



HYGROMATIK®

The new generation of Steam Humidifiers

Presentation **FlexLine**



Za 10.2017

FLEXLine – the new generation of Steam Humidifiers



FlexLine incorporates the substantial characteristics of HygroMatik:

- Quality
- Intelligence
- Versatile
- Flexibility
- Efficiency

FLEXLine – the new generation of Steam Humidifiers



Quality

FLEXLine – Quality



- The Housing – optimum corrosion protection
 - corpus & cover completely made of Stainless steel
 - Entirely powder coated
 - Leading material quality

FLEXLine – Quality



Steam Cylinder – reusable as a standard

- Ressource-saving
- All components are individually replaceable
- Improved material with glass fiber reinforcement (30%)
 - Increased temperature resistance
 - Optimized dimensional stability
 - Longer lifespan

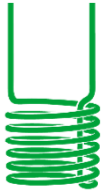
FLEXLine – Quality



Electrodes – solid and universal

- Solid stainless steel
- Individually changeable
- **Special Electrodes optionally available :**
 - For feed water with high conductivity
 - For feed water with low conductivity
 - For feed water with high concentration of Chloride Cl⁻ (galvanized Steel)

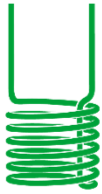
FLEXLine – Quality



Resistive heating elements –
precise and durable

- Control accuracy +/- 1% r.h.
- Especially low maintenance when using DI/RO-water
- Resistive heating elements made of high-quality Incoloy 825
 - Extremely heat resistant
 - Extremely corrosion resistant
 - More resistant to mechanical cleaning than coated materials

FLEXLine – Quality & Innovation



Contactless water level control

- No direct contact to water
 - No Calcification
- No moving parts
 - No wear
 - No pollution
- Leading robustness
- Innovation „made by HygroMatik“

FLEXLine – Quality



- Solid reusable cylinders as standard
 - Glass fiber reinforced
- Solid Electrode Steam humidifiers
 - Solid stainless steel
 - Optionally special electrodes
- Precise Heater Steam Humidifiers
 - Heating elements made of INCOLOY825
 - Capacitive contactless water level control, without moving parts

FLEXLine – Quality



Integrated Hardware- circuit breaker

- Normative (EN60335) required intrinsic safety is optimally implemented by control and **software-independent Hardware**
- Conforms to the current **product safety law (17.03.16)**, based on the Low Voltage Directive (**2014/35/EC**)
- Leading security concept

FLEXLine – The intelligent humidifier generation



Intelligence

HYGROMATIK[®]

