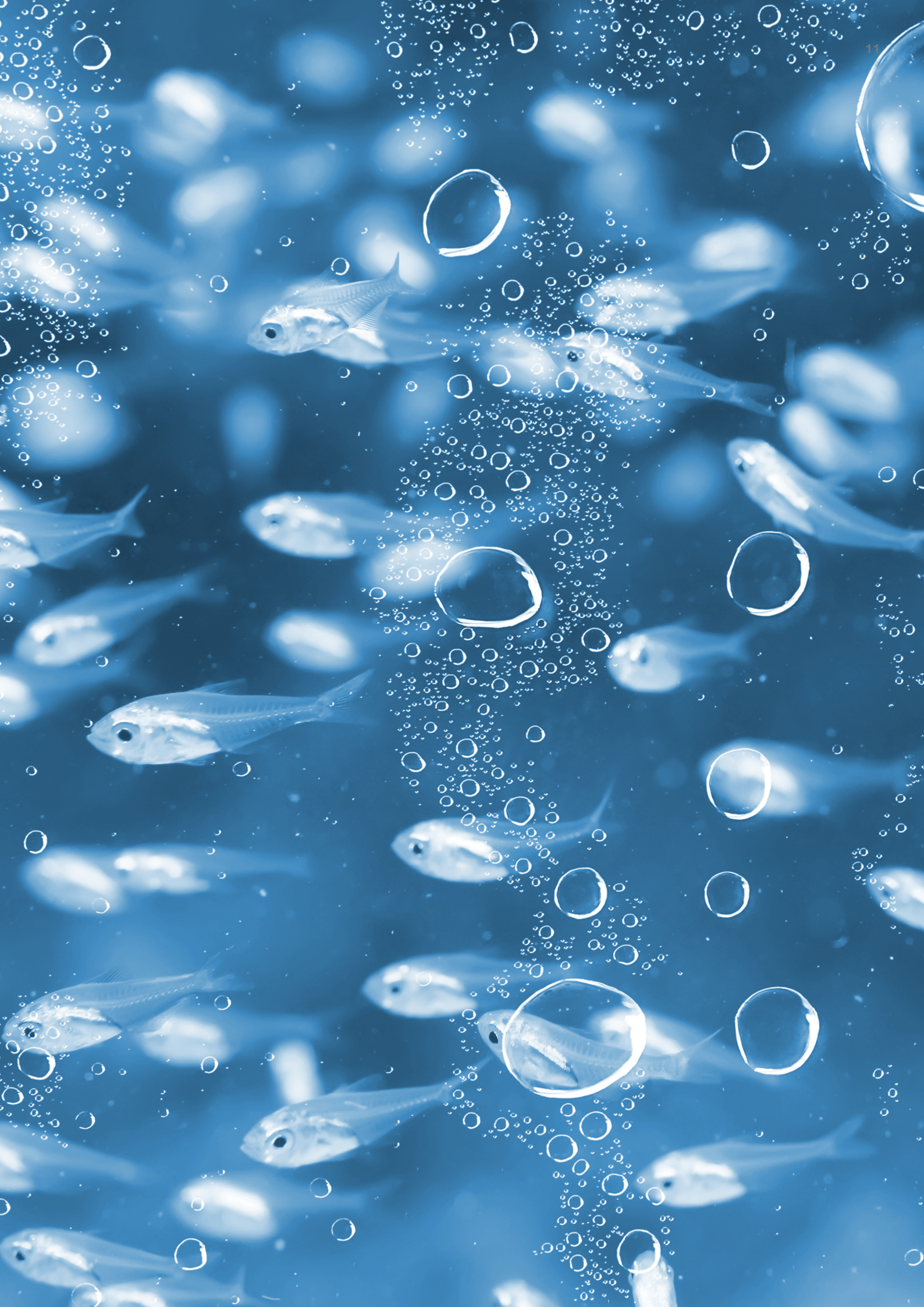


Type 3280

- Brass, stainless steel
- Orifice DN1 to DN12
- 4-20 mA, 0-5 V, 0-10 V with feedback
- Media separated

ELECTROMOTIVE 2 WAY GLOBE PROPORTIONAL VALVE

The direct-acting motor valve is used for dosing of oxygen in closed or open control loops. The valve features a linear stepper motor as actuator. The integrated electronics simplify the process integration; additional actuation modules are not necessary. The power consumption to hold a specific opening position of the valve is zero. This key feature can reduce the energy consumption of a plant significantly and thus make it more efficient



Water Flow Control

Bürkert-competences

Flow control



Precise flow control is what counts.

