TIEFENBACH
Control Systems GmbH

We give
impulses >>>

RECOMATIC®

CONTROL AND CONDITIONING
OF HYDRAULIC FLUIDS TYPE HFA

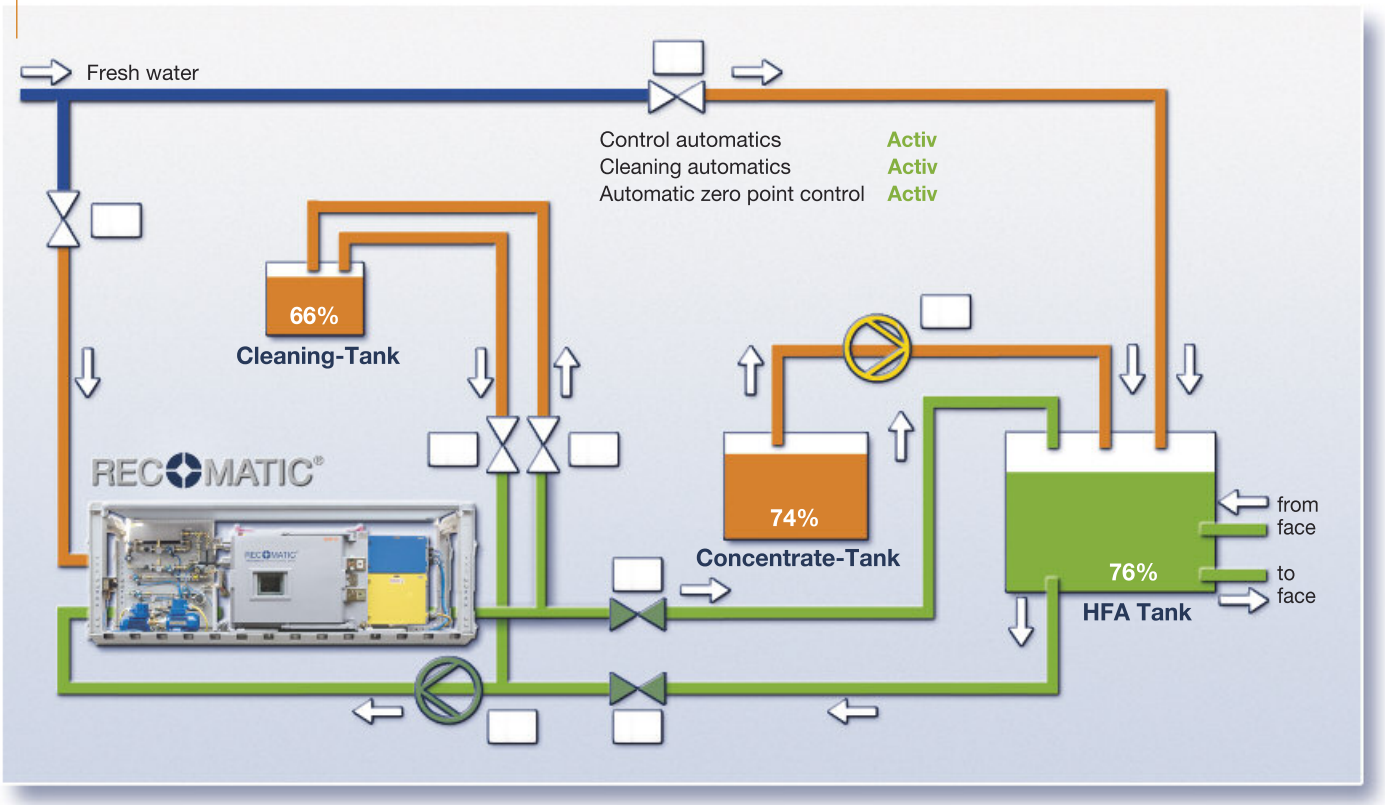
RECOMATIC®

CORROSION UNDER CONTROL

>>> TIEFENBACH CONTROL SYSTEMS HAS BEEN SUCCESSFULLY DEVELOPING, MANUFACTURING, AND SELLING HIGHLY SOPHISTICATED ELECTRO-HYDRAULIC AND HYDRAULIC CONTROL SYSTEMS FOR MODERN ROOF SUPPORTS FOR DECADES.

