

HygroMATIK®

member of CAREL group

CAREL

Heater type steam humidifiers

Precision and process humidification

FlexLine Plus

for the highest standards of hygiene and quality



Process humidification in hygienically sensitive areas

FLEXLINE PLUS STEAM HUMIDIFIER

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

For applications requiring increased control accuracy, such as in clean rooms, the **FlexLine Plus Process (TPRO)** offers the right solution.

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** steam humidifiers 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 underlying model of the FlexLine Plus forms the basis for all further configuration options. **With over 100 possible combinations of additional options**, HygroMatik FlexLine Plus steam humidifiers can be individually adapted to the requirements of various industrial and process control applications. The wide range of options allows specific components to be configured to optimally meet any project requirement, e.g. **HyCool** (integrated waste water cooling) or extended reporting functions. If necessary, some of these options can also be retrofitted.



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** steam humidifiers 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 steam humidifiers
- Plug connections, cylinder clamping ring and steam hose adapter enable **fast and easy maintenance**

When operated **with demineralized water**, the build-up of scale is kept to a minimum, which allows for a significantly longer operating period between maintenance intervals.



DURABLE AND SAFE

HygroMatik **FlexLine Plus** steam humidifiers 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** (titanium-stabilised nickel-iron-chromium 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** steam humidifiers 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.

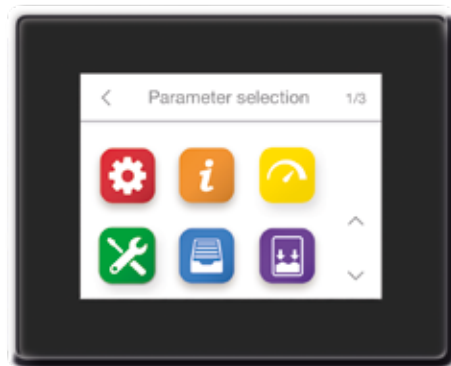
- **Extremely durable:** All FlexLine cabinets and cylinders are made of corrosion-resistant stainless steel; the powder coating of the cabinet further increases the durability and offers optimum occupational safety
- Heater steam humidifier with robust, contactless and therefore **wear-free level control**
- **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** steam humidifiers 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** steam humidifiers 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** steam humidifiers 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 PLUS PROCESS (TPRO)

The HygroMatik **FlexLine Plus 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.

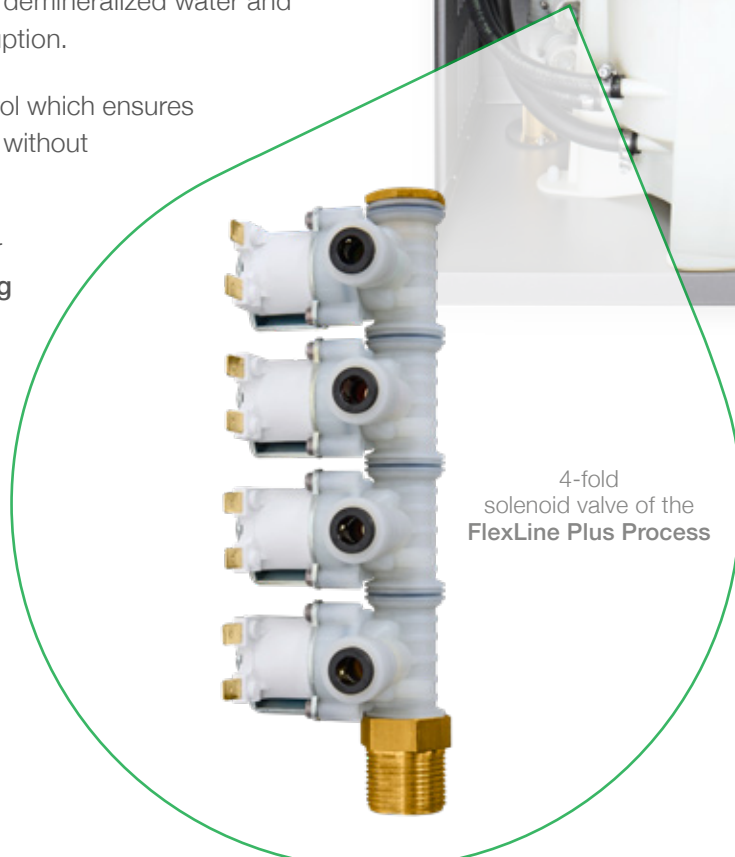
The HygroMatik **FlexLine Plus Process** offers all the advantages of FlexLine Plus and supplements them with **increased control accuracy of up to +/- 0.5%**. To achieve this, the FlexLine Plus Process is operated exclusively with demineralized water and therefore runs almost maintenance-free and without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

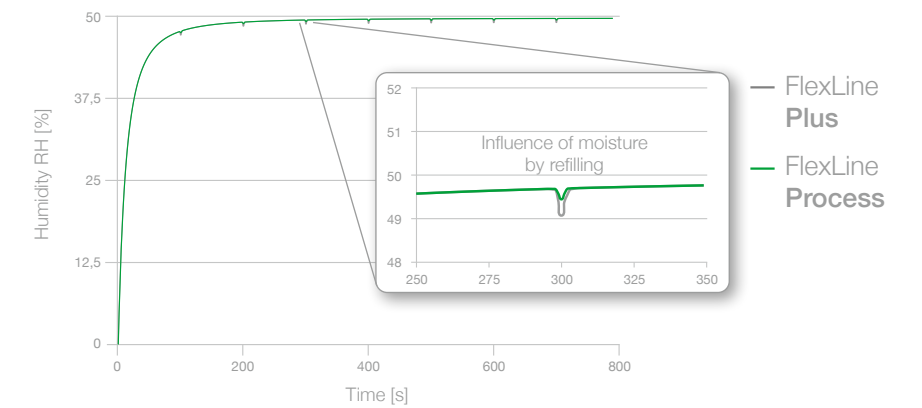
Another important feature is the additional analogue input for connecting a **second humidity sensor**. This enables **sliding maximum limitation**. This means that the steam output adapts smoothly to the maximum value and interruptions caused by switching off steam production are avoided.

The FlexLine Plus Process can be equipped with the **'wide range control' option** ex works. This gives you controllable power reduction to lower the heating power when requirements are low, below 33%. Control accuracy is tripled in this range, allowing the humidifier to control even significantly lower outputs very precisely.

The wide-range control thus reduces **the smallest controllable steam output by 300%** compared to a standard humidifier.



FLEXLINE PLUS FLEXLINE PLUS PROCESS IN A DIRECT COMPARISON



Moisture profile in operation with purified water *

Comparison of equipment and options

	FlexLine Plus	FlexLine Plus Process
Control accuracy	up to +/- 1%	up to +/- 0.5%
Water quality	demineralized water, cleaned condensate, partially softened water, tap water of different qualities	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	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 Plus Process (TPRO) 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						
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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