HygroMatik®

member of CAREL group CAREL

Constant air humidity

FlexLine heater type steam humidifiers

Plus and Process

For stable processes in industry





Precision and process humidification in a modular system

FLEXLINE
PLUS AND PROCESS

HIGHEST QUALITY AND PRECISION
THROUGH CONTROLLED AIR HUMIDITY

A stable and controlled room climate is indispensable for many production processes. Fluctuations in air humidity and especially excessively dry air have a massive influence on the raw materials used, on their processing capabilities and ultimately also on the quality of the end products.

HygroMatik **FlexLine Plus** and **Process** heater steam humidifiers have been developed especially for use in precision and process humidification, in sensitive areas of industrial production as well as for the stabilization of the relative air humidity in laboratories and research facilities.

Advantages for the operator

- Precise control and reliable stabilization of humidity in the ambient and room air
- Increased process efficiency by reducing errors and failures
- Increased productivity and product quality
- Protection against dangerous electrostatic discharges
- Healthy and pleasant working environment for employees

MAXIMUM FLEXIBILITY
THAT PAYS FOR ITSELF

As part of the **FlexLine series,** a modern generation of steam humidifiers, the units can be flexibly expanded from a basic model with appropriate options. Every humidifier can thus be optimally adapted to the individual requirements of a project.

Advantages for project planning

- Reduction of installation complexity by means of individual pre-configuration ex factory
- Optimum connection to the building management system
- Optionally Modbus or BacNet
- Retrofittable with optional expansion options
- You only invest in the functions you really need



THE OPTIMAL
HUMIDIFICATION PERFORMANCE

Equip the HygroMatik **FlexLine Plus** and **Process** with the power you need for optimum humidification performance. There are seven output classes from 9 to 115 lbs/hr steam output in one unit size to choose from. In addition, individual performance adjustments can be programmed both at the factory and on site. Higher humidification performance is achieved by connecting units together.

MANY OPTIONS
FOR INDIVIDUAL CONFIGURATION

The respective basic model of the FlexLine is the basis for all other configuration options. Thanks to their individual equipment, HygroMatik **FlexLine Plus** and **Process** can be adjusted to the requirements of various industrial and process control applications and equipped with a wide range of options so that they optimally meet every project requirement. These options can also be retrofitted as needed.

Example options

- HyCool (integrated waste water cooling)
- Extended reporting functions

A safe investment

HIGH-QUALITY, DURABLE AND LOW-MAINTENANCE

THE ROBUST STAINLESS STEEL CYLINDERS – HIGH QUALITY AND HYGIENICALLY CLEAN

In some application areas, such as hospitals or other medical areas, stainless steel cylinders are sometimes preferred. The stainless steel cylinders of HygroMatik **FlexLine Plus** and **Process** generate hygienic, mineral free steam and are designed accordingly for these applications.

- The **stainless steel split cylinders** can be opened easily and cleaned without chemicals
- The **robust heater mounting** allows for simple and fast installation and removal of the heating elements
- Available in two cylinder sizes with **volumes attuned to the humidification capacity**

COMPACT AND LOW-MAINTENANCE

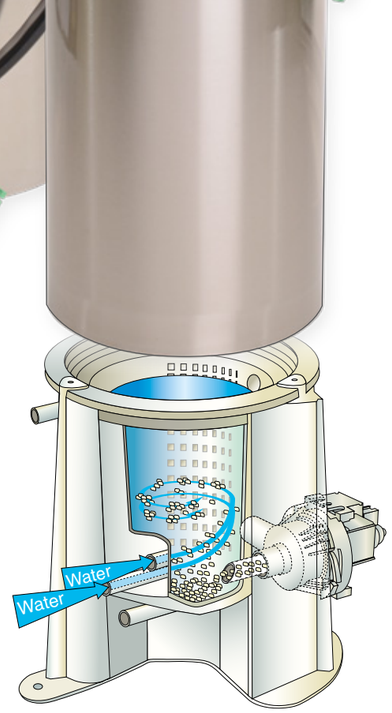
When operated with softened or tap water, the minerals and salts contained in the water precipitate. These deposits are stirred up by the **integrated rinsing and mineral collection system** during partial blowdown and removed by the **powerful blowdown pump.** The amount of particles accumulated in the strainer is thus significantly reduced.