- Corrosion is a huge cost factor in waterhydraulic systems as it causes high repair costs and long downtimes.
- The operating fluid (HFA) for the shield support must be monitored constantly and exactly in order to conserve the value of the hydraulic shield support.
- For the online monitoring of HFA fluids Tiefenbach offers the RECOMATIC® system.
- Corrosion damage due to inadequate concentration and thus a reduced life of the shield support can be prevented by the use of the RECOMATIC® system.
- The modern mining industry thus has a reliable measuring and control system for checking and conditioning the operating fluid at its disposal.

SYSTEM OVERVIEW...



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TECHNOLOGY AT THE FACE...

- The RECOMATIC® system translates experiences gained in the day-to-day mining work into practical technology facilitating work and making the mining process more economical and cost-effective.
- The HFA concentration in the hydraulic system is determined by means of an optical measuring method. The value measured is temperature-compensated and can be read directly off the screen.
- The RECOMATIC® system is installed at a high-pressure pump station for the longwall hydraulic system. The fluid for measuring volumetric flow is taken from the HFA storage tank and bypassed to the measuring unit.
- Works independently of the HP circulation
- Data transmission to the surface is made via fibre optics technology and is possible over long distances.

>>> THE RECOMATIC® SYSTEM DETERMINES THE CONCENTRATION AND OTHER FLUID-SPECIFIC DATA OF HYDRAULIC FLUIDS AND AUTOMATICALLY INITIATES THEIR CORRECTION TO THE OPTIMUM VALUES.

The RECOMATIC® system is capable of regulating the HFA concentration automatically. If the HFA concentration is too low the RECOMATIC® system controls the addition of concentrate via the current measured value. If the concentrate content is too high a water valve opens to dilute the HFA fluid to the set target value.

In addition to the HFA concentration the system also measures the pH-value, the electrical conductivity as well as the temperature and processes the data.

Integral level indicators provide information on the filling level in the HFA tank, the concentrate tank, as well as the cleaning tank.

These options and many more ensure that the modern mine has an tailor-made measuring and control system for operating fluid conditioning at its disposal.