FLEXLine – The intelligent humidifier generation



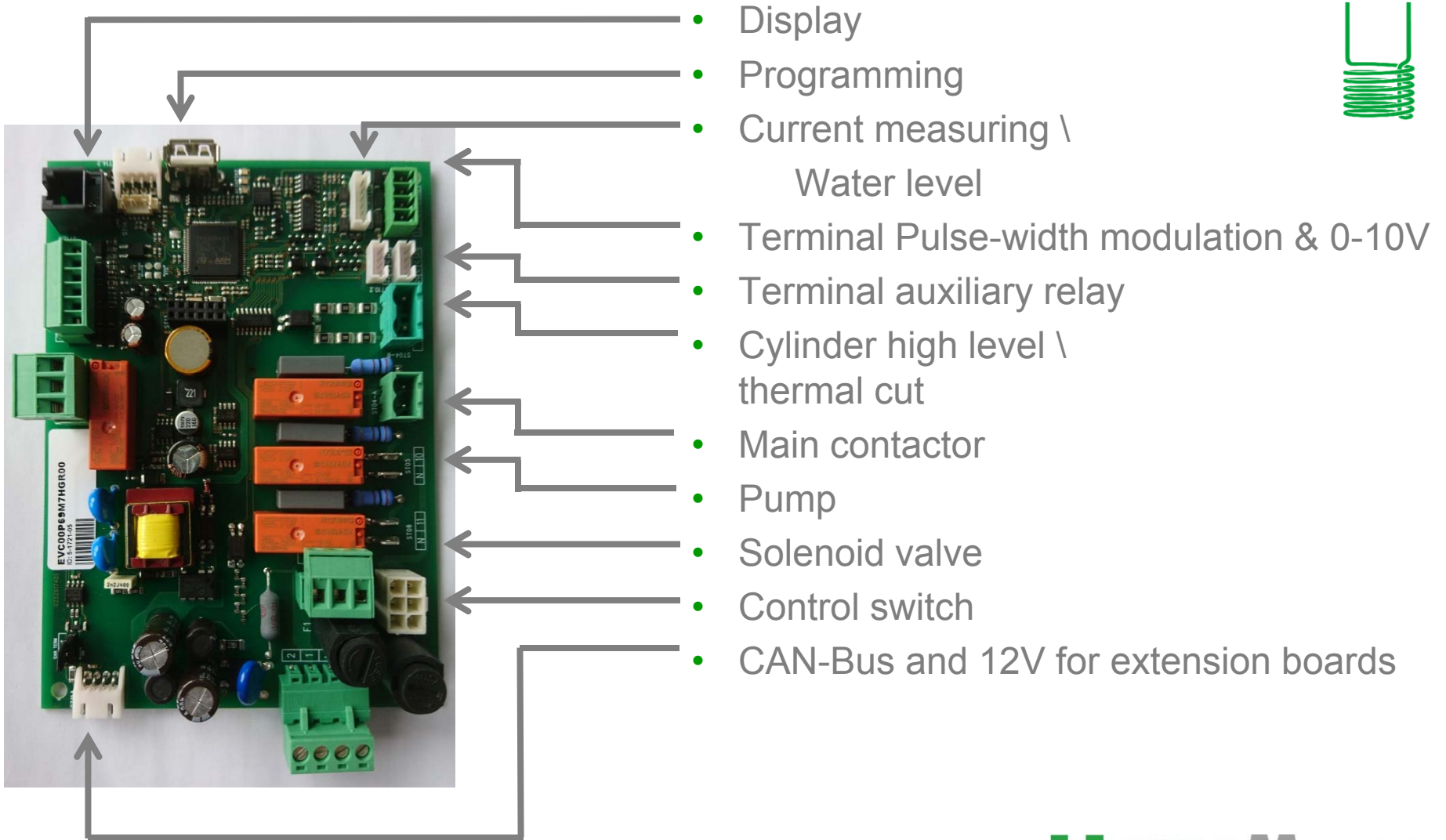
- High-quality 3,5'' Touchscreen (capacitive)
- All operating conditions at a glance
- Clear and handy Menu structure
- Easy adjustment per fingertip

FLEXLine – The intelligent humidifier generation



- Symbols for operation
 - operating conditions are displayed
- Symbols for the release
 - When Symbol is shines, Steam production is started
- Actual status display
 - Maintenance and error messages are displayed

FLEXLine – The intelligent humidifier generation



- Display
- Programming
- Current measuring \ Water level
- Terminal Pulse-width modulation & 0-10V
- Terminal auxiliary relay
- Cylinder high level \ thermal cut
- Main contactor
- Pump
- Solenoid valve
- Control switch
- CAN-Bus and 12V for extension boards

FLEXLine – The Humidifier for versatile applications



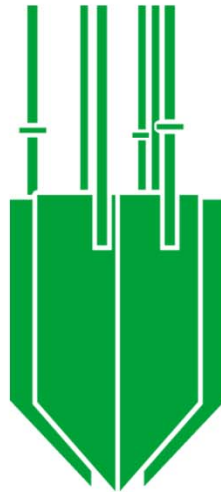
Versatile

FLEXLine – The Humidifier for versatile applications



- Performance Range
 - Electrode
 - 5 – 65 kg/h with single cylinder
 - 80 – 130 kg/h with double cylinder
 - Heating elements
 - 3 – 50 kg/h with single cylinder
 - 80 – 100 kg/h with double cylinder

FLEXLine – Electrode steam humidifier FLE



FLEXLine – Electrode steam humidifier FLE



- Overview Electrode units
 - 4 to 25 kg/h
 - single cylinders CY08 / CY17

Type	FLE05	FLE10	FLE15	FLE20	FLE25
Steam output [kg/h]	4,8-5,2	9,5-10,4	14,3-15,5	19,0-20,8	23,9-26,1
Electrical connection **	380-415V / 3 / 50-60Hz				
Electrical power [kW]	3,6-3,9	7,1-7,8	10,7-11,7	14,3-15,6	17,9-19,5
Power consumption	5,4	10,8	16,3	21,7	27,2
Fuse [A]	3 x 10	3 x 16	3 x 20	3 x 32	3 x 35
Control voltage	220-240V / 1 / N 50-60Hz				
Steam hose connection [mm]	HVAC: 1 x 25 / SPA 1 x 40			1 x 40	
Dimensions ***	CY8			CY17	
Height [mm]	535			695	
Width [mm]	540			540	
Depth [mm]	320			320	