- **Robust removable strainer** allows easy removal of accumulated solids
- The combined rinsing and mineral collection system is integrated in the unit and ensures **compact dimensions** for HygroMatik FlexLine Plus and Process
- Plug connections, cylinder clamping ring and steam hose adapter enable **fast and easy maintenance**



Small cylinder
(FLP05 - FLP25)

Large cylinder
(FLP30 - FLP50)



Integrated rinsing and
mineral collection system

DURABLE AND SAFE

HygroMatik **FlexLine Plus** and **Process** units heat the water with the aid of one, three or six resistance heaters in the stainless steel cylinder according to the immersion heater principle. The heaters are made of **highly corrosion-resistant Incoloy825** (chrome-nickel-molybdenum alloy) and therefore extremely durable. The mechanical overheating protection of the heaters together with the electronic proportional level control provide double protection.



Resistor type heater elements
in highly corrosion-resistant alloy

ROBUST AND EFFICIENT

HygroMatik **FlexLine Plus** and **Process** have been developed, like all our products, for particularly long operating times. The units are characterized by technologies that, in addition to the maintenance effort, minimize the wear of unit components and use energy and resources in a highly efficient manner.

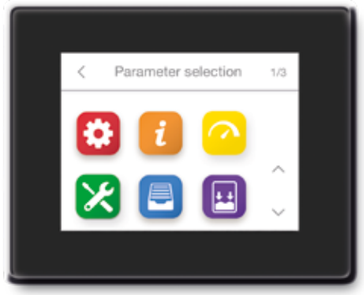
- **Extremely durable:** All FlexLine cabinets and cylinders are made of corrosion-resistant stainless steel; the powder coating of the cabinet further increases the durability and offers optimum occupational safety
- Heater steam humidifier with robust, contactless and therefore **wear-free level control**
- **Robust blowdown pump** for removing minerals to ensure long operating life cycles and low maintenance requirement
- **Adjustable load shedding** between 25 and 100% for temporary or permanent adjustment of the operation to the respective load conditions



Robust blowdown pump

Benefit from extensive functions

COMFORTABLE, INTELLIGENT AND SAFE



EXCELLENT EASE OF OPERATION

All HygroMatik **FlexLine Plus** and **Process** units are equipped with a capacitive 3.5“ touch display. Operation and programming is made via a flat and intuitive menu structure analogous to modern smartphone logic. In addition to this, subsequent software updates are quickly and easily possible via USB stick.

- At a glance comprehensible pictographs provide information on the operating condition
- Simple and fast navigation
- Information and system messages are displayed as plain text
- Readout of service messages with date and time
- Integrated real-time clock

INTELLIGENT AND RESPONSIVE

The control and regulation technology of HygroMatik **FlexLine Plus** and **Process** units offers extensive possibilities that are simple and easy to operate.

- **Numerous control and reporting functions can** be assigned to up to 11 relays depending on the unit
- Freely programmable, overload-protected **digital input**
  - » Load shedding: power limitation in the event of network overload or emergency power operation
  - » Blow-down on external request for specific operating conditions
  - » Stand-by mode: pre-heating by remote activation for a quick response time
- **Integrated communication protocol** Modbus RTU or BACnet

SAFETY AND SERVICE

We have equipped the HygroMatik **FlexLine Plus** and **Process** units with intelligent service functions for operational safety. These provide a high level of safety, reliability, control and comfort.

- **Reliable:** Preventive maintenance through permanent monitoring and intelligent evaluation of operating parameters can avoid unplanned downtimes
- **Convenient:** Detailed messages enable deviations to be identified and rectified more quickly
- **Simple:** The diagnostic mode can be started directly via the touch display without commissioning the unit completely
- **Flexible:** Service intervals can be calculated by the unit according to time as well as the amount of steam produced



All in the green zone

Robust and durable cabinet

Reusable stainless steel steam cylinders

Long and flexible service intervals

High resource efficiency

Maximum control accuracy for highest precision

FLEXLINE PROCESS

PRECISION IN PERFECTION

The HygroMatik **FlexLine Process** units are the solution for all applications in which constant humidification values are decisive for quality, for example the humidification of demanding production processes. Other common applications are test benches which require exact and constant reproducible ambient conditions for valid results.

