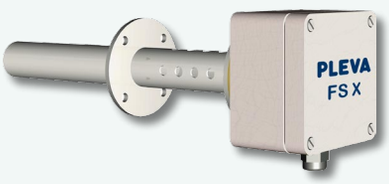
PLEVA
Sensors and Controls

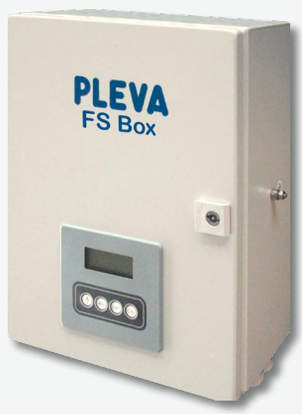
Air humidity

measurement and control
for exhaust humidity • climate humidity
and energy saving

FS

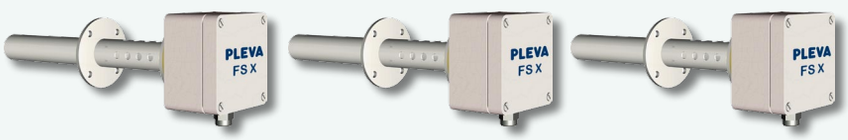


Air humidity sensor FSX

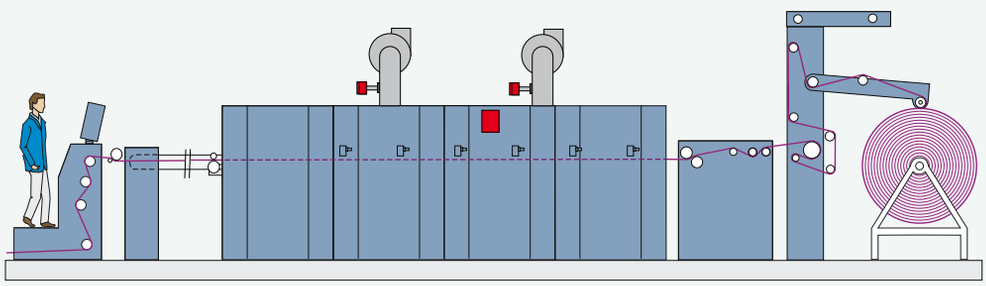


PLEVA FS Box

Air humidity



up to 3 set of air humidity sensors FSX at one box



PLEVA

Air humidity sensor

Air humidity measurement for reduced energy consumption

Type FSX ST
Type FSX HT

FEATURES OF PRODUCT

- Reliable measurement in the dryer at high temperatures
- Wide measuring range
- Requires no maintenance
- Strongest sensor for highest lifetime

BENEFIT FOR CUSTOMER

- Great effect in energy saving
- High fabric quality by constant humidity
- Short payback time

Application

Drying is a highly energy intensive process. A high percentage on the cost of a dryer are spent on energy. Minimization of energy consumption and reduction of energy cost must be given the highest priority in every production plant.

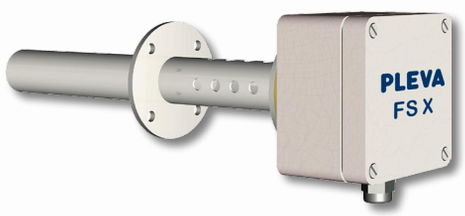
At same time the control of humidity guarantees a constant drying climate. It maintains the quality of the dried material at a consistently high level. Textiles for example, get a comfortable touch. Constant humidity is just as important when conditioning fabrics with high humidity.

Sensor

The differential sensor system for air moisture measurement with two heated electrodes is fitted into a stainless steel tube with a preamplifier in the connector head.

One of this electrodes is subject to the process air, the other is subject to the room air. The sensor gives off a determinated voltage signal depending on the humidity of the air. This signal is processed in the measuring preamplifier for further processing by the process box.

The new sensor FSX is equipped with integrated controlled heating, improved accuracy and large measuring range.