With regard to UV disinfection, the flow rate is a decisive parameter, as it must be ensured that all parasites are killed. Furthermore, it provides information about the optimal oxygen supply and helps to use water in a resource-saving way. Bürkert solutions ensure perfect control.

COMPONENTS FOR WATER FLOW CONTROL

BALL VALVE

The solution consists of a quarter turn valve and a pneumatic rotary actuator. The rotary actuator is available as single or double-acting actuator. Type 8805 can be complemented by a positioner (Types 8791, 8792, 8793, 8691, 8692, 8693, 8694), a pilot valve (Type 6519) or several kinds of position feedbacks.



Type 8805

- Accurate end position setting
- High flow values
- Orifice up to DN600
- Long lifetime



Type 8805

- Pneumatic rotary actuator
- Accurate end position setting
- High flow values
- Nominal diameter/ orifice:
 - 2/2 way ball valve: 10...100 mm
 - 3/2 way ball valve: 10...40 mm
- Long lifetime

BUTTERFLY VALVE

2/2-way butterfly valve used for control and on/off operations. Due to the fact that the valves are available with different body types (wafer or lug type) and materials, they perfectly meet the requirements of diverse applications and processes

SERVO-CONTROLLED DIAPHRAGM VALVE

The valve type 6281 shuts off reliably. The standard brass body meets all European drinking water requirements. Coils with integrated Kick and Drop (KD) electronics in double coil technology are available to reduce electrical power consumption during operation. The valve can be supplied with a manual override for easy maintenance and commissioning.



Type 6281

- Diameter up to DN50
- Vibration resistant
- Energy saving



Type S055 + SE58S

- Continuous measurement, high accuracy
- up to DN800
- Flow measurement 25...approx. 75,000 l/min

FULL BORE MAGNETIC INDUCTIVE FLOW SENSORS

The magnetic inductive flow sensor type S055 (compact or separate version) is suitable for liquids with a minimum conductivity and for use in applications with requirements in the field of water measurements. The combination with the corresponding transmitter SE58S (required minimum conductivity: 20 $\mu\text{S}/\text{cm}$) results in a flowmeter with different performance, functions, materials and approvals.

INSERTION PADDLE WHEEL FLOW SENSOR

The compact flowmeter with paddle wheel sensor is available in two versions: standard output signal or battery powered indicator/totalizer version without output. Inputs (with batch controller) and all outputs can be checked without the need for actual flow.



Type 8025

- Up to PN10, size of measuring tube: DN06...DN400
- Display for indication of flow rate and volume with two totalizers or dosing
- Automatic calibration using teach-in