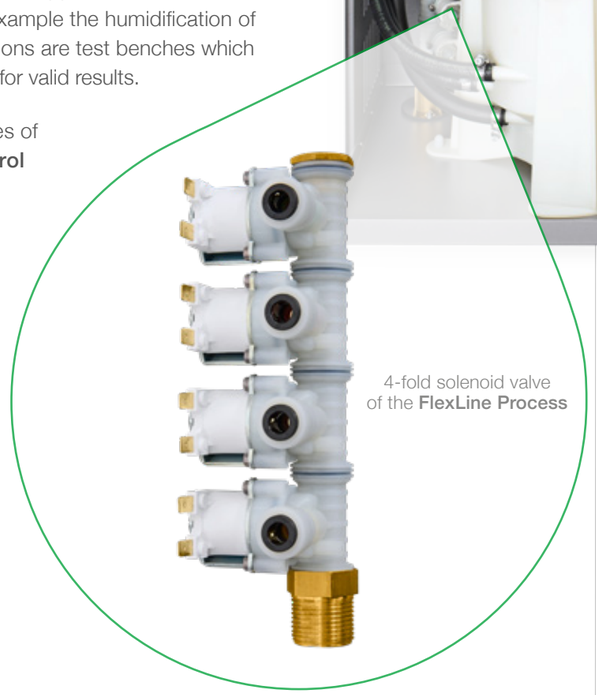
The HygroMatik **FlexLine Process** offers all the advantages of FlexLine Plus and supplements them with **increased control accuracy of up to +/- 0.5%.** To achieve this, the FlexLine Process is operated exclusively with fully demineralized water and therefore runs almost maintenance-free and without interruption.

The **4-fold solenoid valve** is responsible for precision control which ensures continuous and steady feeding of the water into the cylinder without interruption.

Another important feature is the additional analogue input for connecting a **second humidity sensor.**

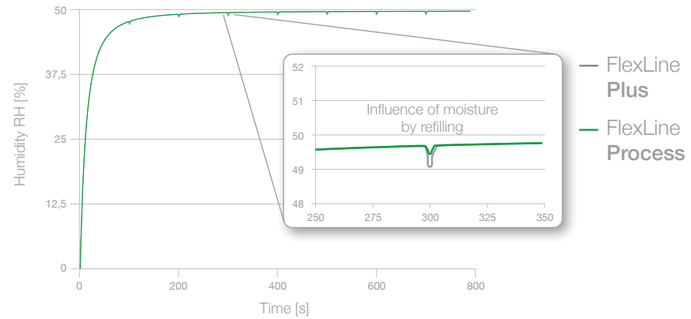
This enables **sliding maximum limitation.** This means that the steam output adapts smoothly to the maximum value and interruptions caused by switching off steam production are avoided.





4-fold solenoid valve of the **FlexLine Process**

FLEXLINE PLUS AND PROCESS
IN A DIRECT COMPARISON



Moisture profile in operation with purified water *

Comparison of equipment and options

	FlexLine **Plus**	FlexLine **Process**
Control accuracy	Up to +/- 1%	Up to +/- 0.5%
Water quality	Fully demineralized water, cleaned condensate, partially softened water, tap water of different qualities	Fully demineralized water
SuperFlush	Integrated	Not necessary
Solenoid valve	2-fold or 3-fold	4-fold
Digital inputs (standard)	1	2
Analogue inputs (standard)	1	2
Optional relay functions	Up to 11	Up to 8

* Measuring point directly after 2.5 x humidification distance

FlexLine Plus technical data

A higher humidification performance is possible by connecting units together.

Electrical supply [1]	Type	FLP05	FLP08	FLP15	FLP25	FLP30	FLP40	FLP50
208-240 VAC / 1 / N / 50-60Hz	Steam output [kg/h]	4.1-5.5						
	Steam output [lbs/h]	9.0-12.1						
	Rated power [kW]	3.1-4.1						
	Rated current [A]	14.9-17.2						
208-240 VAC / 3 / 50-60Hz	Steam output [kg/h]	4.1-5.5		12.4-16.6				
	Steam output [lbs/h]	9.0-12.1		27.3-36.5				
	Rated power [kW]	3.1-4.1		9.3-12.4				
	Rated current [A]	14.9-17.2		25.9-29.9				
440-480 VAC / 3 / 50-60Hz	Steam output [kg/h]	4.6-5.5	7.7-9.1	13.9-16.6	23.1-27.4	27.8-33.1	37.0-44.0	43.7-52.0
	Steam output [lbs/h]	10.1-12.1	16.9-20.0	30.6-36.5	50.8-60.3	61.2-72.8	81.4-96.8	96.1-114.4
	Rated power [kW]	3.5-4.1	5.8-6.9	10.4-12.4	17.3-20.6	20.9-24.8	27.7-33.0	32.8-39.0
	Rated current [A]	7.9-8.6	13.1-14.3	13.7-14.9	22.7-24.8	27.4-29.9	36.4-39.7	43.0-46.9
575-600 VAC / 3 / 50-60Hz	Steam output [kg/h]	3.8-4.2	6.4-6.9	11.5-12.6	19.1-20.8	23.1-25.1	30.7-33.4	39.5-43.0
	Steam output [lbs/h]	8.4-9.2	14.1-15.2	25.3-27.7	42.0-45.8	50.8-55.2	67.5-73.5	86.9-94.6
	Rated power [kW]	2.9-3.1	4.8-5.2	8.7-9.4	14.3-15.6	17.3-18.8	23.0-25.0	29.6-32.2
	Rated current [A]	5.0-5.2	8.3-8.7	8.7-9.1	14.4 - 15.0	17.4-18.1	23.1-24.1	29.7- 31.0