FLEXLine – Electrode steam humidifier FLE



- Overview Electrode units
 - 30 to 65kg/h
 - single cylinders CY30 / CY45

Type	FLE30	FLE40	FLE50	FLE65
Steam output [kg/h]	28,5-31,2	38,1-41,7	47,8-52,2	62,0-67,5
Electrical connection **	380-415V / 3 / 50-60Hz			
Electrical power [kW]	21,4-23,4	28,6-31,3	35,9-39,2	46,3-50,6
Power consumption	32,5	43,5	54,5	70,4
Fuse [A]	3 x 40	3 x 50	3 x 63	3 x 80
Control voltage	220-240V / 1 / N 50-60Hz separat			
Steam hose connection [mm]	1 x 40	1 x 40 with Y	2 x 40 with Y	2 x 40
Dimensions ***	CY30		CY45	
Height [mm]	750		785	
Width [mm]	580		640	
Depth [mm]	355		420	

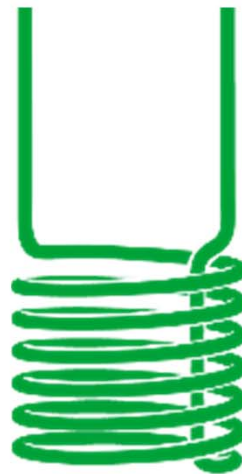
FLEXLine – Electrode steam humidifier FLE



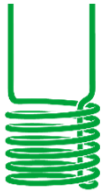
- Overview Electrode units
 - 80 to 130 kg/h
 - Double cylinders CY30 / CY45

Type	FLE80	FLE100	FLE130
Steam output [kg/h]	76,2-83,4	95,6-104,4	124,0-135,0
Electrical connection **	380-415V / 3 / 50-60Hz		
Electrical power [kW]	2 x 28,6-31,3	2 x 35,9-39,2	2 x 46,3-50,6
Power consumption	2 x 43,5	2 x 54,5	2 x 70,4
Fuse [A]	6 x 50	6 x 63	6 x 80
Control voltage	220-240V / 1 / N 50-60Hz separat		
Steam hose connection [mm]		4 x 40	
Dimensions ***	2 x CY30	2 x CY45	
Height [mm]	750	785	
Width [mm]	1090	1170	
Depth [mm]	355	420	

FLEXLine – Heater type steam humidifiers FLH



FLEXLine – Heater type steam humidifiers FLH



- Overview Heater type units
 - 03 to 25 kg/h
 - Single cylinder CY 08 / CY17

Type	FLH03	FLH06	FLH09	FLH15	FLH25
Steam output [kg/h]	2,7-3,3	5,5-6,5	8,1-9,7	13,7-16,4	22,7-27,1
Electrical connection **	220-240V / 1 / N 50-60 Hz	380-415V / 3 / 50-60 Hz			
Electrical power [kW]	2,1-2,5	4,1-4,9	6,1-7,3	10,3-12,3	17,1-20,4
Power consumption	9,4-10,2	10,7-11,7	16,0-17,5	15,7-17,1	25,9-28,3
Fuse [A]	3 x 16	3 x 16	3 x 20	3 x 20	3 x 35
Control voltage	220-240V / 1 / N 50-60 Hz				
Steam hose connection [mm]	HVAC: 1 x 25 / SPA: 1 x 40				1 x 40
Dimensions ***	CY8			CY17	
Height [mm]	535			695	
Width [mm]	540			540	
Depth [mm]	320			320	

FLEXLine – Heater type steam humidifiers FLH



- Overview Heater type units
 - 40 to 100 kg/h
 - Single/double cylinder CY 45

Type	FLH30	FLH40	FLH50	FLH80	FLH100
Steam output [kg/h]	27,4-32,7	36,5-43,5	45,5-54,3	73,0-87,0	91,0-108,6
Electrical connection **	380-415V / 3 / 50-60 Hz				
Electrical power [kW]	20,0-24,5	27,4-32,6	34,1-40,7	2 x 27,4-32,6	2 x 34,1-40,7
Power consumption	31,3-34,1	41,6-45,4	51,8-56,6	2 x 41,6-45,4	2 x 51,8-56,6
Fuse [A]	3 x 35	3 x 50	3 x 63	6 x 50	6 x 63
Control voltage	220-240V / 1 / N 50-60 Hz				
Steam hose connection [mm]	2 x 40			4 x 40	
Dimensions ***	CY45			2 x CY45	
Height [mm]	785			785	
Width [mm]	640			1170	
Depth [mm]	420			420	