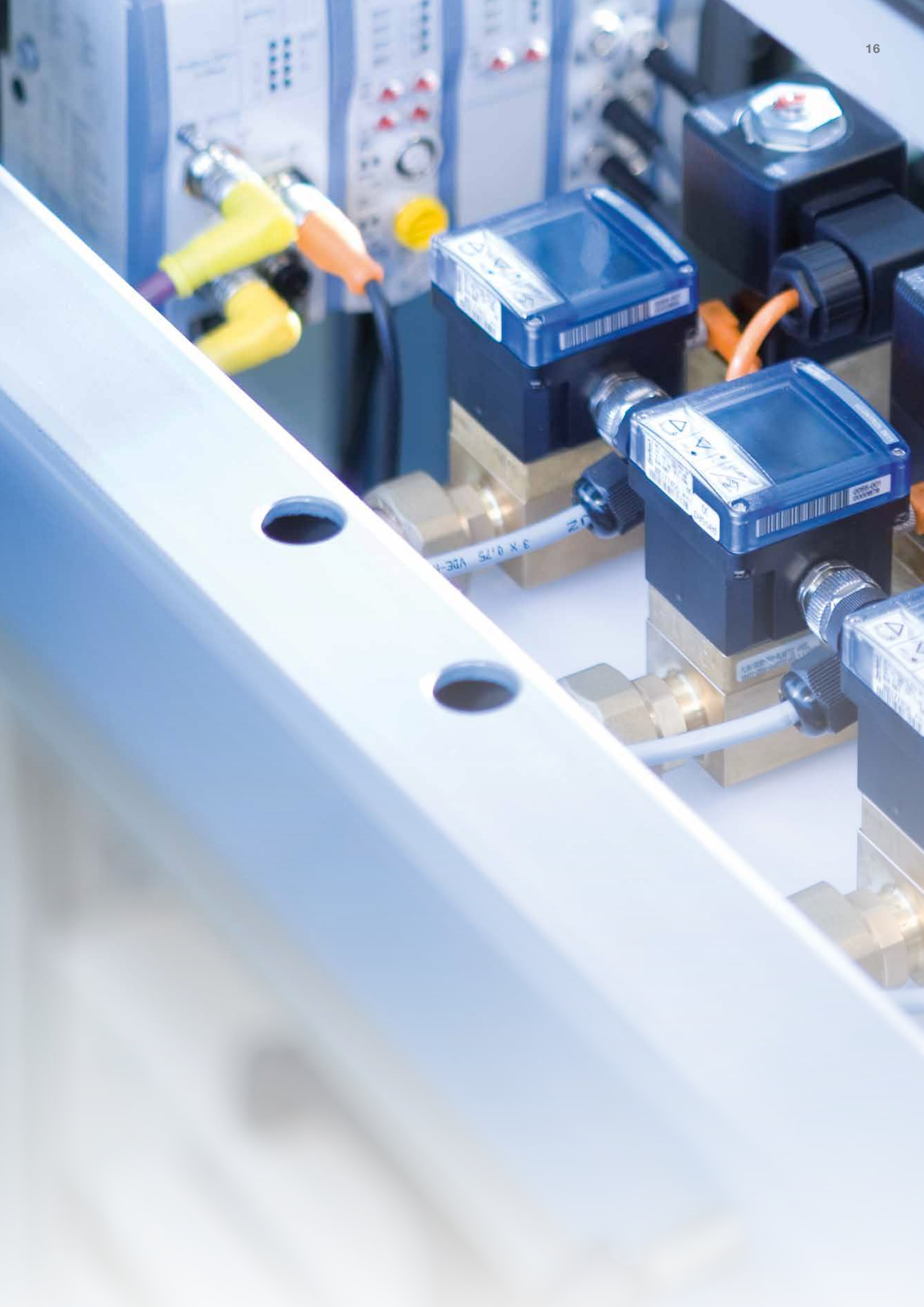
Type 8045

- up to DN400
- Sensor without moving parts
- Simulation of all output signals
- Version with Alloy C22 electrodes

INSERTION MAGNETIC INDUCTIVE FLOW SENSOR

The electromagnetic flowmeter 8045 is made up of an electronic module including a backlit display, operating keys and a sensor consisting of PVDF or stainless steel material. It has been designed to measure a flow rate of neutral and slightly aggressive fluids with a conductivity of more than 20 $\mu\text{S}/\text{cm}$ in DN06...DN400 pipes. It is equipped with a 4...20 mA output, a digital output (pulse output by default).







Pressure, temperature & level control

Bürkert-competences

Level control, pressure and temperature control



Pressure, temperature and fill level always in view.