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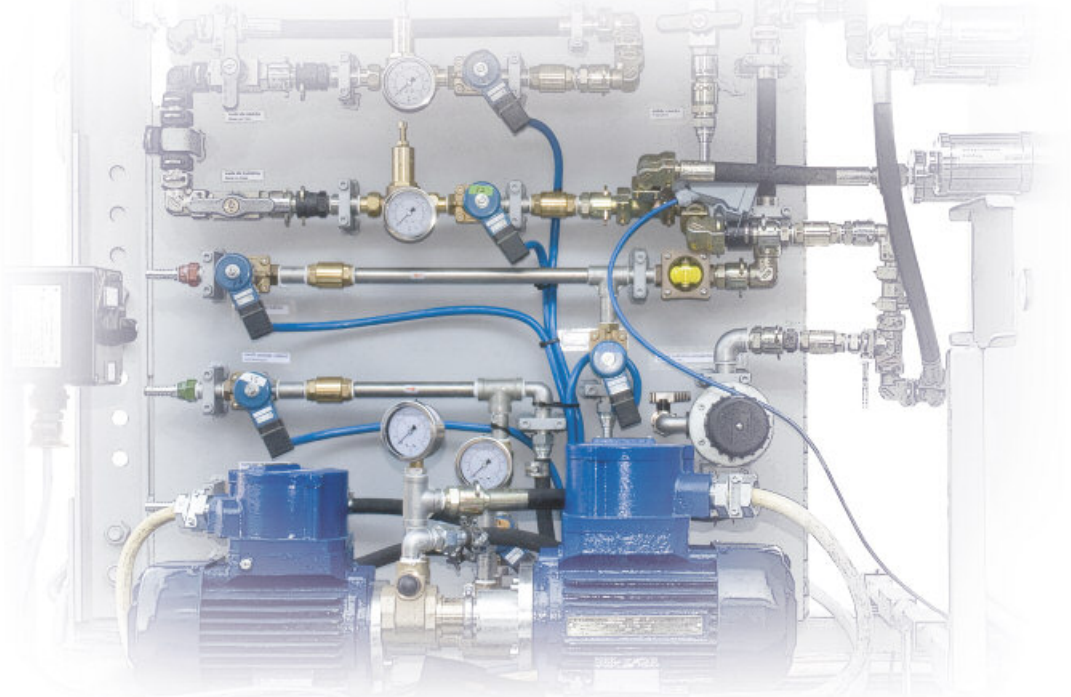
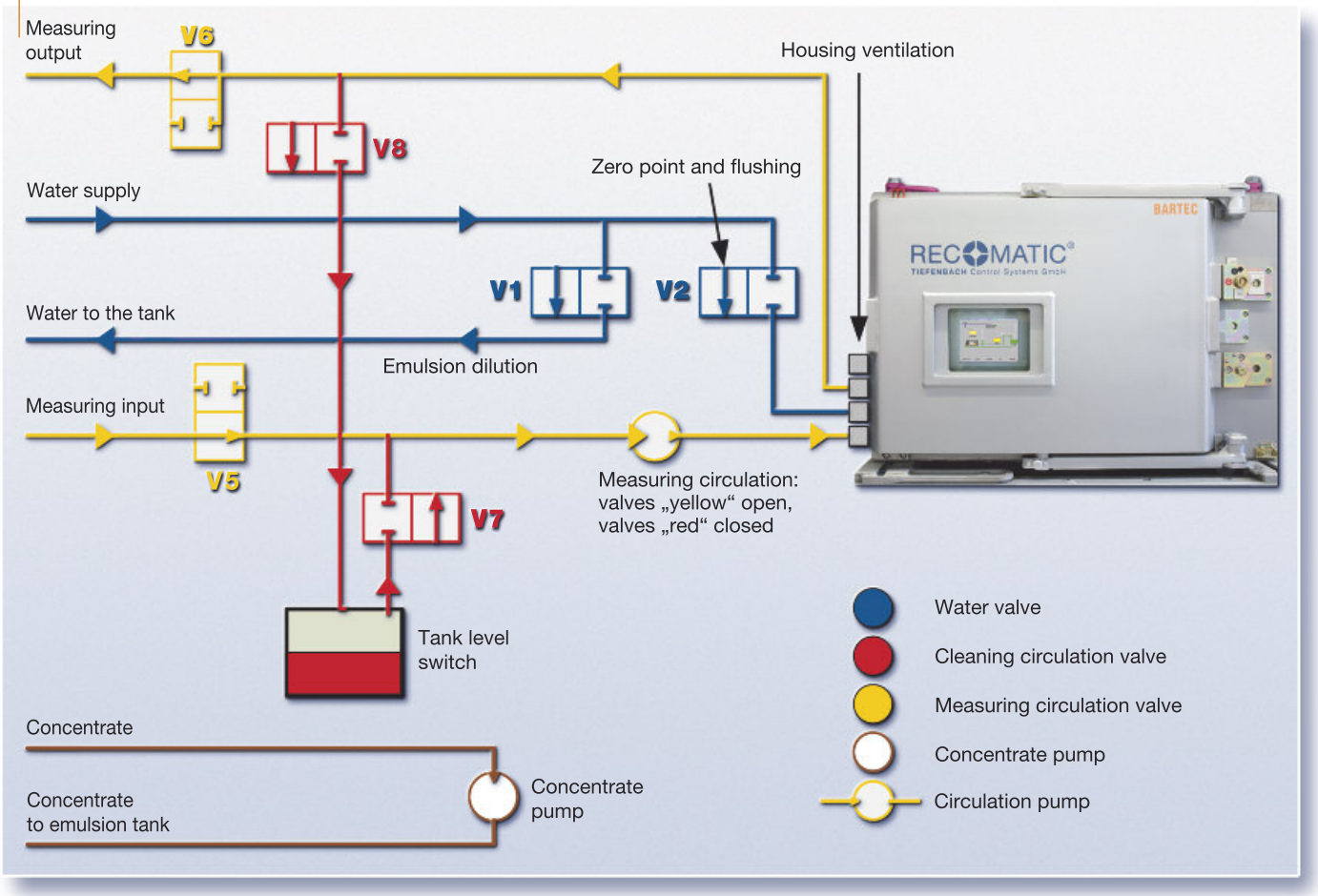
CORROSION UNDER CONTROL

>>> INTEGRATED VALVE AND PUMP TECHNOLOGY FOR PROPORTIONING CONCENTRATE AND WATER AND CONTROLLING THE CLEANING FLUID.