FlexLine – The flexible humidifier for every application



Flexibility

HYGROMATIK[®]

FlexLine – The flexible humidifier for every application



HYGROMATIK

FlexLine – The flexible humidifier for every application



- Service indication operation hours
 - Service interval programmable
 - Acc. to steam amount produced
 - And / or time related
- Detailed Status information
 - Device status messages in clear text
 - Minimizes downtime
- Extended (preventive) maintenance messages
 - Unit recognizes deviations in the operating sequences
 - Maintenance messages is reported before a disruption occurs
 - Avoids damage and unplanned downtime

FlexLine – The flexible humidifier for every application



- Individual control strategy for Electrode Steam humidifiers
 - POWER: Energy optimized (128%),
 - MODERATE: Load optimized (113%),
 - PRECISION: Pump supports controlling process
- Data logger for recording values
 - More process reliability:
 - Recording and storing of different measured values via USB stick.
 - Data can be interpreted via Excel
- Storage for operation status with date and time
 - Status reports are stored with date and time.

FlexLine – Standardized with dead leg flushing!



- Function:
 - When the safety chain* is closed, the inlet valve and the blowdown pump are controlled simultaneously (without heating voltage) in adjustable time intervals.
- Use:
 - According to VDI 6022 (Germany), it is ensured that even in longer periods without demand, no contamination by standing water (bio film) in the feed line can occur.

*optionally also with open Safety chain,
Version with Superflush



HYGROMATIK[®]

FlexLine – Optionally with Superflush!

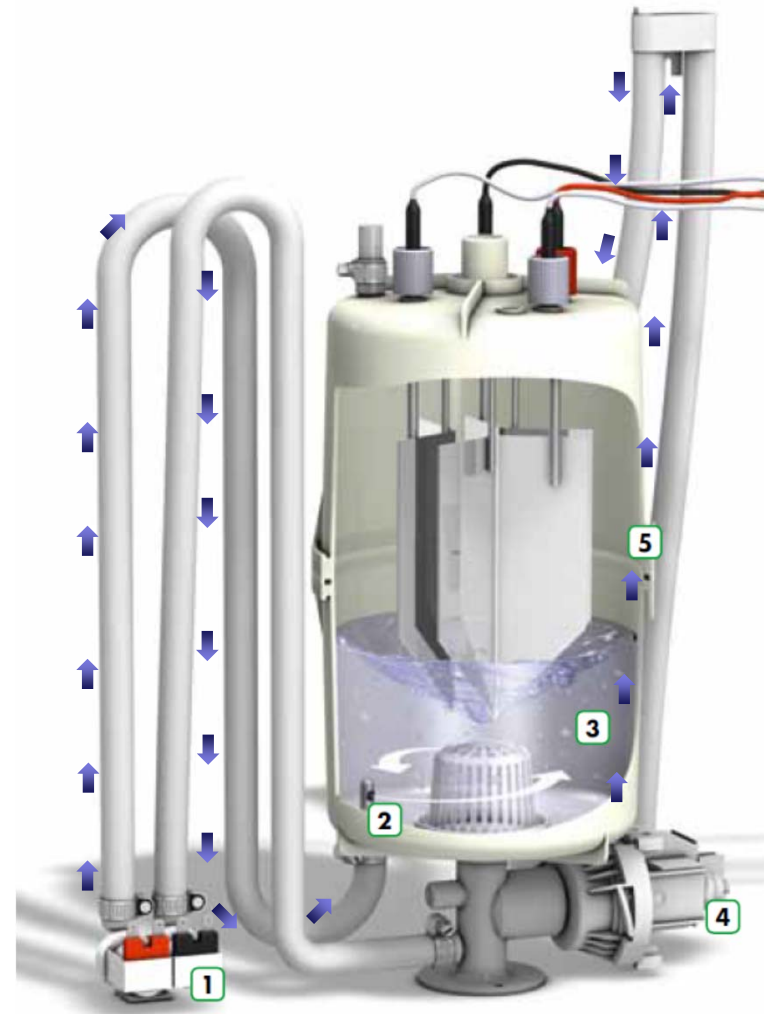


Function:

- Superflush inlet valve and blow-down pump are controlled simultaneously in adjustable time intervals.
- A pressure-intensified water jet swirls hardness

9.5	°dH (German degree of hardness, 10 mg CaO/l)
16.956	°fH (French degree of hardness, 10 mg CaCO ₃ /l)
11.896	°e (English degree of hardness, grain CaCO ₃ /gal(UK))
169.56	ppm (mg CaCO ₃ /l)
1.6941	mmol/l (millimol per litre)
3.3882	mval/l (millival per litre)
9.9051	gr/gal(US) (grain CaCO ₃ /gal(US))
95	mg CaO/l
169.56	mg CaCO ₃ /l
67.896	mg Ca ²⁺ /l
41.175	mg Mg ²⁺ /l

- Example: For a total hardness of 9.5 °dH/ (carbonate hardness 6.5 °dH), e.g. a doubling of the service life is achieved

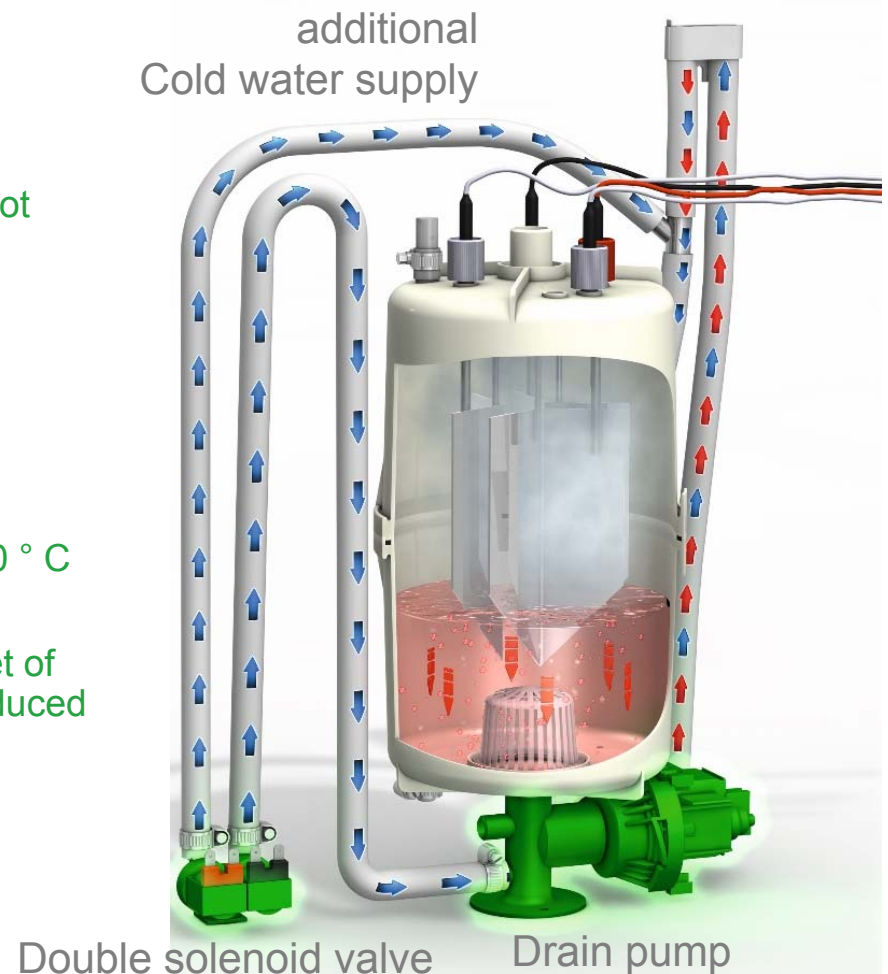


HYGROMATIK

FlexLine – DRAIN WATER COOLING Optionally!