Number of cylinders	1				
Control type	FlexLine mainboard with capacitive 3.5“ touch color display				
Internal control voltage	208-240V / 50-60Hz				
Steam hose connection [mm]	1 x DN 40 ID [2]		1 x DN 40 ID	2 x DN 40 ID [3]	2 x DN 40 ID
Steam hose connection [in]	1 x 1.6 ID [2]		1 x 1.6 ID	2 x 1.6 ID [3]	2 x 1.6 ID
Empty weight [kg/lbs]	32 / 70.6	35 / 77.2		41 / 90.4	
Operating weight [kg/lbs]	47 / 103.6	50 / 110.2		71 / 156.5	
Dimensions [4]					
Height [mm/in]	855 / 33.7				
Width [mm/in]	650 / 25.6				
Depth [mm/in]	380 / 15.0				
Water installation	Fully demineralized water / cleaned condensate: 1-10 bar / 14.5-145 PSI, with 3/4“connection Partially softened water / tap water of varying qualities: 1-10 bar / 14.5-145 PSI, for 3/4” external thread				

We reserve the right to make technical changes.

(1) Other voltages upon request.
(2) Reducer DN40/DN25 included.
(3) Incl. Y piece DN 40.
(4) External width and depth dimensions. Height including drainage nozzles.

FlexLine Process technical data

A higher humidification performance is possible by connecting units together.

FLP05-TPRO	FLP08-TPRO	FLP15-TPRO	FLP25-TPRO	FLP30-TPRO	FLP40-TPRO	FLP50-TPRO
4.1-5.5						
9.0-12.1						
3.1-4.1						
14.9-17.2						
4.1-5.5		12.4-16.6				
9.0-12.1		27.3-36.5				
3.1-4.1		9.3-12.4				
14.9-17.2		25.9-29.9				
4.6-5.5	7.7-9.1	13.9-16.6	23.1-27.4	27.8-33.1	37.0-44.0	43.7-52.0
10.1-12.1	16.9-20.0	30.6-36.5	50.8-60.3	61.2-72.8	81.4-96.8	96.1-114.4
3.5-4.1	5.8-6.9	10.4-12.4	17.3-20.6	20.9-24.8	27.7-33.0	32.8-39.0
7.9-8.6	13.1-14.3	13.7-14.9	22.7-24.8	27.4-29.9	36.4-39.7	43.0-46.9
3.8-4.2	6.4-6.9	11.5-12.6	19.1-20.8	23.1-25.1	30.7-33.4	39.5-43.0
8.4-9.2	14.1-15.2	25.3-27.7	42.0-45.8	50.8-55.2	67.5-73.5	86.9-94.6
2.9-3.1	4.8-5.2	8.7-9.4	14.3-15.6	17.3-18.8	23.0-25.0	29.6-32.2
5.0-5.2	8.3-8.7	8.7-9.1	14.4 - 15.0	17.4-18.1	23.1-24.1	29.7- 31.0

1					
FlexLine mainboard with capacitive 3.5“ touch color display					
208-240V / 50-60Hz					
1 x DN 40 ID [2]		1 x DN 40 ID	2 x DN 40 ID [3]	2 x DN 40 ID	
1 x 1.6 ID [2]		1 x 1.6 ID	2 x 1.6 ID [3]	2 x 1.6 ID	
32 / 70.6	35 / 77.2		41 / 90.4		
47 / 103.6	50 / 110.2		71 / 156.5		
855 / 33.7					
650 / 25.6					
380 / 15.0					
Fully demineralized water: 1-10 bar / 14.5-145 PSI, with 3/4“connection					



Our service for 100% customer satisfaction

- Simple ordering process and short delivery times
- Long availability of replacement parts
- Technical hotline +49 4193 895-293 or hotline@hygromatik.com
- HygroMatik distributes in more than 45 countries
- Operating manuals, planning data and information on workshop events available online at www.hygromatik.com

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