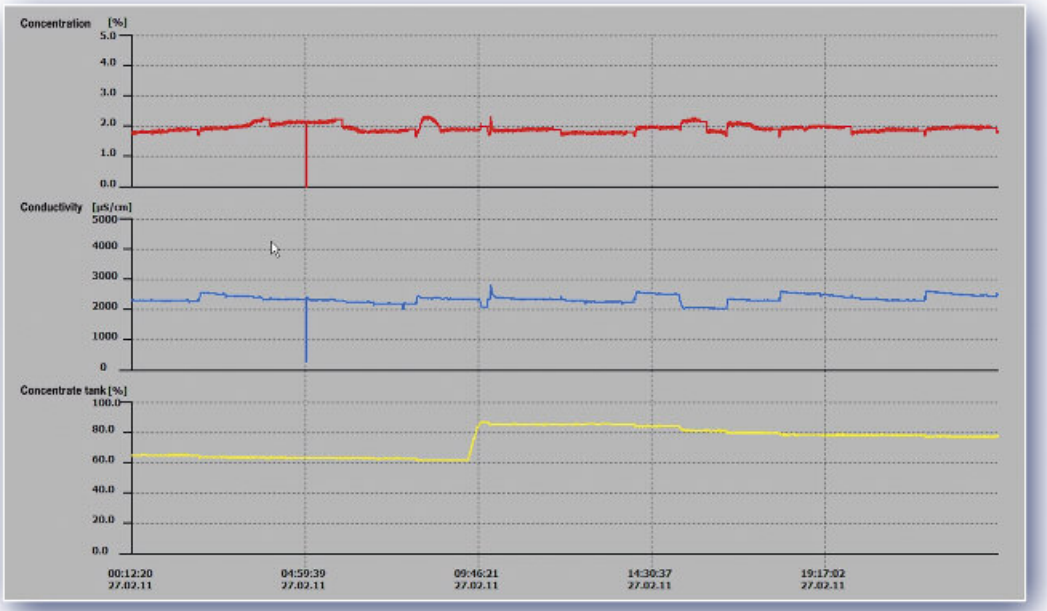


VALVE DIAGRAM WITH 6 2/2-WAY VALVES



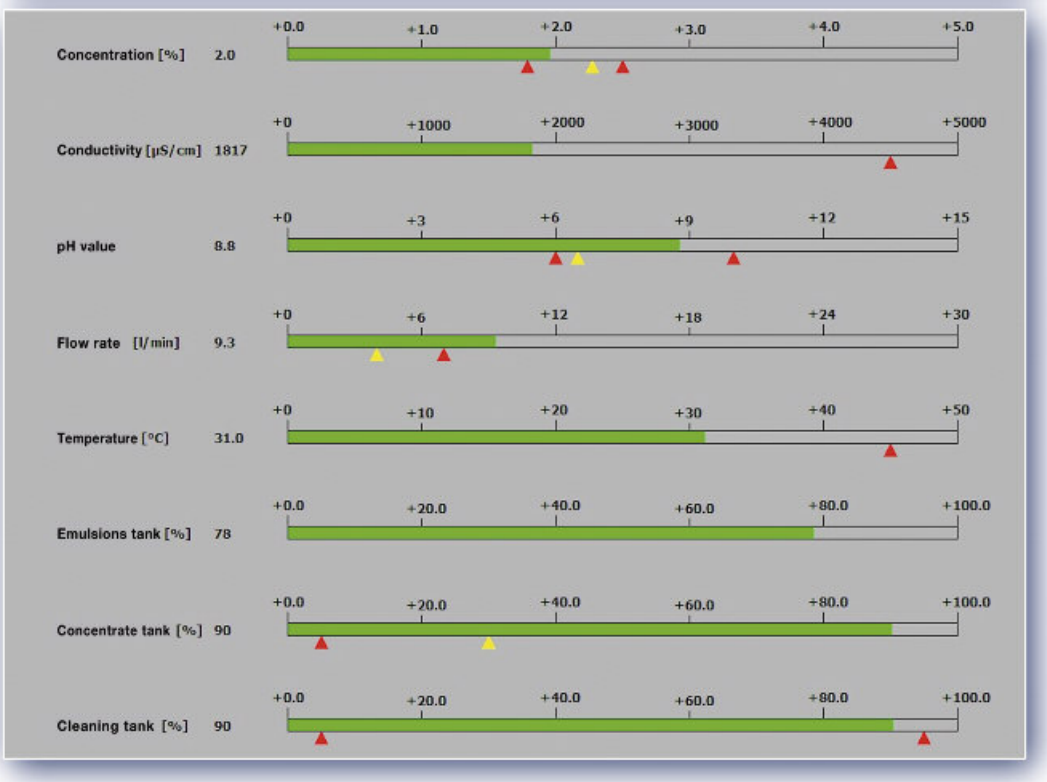
CONVINCING RESULTS IN PRACTICE

- Ease of operation even under difficult conditions is a requirement of the practice that the RECOMATIC®-system meets in full.
- The current measurement values are displayed on a screen at the place of operation site and also in a control room at the surface. Warning and alarm values can be set individually and show any deviations from the target values. All measurement values are stored in the documentation mode of the system.
- For maintenance and diagnostics purposes the condition of the HFA medium can be read and presented graphically in the software history at any time.
- With the technology of the RECOMATIC® system the foundation stone has been laid for the needs based control and regulation of the HFA concentration. The hydraulic circuit of the longwall support system can thus be continually monitored to ensure optimum control. Deviations from the required HFA concentration no longer pass unnoticed.



CURVE...

DOCUMENTATION BY THE RECOMATIC® SYSTEM



MEASURED VALUES...

CURRENT MEASURED VALUES OF THE RECOMATIC®

RECOMATIC®

CORROSION UNDER CONTROL

PROPORTIONING WATER AND CONCENTRATE BY INTEGRATED VALVE AND PUMP TECHNOLOGY >>>