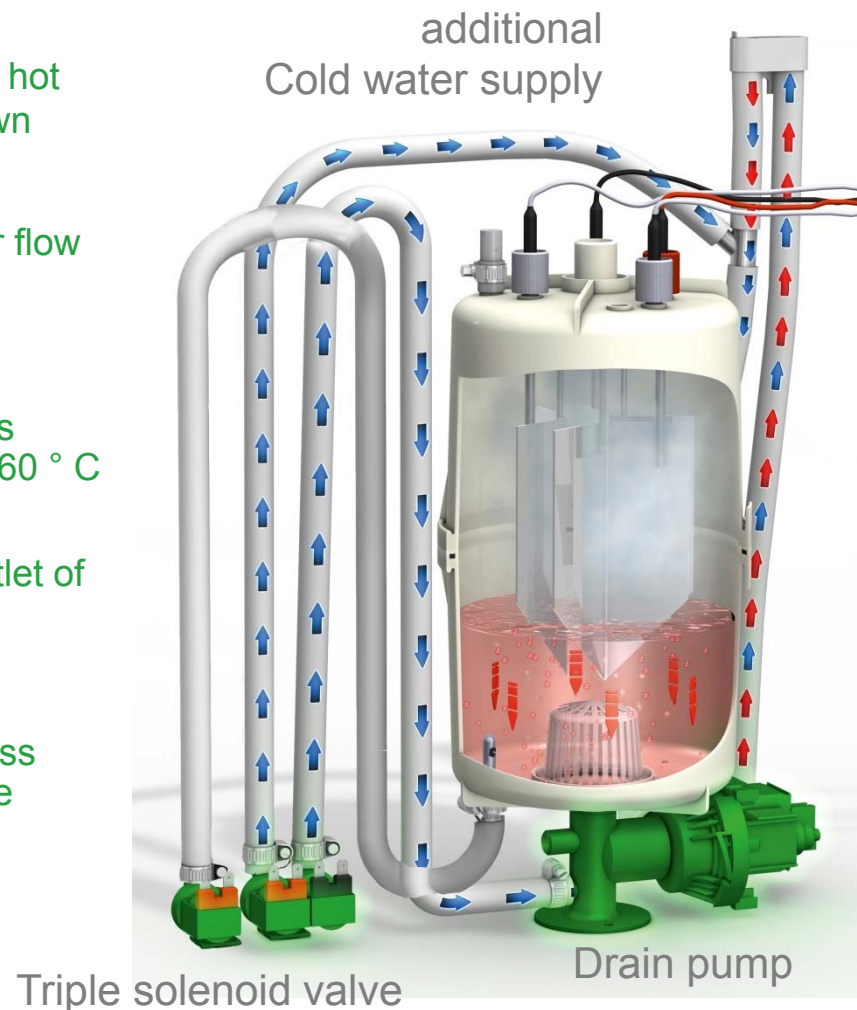
- Function:
 - Fresh cold water is added to the hot waste water during the blow-down process.
- Use:
 - The wastewater temperature is adjusted with HyCool to max. 60 ° C
 - Vapor formation in the free outlet of the discharge straightener is reduced



FlexLine – DRAIN WATER COOLING & SuperFlush combined, optionally



- Function:
 - Fresh cold water is added to the hot waste water during the blow-down process.
 - Cylinder is flushed with a higher flow rate during the drain cycle
- Use:
 - The wastewater temperature is adjusted with HyCool to max. 60 ° C
 - Vapor formation in the free outlet of the discharge straightener is reduced
 - Additional reduction of hardness deposits, i.e. longer service life