The amount of water plays a decisive role. On the one hand, there must be enough water available for the fish, on the other hand it has an influence on the life span of the system. For example, mechanical filtration requires a certain water level. To ensure the long-term use of the system, it must be operated at a defined water pressure. Our components and solutions help you to maximise the service life of your system and to save save maintenance costs.

PRESSURE CONTROL



Type 8325

- Pressure range from 0 to 25 bar
- Body and wetted parts made from extremely high-quality stainless steel
- 0,125 % accuracy

LEVEL & PRESSURE TRANSMITTER

The pressure transmitter is suitable for a wide range of measuring tasks due to its high accuracy, compact design, robust construction and flexibility. Corrosion-proof stainless steel and a front flush-mounted diaphragm guarantee as little need for maintenance as possible.

TEMPERATURE CONTROL

TEMPERATURE SENSOR

The temperature sensor is used for measuring and monitoring the temperature. The impact of the temperature on a resistance thermometer generates a signal which is amplified, digitised and processed. Instead of an analogue output, this device offers a digital interface IO-Link. This allows bidirectional data transfer with any IO-Link master.



Type 8418

- Access to measured value, device status and settings via IO-Link interface, very easy sensor replacement
- Process connections: G 1/2", clamp DN10/20 according to DIN32676
- Available switching functions: PNP or NPN

LEVEL CONTROL

RADAR LEVEL METER

The type is a non-contact radar level meter for continuous level measurement. The unit is available in two variants:

- with encapsulated horn antenna. Particularly suitable for the level measurement of aggressive liquids in small vessels.
- with plastic horn antenna. Particularly suitable for flow measurement in open flumes or gauge measurement in waters



Type 8136

- For level measurement up to 20 m
- Adjustable with display/configuration module or PC
- Insensitive to variations of temperature, pressure and medium data of the product



Type 8177

- For level measurement up to 8 m
- 4...20 mA/ HART – 2 wires
- Housing: PBT, stainless steel 316L

ULTRASONIC LEVEL MEASURING DEVICE

The ultrasonic measure device is a non-contact ultrasonic level measuring device, designed for continuous level measurement in open or closed vessels. The unit is suitable for liquids, but also for solids, in virtually all industries, particularly in water and waste water management.

VIBRATION LEVEL SWITCH

The vibrating level switch also works under unfavourable measuring conditions such as turbulence, air bubbles, foam formation, build-up or strong external vibrations and is therefore very well suited for fish farming.



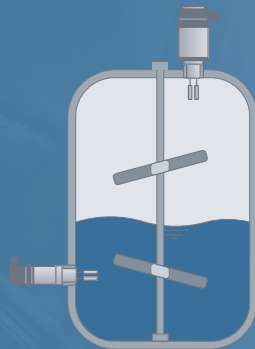
Type 8110

- Installation without adjustment
- Available in IO-Link version
- Degree of protection: - IP65 with cable plug EN 175301- 803 mounted and tightened- IP66/IP67 with M12x1 plug mounted

Did you know ?

- The transducer of the ultrasonic sensor emits short ultrasonic pulses, at 70 kHz to the measured product. These pulses are reflected by the product surface and received by the transducer as echoes. The running time of the ultrasonic pulses from emission to reception is proportional to the distance and hence to the level.

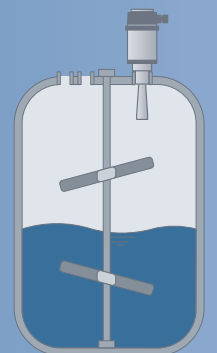
An integrated temperature sensor detects the temperature in the vessel and compensates the influence of temperature on the signal running time. The determined level is converted into an output signal and transmitted as a measured value. If the tank geometry is known, the volume still inside the tank can be indicated. Various disturbance echo filters even enable use in containers with built-in fixtures generating a disturbance echo.