>>> MEASURING INSTRUMENTS IN THE RECOMATIC®

TECHNICAL DATA

➤ Electrical connection		500 V, 1.000 V, 1.140 V, 50 Hz
➤ Intrinsically safe output circuit		12 V DC EEx ib
➤ Data line		Fibre optical cable Single mode 9/125µ, optionally Cu conductor
➤ Type of protection		EEx d, i, I
➤ Directive		94/9 EC (ATEX)
➤ Housing leadthroughs		3 fluid lead-throughs, 1 housing ventilation
➤ Connection box (increased safety)		Type of protection EEx e I, terminals for power supply and pump outlets
➤ Connection box (intrinsically safe)		Type of protection EEx i I, terminals for valve outputs Coupling field for fibre optic cable
➤ Pump outlets	a.	Circulating pump (500 V, 0,50 kW) 3 main fuses in the EEX d-housing integral contactor Overload release Overtemp.-PTC resistor-release Earth leakage circuit breaker
	b.	Concentrate pump (see a.)
➤ Valve plate		6 2/2-way valves, 12 V DC intrinsically safe EEx ib Pressure reducing valve 10 bar, all fittings made of brass or high-grade steel
➤ Hydraulic ports		Measuring volume flow DN 12 Water DN 12 HFA-Concentrate DN 12
➤ Control devices		Leakage monitoring Measuring volume flow monitoring
➤ Transport frame		Heaby-duty type (60 kN) Dimensions (W x H x D): 3.300 x 1.150 x 850 mm
➤ Overall weight		2.700 kg (incl. bottom cabinet)