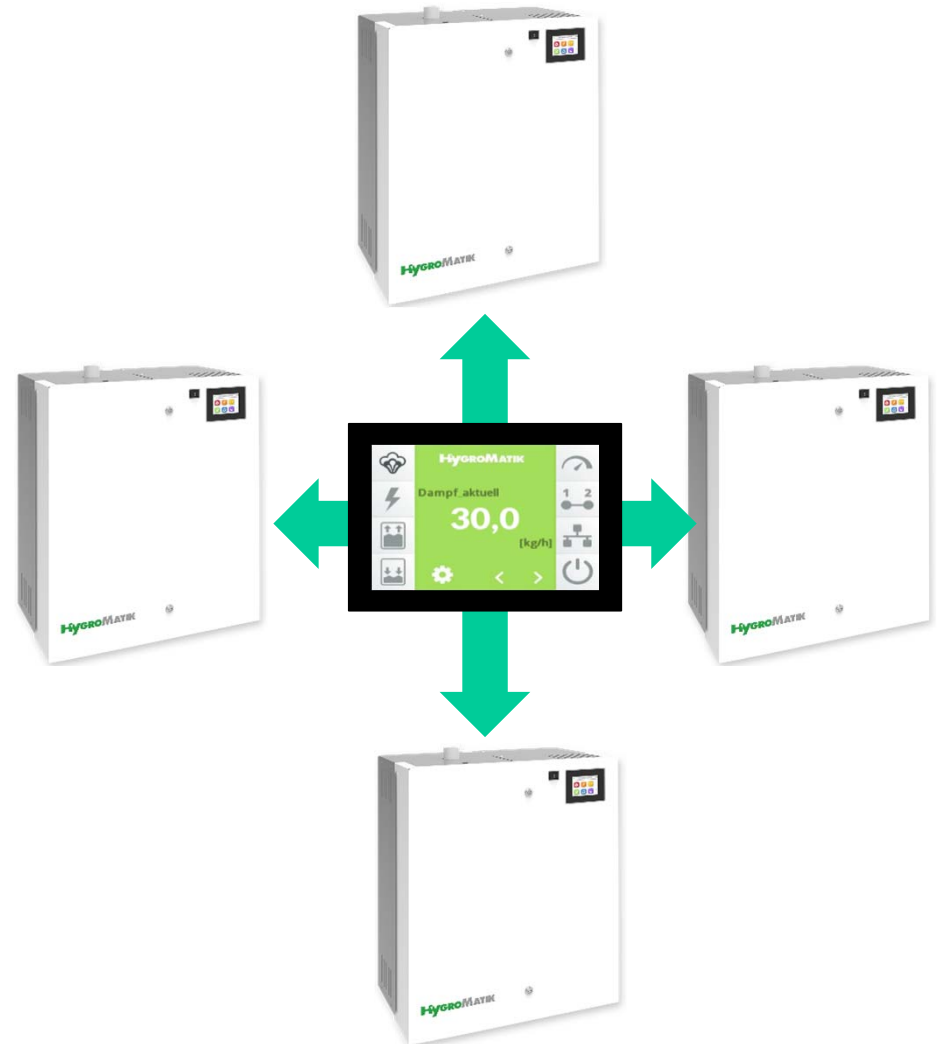
HYGROMATIK

FlexLine – flexible operating concept



Intelligent Multi Unit Operation Management (*scheduled for Q3/18*)

- optimal utilization of the equipment
- Redundancy during maintenance
- Distribution of the steam loads is possible.

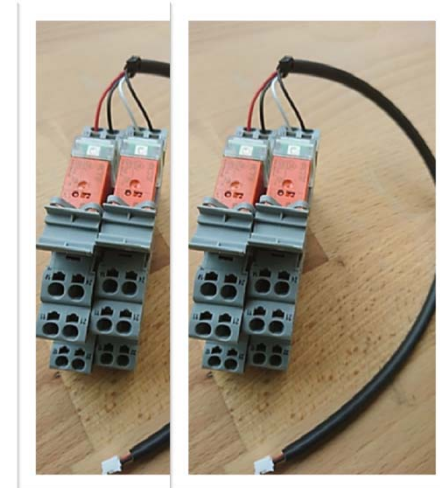


HYGROMATIK

FlexLine – Flexible, Intelligent and Efficient



- Versatile expansion options for triggering functions or displaying operating conditions
 - Up to 2 x 2 relays can be connected
 - Up to 53 different functions can be allocated, status, fault message, control (light, perfume ..)
 - Clear colors / signals / symbols can be assigned
 - For example for active or passive mode.



FlexLine – Flexible, Intelligent and Efficient



- Versatile expansion options for triggering functions or displaying operating conditions
 - Extension board with
 - 3 configurable relays
 - 1 digital input
 - Input for voltage (V), current (mA), resistance (Ω)
 - Up to 53 different functions can be allocated, status, fault message, control (light, perfume ..)
 - Clear colors / signals / symbols can be assigned