- The tuning fork is piezoelectrically energized and vibrates at its mechanical resonance frequency of approx. 1200 Hz. When the tuning fork is submerged in the product, the frequency changes. This change is detected by the integrated oscillator and converted into a switching command. The integrated fault monitoring detects the following faults:

- Interruption of the connection cable to the piezoelectric elements
- extreme material wear on the tuning fork
- break of the tuning fork
- absence of vibration

- The radar transmitter consists of an electronic housing, a process fitting element, the antenna and a sensor. The antenna emits short radar pulses with a duration of approximate 1 ns to the measured product. These pulses are reflected by the product surface and received by the antenna as echoes. Radar waves travel at the speed of light. The running time of the radar pulses from emission to reception is proportional to the distance and hence to the level. The determined level is converted into an output signal and transmitted as a measured value.



Water Quality Monitoring

Bürkert-competences

Water analysis and quality monitoring



Water quality under control.

In order to prevent diseases, achieve optimal growth of the fish and make the purification of the water as efficient as possible, water monitoring is essential. In order to conserve the precious resource of water in the future, the focus is on water reuse. Especially here it is of utmost importance to have the water quality in view at all times. With Bürkert analysis systems and products, you do not only save water, but also have the water quality in view 24/7.

SENSORS

INSERTION SENSORS



Types 8202, 8220, 8228

pH, ORP, Conductivity

SENSORS FOR INSTALLATION IN THE ONLINE ANALYSIS SYSTEM



Types Sensor cubes MS01 – MS08

pH, Chlorine/ Chlorine dioxide,
Conductivity, Redox, Turbidity, Iron,
SAC 254, Nitrate

MULTI-CHANNEL & MULTI-FUNCTION TRANSMITTER/CONTROLLER



Type 8619

Multicell - type 8619 is a microprocessor transmitter/controller available in panel mount or wall mount housing versions. Thanks to full support of Modbus TCP and PROFINET (conformity class B) or EtherNet/IP, the type 8619 can be integrated into most industrial Ethernet environments.

ONLINE ANALYSIS SYSTEM



Types 8906

The Online Analysis System is a compact and modular system for monitoring all important water parameters on one platform. The sensors can be flexibly adapted to your application. The system is additionally available as a stainless steel variant (control cabinet) type 8906 or also as a field unit.

FIELDBUS GATEWAY



Types ME43, ME61

The fieldbus gateway type ME43 is the central control unit for Bürkert products (valves, sensors, mass flow controllers or displays), which are based on EDIP. The basic version consists of a fieldbus coupler which transmits the internal CANopen-based communication of the Bürkert field devices to industry standards for industrial Ethernet and fieldbus.

Automation

Bürkert-competences

Automatisation, Communication,
Digitalisation



Ready for the automated future.

Which type of automation suits your plant? In close cooperation with you to analyse your needs and support you in the conception of your plant automation. Whether sensor, valve terminal or completely configured control cabinet - you get an all-round, harmonious solution.



Types 8652, 8653

- Available with LC display for diagnosis
- IP20, IP65 in closed cabinets
- Flow 310 l/min

AUTOMATION VALVE ISLANDS

The valve islands are part of a flexible solution for process automation. They can be mounted in small control cabinets or as field modules close to the process. This automation solution is easy and quick to expand.

AUTOMATION CABINETS

The compact control cabinets allow you to place the complete automation in one place close to the process. The components in the control cabinet can be flexibly adapted to your application as required. The enclosure material can be adapted to your application, stainless steel AISI316 or reinforced fibreglass are available for this purpose.



Type 8614

- Available with up to 40 valve positions and 64 valve functions
- Protection class IP65
- Optional assemblies, such as pressure monitoring, power supply unit, wall spacer, available



Type 6519

- High flow-rate capacity up to DN9
- Reduced power consumption
- 3/2-, 5/2- or 5/3- ways possible

PILOT VALVES

The servo assisted valve for pneumatics can be used individually or on blocks. They operate without constant air consumption and are used to control double-acting or single-acting actuators.





"The various Bürkert valves supplied for the project have a variety of tasks. In addition to the automated distribution of air and water, also the control of the feed distribution systems, deck washing systems and fuel shut-offs for the generators."

Katherine George, Managing Director
Total Instruments Controls

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