Sensor type FSX ST

FSX sensor types

- Type FSX ST: 0 .. 1000 g/kg, max. process air temperature 250 °C
- Type FSX HT: 0 .. 90 °C dew point, max. process air temperature 600 °C

Optimal humidity at drying process

Circulation air loaded with humidity is a perfect energy transfer medium. The most efficient humidity range in the dryer is between 80..130 g/kg water per kg air, corresponding to 11..18 Vol % for drying temperatures between 130 °C and 160 °C.

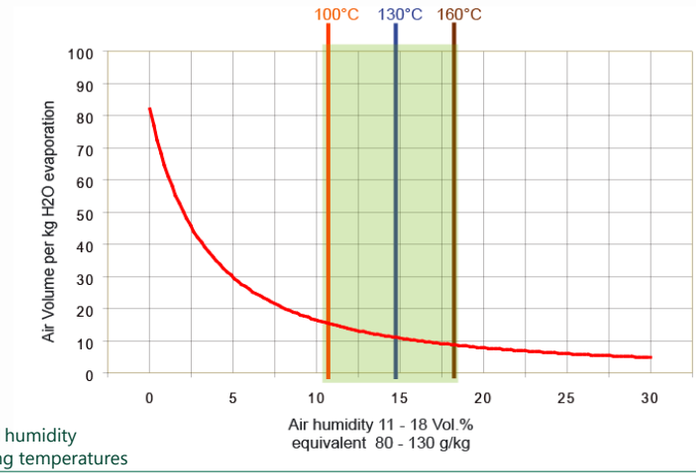


Table of optimal humidity
at different drying temperatures

Air humidity sensor FSX
installed at dryer

Air humidity sensor FSX
installed in exit tube

FS Box for multiple air humidity sensors

PLEVA FS Box

The new PLEVA FS Box series 600 is designed to connect up to 3 set of air humidity sensors FSX to one micro processor box fitted outside of heat treatment machine.

Different outputs of the FS Box are adjustable by the integrated keypad. The absolute air humidity values can be indicated in g/kg, °C dew point or Vol. % of H_20.

The box has compatible mounting dimensions to previous panel.

PLEVA FS Box series 600

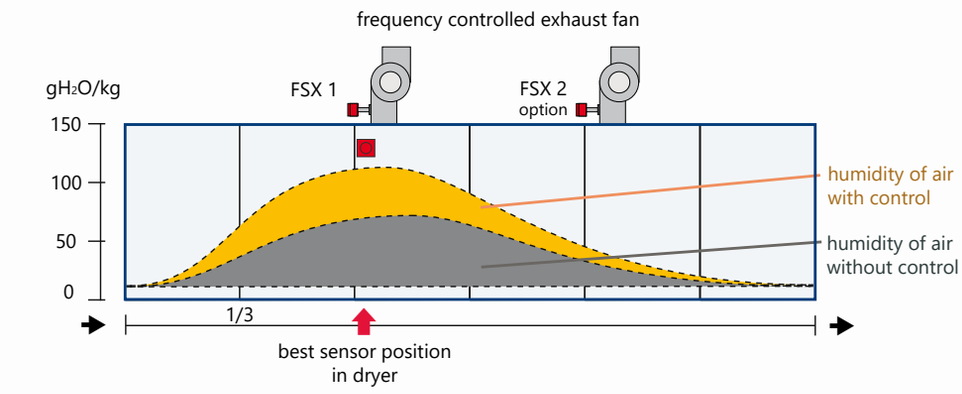
Mode of operation

Drying process consume a lot of energy. Large amount of hot air are required in order to remove the vaporized water (humidity).

The measurement and control of the humidity in the dryer allows to load the air to an optimum degree with water vapour (humidity). The higher the humidity, the smaller the quantity of exhaust air and with that the smaller energy consumption.

With a control unit the air quantity is controlled as a function of humidity in the air by frequency-controlled fans or exhaust flaps.

Our control systems are equipped with regulating functions to ensure optimal energy consumption at each dryer. Alternative we can provide individual controllers.