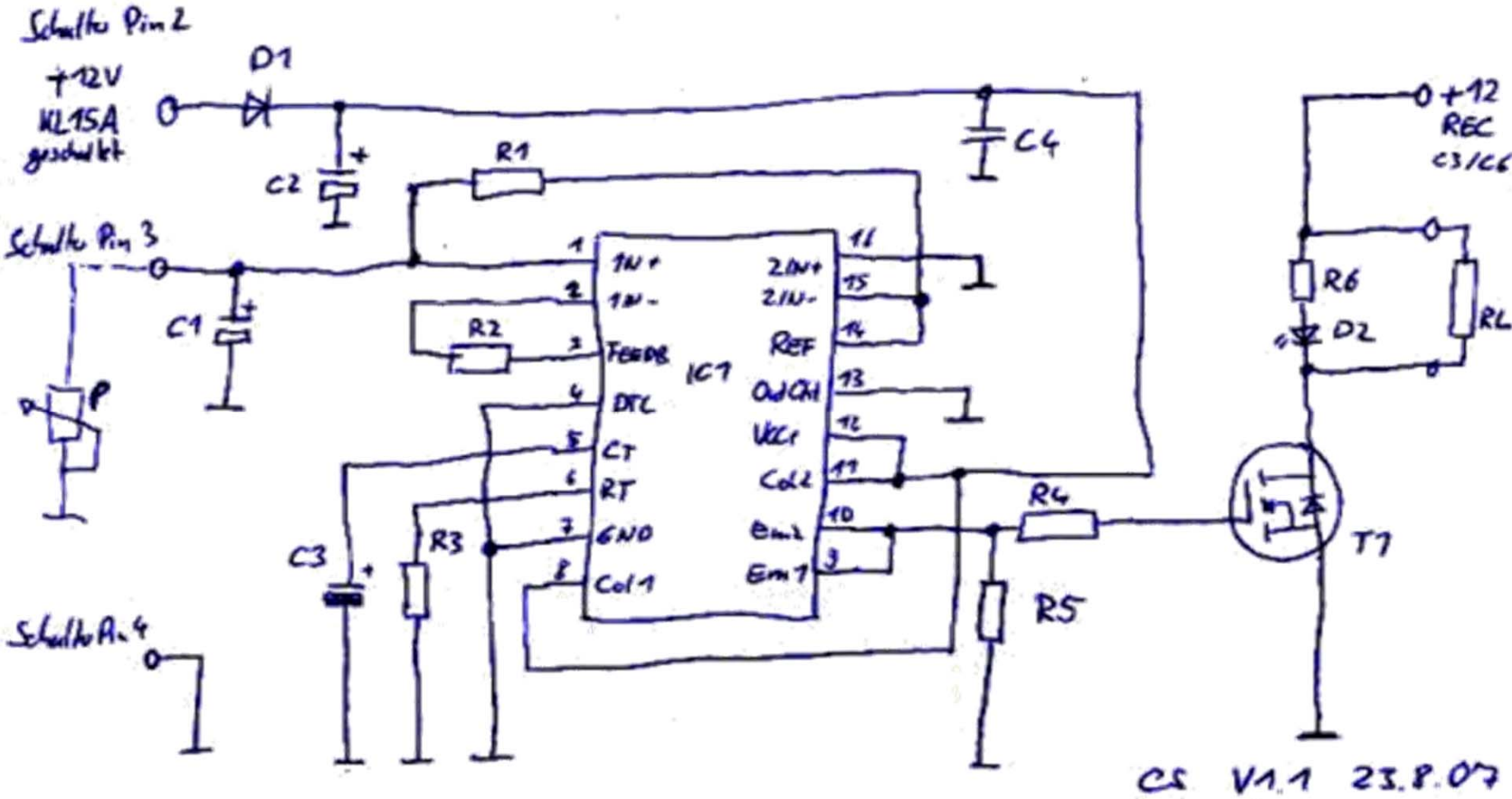
FlexLine – Flexible, Intelligent and Efficient



- Offshore, Power plants, cruise ships,
 - Special voltages 200V to 690V
 - Insulation resistance up to 50M Ω



FlexLine – Flexible and integrative in the inclusion



FlexLine – Flexible and integrative in the inclusion



- 1-step via safety chain and control input
 - Power control at resistive units using solid state relays is still possible.
- Digital input
 - programmable input for triggering software functions. The entrance is equipped with a low voltage, safe when touched.
- Modulating control via second input signal
 - By connecting a continuous max. Limiter, the r.h. supply is optimally controlled.
- Modulating control with humidity sensor & analog Set point specification
 - The adjustment of the requested humidity is possible from the room itself, does not have to be done at the display.
- BacNet MS/TP (Master-Slave/Token-Passing) and Modbus RTU (Remote Terminal unit)
 - BacNet MSTP respectively Modbus RTU are included in the Software.

5. Energy efficient



5. Energy efficient



- Load shedding (refer to Digital input) – when it gets tight in the electrical net
 - Device reduces its maximum power upon request; steam production continues in emergency operation
- ECO-Mode
 - „Active "Energy Saving: unit runs in" standby "at a reduced relative humidity
 - Internal Software Controller has to be activated
- Timer-Function Steam / ECO
 - Various timer functions can be implemented flexibly. Example Coin counter: The coin is inserted - the device runs for a predefined period.