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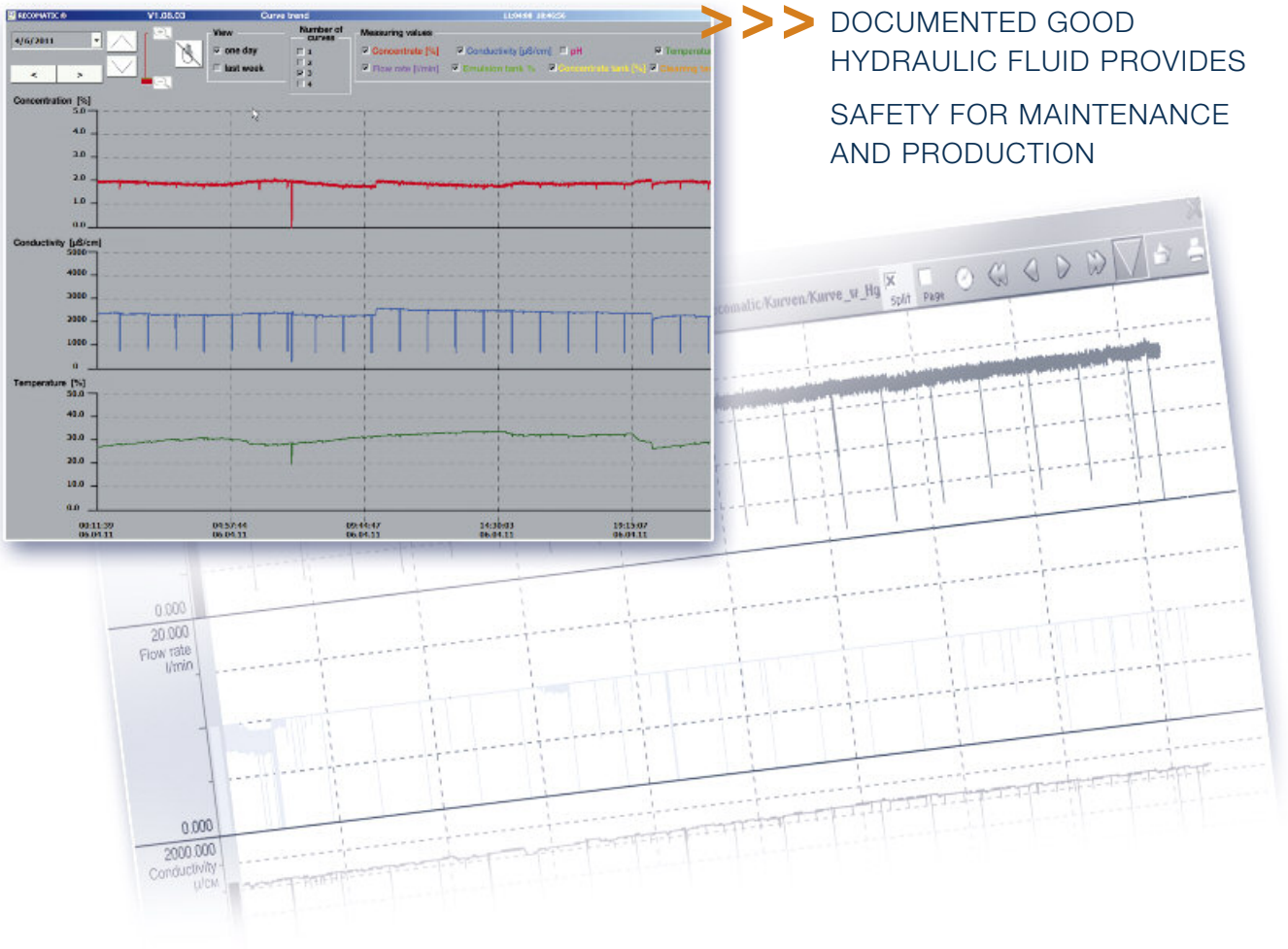

>>> DOCUMENTED GOOD HYDRAULIC FLUID PROVIDES SAFETY FOR MAINTENANCE AND PRODUCTION

TECHNICAL DATA ››› MEASUREMENT TECHNOLOGY

➤ HFA concentration	Optical measuring sensor Measuring accuracy < +/- 0.2% absolute Integrated temperature measurement
➤ Electrical conductivity	Measuring range: 0 – 5.000 µS/cm Measuring accuracy < +/- 0.5% of value measured
➤ pH value	Measuring range: pH 0 - 14 Measuring accuracy in water: < +/- pH 0.1
➤ Level measurement	3 units (emulsion, concentrate, and cleaning medium)
➤ Circulation pump	External rotary slide–valve pump, delivery 10-14 l/min 1.500 rmp, max. 12 bar Motor: 500 V, 0.5 kW Type of protection of motor: EEx d e l Connecting cables: DN 12
➤ Concentrate pump	External rotary slide-valve pump, delivery 10-14 l/min 1.500 rpm , max. 12 bar Motor: 500 V, 0.5 kW Type of protection of motor: EEx d e l Connecting cables: DN 12

- The information given in this leaflet is for guidance only.
- Obligations and commitments or claims of any kind cannot be derived therefrom.

>>> Version 06/11

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