Humidity distribution in a tenter

Areas of Application

- Stenter frame (textile, carpet)
- Dryer for tubular fabric
- Printing machine
- Sizing machine with energy saving dryer
- Heat-setting for carpet yarns
- Drying hood for paper-making machine
- Flat surface dryer (building slabs, cardboard, wooden boards)
- Dryer for webs of endless fabric (leather fibre, foamed material)
- Backing oven
- Conditioning with high humidity

FS Box
installed outside at dryer

PLEVA FS Box

Type FS Box series 600

FEATURES OF PRODUCT

- Connection of up to 3 FSX sensors at one box
- Latest state of processor technology and improved EMC protection
- Compatible mounting dimensions with previous panel

BENEFIT FOR CUSTOMER

- Economical price for sensor package
- One process box for multiple sensors reduces installation works
- Reduced wiring and cable costs

FS

Air humidity sensor

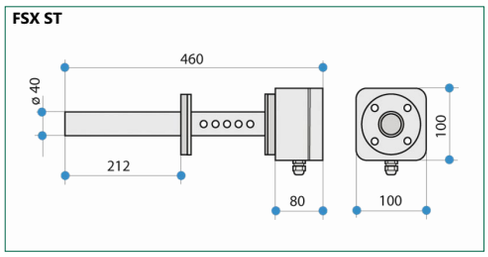
Type FSX ST
Type FSX HT

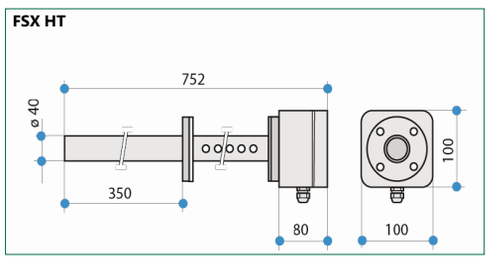
PLEVA FS Box

Type FS Box series 600

Accessories

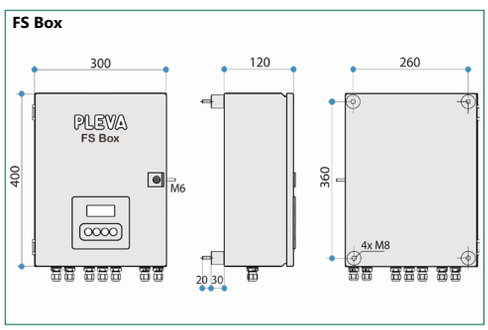
Technical Data





Sensor FSX

Process air temperature:	Type FSX ST: max. 250 °C Type FSX HT: max. 600 °C
Temperature of sensor:	> 700 °C
Heating-up time for sensor:	approx. 20 min
Measuring range sensor:	FSX ST: 0 .. 1000 g/kg FSX HT: 0 .. 90 °C DP
selectable on FS Box:	free scaling
Ambient temperature for instrument preamplifier:	max. 70 °C
Power supply:	24 V DC (+/- 10 %)
Power consumption:	max. 24 VA, max. 1.0 Amps.
Weight sensor FSX ST:	approx. 2.6 kg
Weight sensor FSX HT:	approx. 3.8 kg



PLEVA FS Box

Sensors maximal:	3x FSX
Ambient temperature:	max. 50 °C
Power supply:	24V DC (+/- 10%)
Power consumption:	40 VA, max. 90 VA (3x FSX)
Current:	1.6 Amps. max. 3.8 Amps
Communication:	RS485 serial
Protocols:	MODBUS, PLEVA, MININET
Analogue outputs: (with board MP1)	3 signals 0/4 .. 20mA (isolated)
Weight approx.:	10 kg

Accessories optional

- **Special filter** for silicon in air circulation
- **Frequency inverter** for exhaust air fans
- **Slatted regulating flaps** in any rectangular dimensions

Available machines, measuring and control systems for different applications

- **StraightLiner** for high-tech automatic straightening
- **StructureDetector** for distortion analysis, pick/course density and width measurement
- **Add'nDry** for coating, drying and heat-treatment processes with multiple sensors
- **Dens'nDry** for drying and fixation processes and pick/course density
- **DrumDryControl** for cylinder dryers
- **SizeControl** for controlled size pick-up
- **PadderControl** for continuous dyeing and cold pad batch dyeing
- **Sensors** for fabric temperature, exhaust humidity, oxygen, application and residual moisture

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