



Manufactured by
Superior
with
Solids
SWR

M-Sens 2

Online-Moisture Meter
for Solids



Using

M-Sens 2 is specifically designed for continuous moisture measurement of solids.

M-Sens 2 is used for online moisture measurement of:

- all types of dust, powder, granulates and other bulk solids
- in different mounting positions

M-Sens 2 is characterized by its uncomplicated installation as well as by its simple calibration. Due to its hygrostability and its resistance to mechanical shocks and abrasion the entire sensor is very rugged and allows a long service life. The sensor window is protected by a ceramic disc being very resilient with regard to abrasion and pressure.



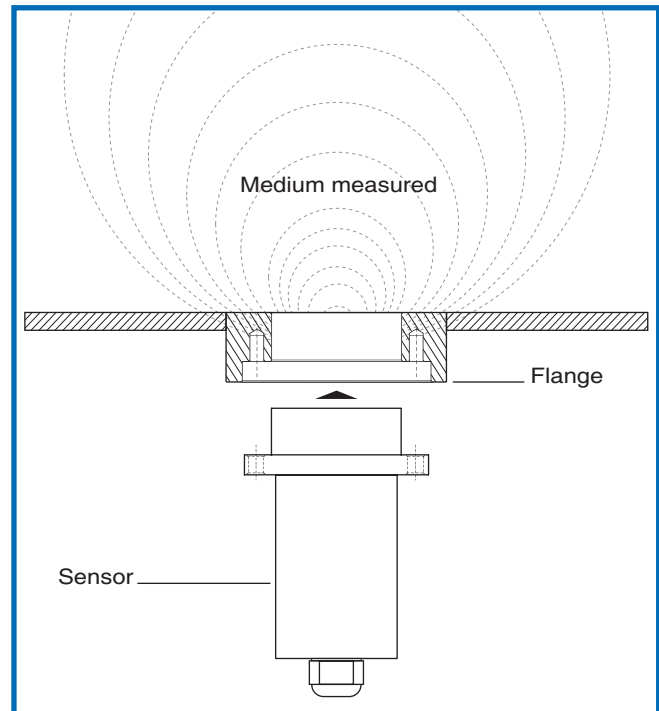
Function

The M-Sens 2 sensor functionality is based on precise high-frequency measurement and direct digitalization of measured values, wherefrom results a high resolution.

As the materials surface and capillary moisture influences strongly its specific conductive capacity, the moisture can be measured exactly by a constant averaged bulk density.

The calibration can be done very simply by the operator by pressing the button and entering the referenced moisture contents.

In this context it is convenient that measured value fluctuations by bulk density variations are balanced by an internal filter function. Additionally, measured value fluctuations by temperature variations are compensated automatically by the sensor.

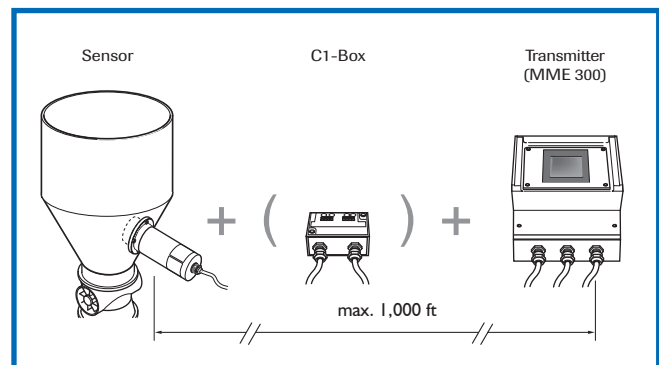


System

A complete measurement unit consists of the following components:

- welding flange
- 1 to 3 sensors, each with a 3 ft connection cable
- Transmitter MME 300
- C1-Box for the connection between sensor(s) and transmitter

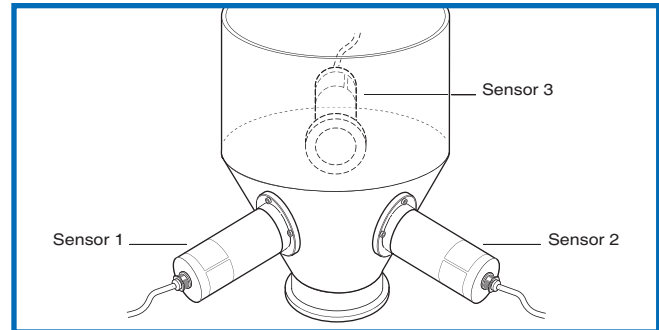
The sensor probe is connected to the transmitter by a shielded, 4-wired cable. The maximum distance between the two components can be up to 1,000 ft.



Using of more than 1 sensor

The MME 300 transmitter allows up to 3 sensors to be connected and their signals averaged in order to produce an accurate overall moisture reading. This reduces inhomogeneity in the process.

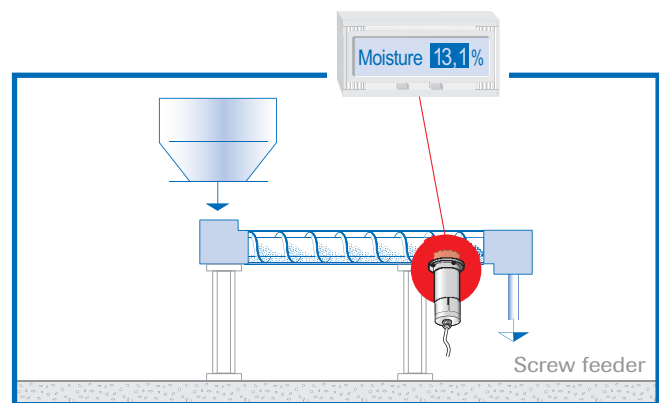
At the same time there is reduction of the influence of bulk density variations which normally exist over the whole measurement zone.



Applications - Practical Examples

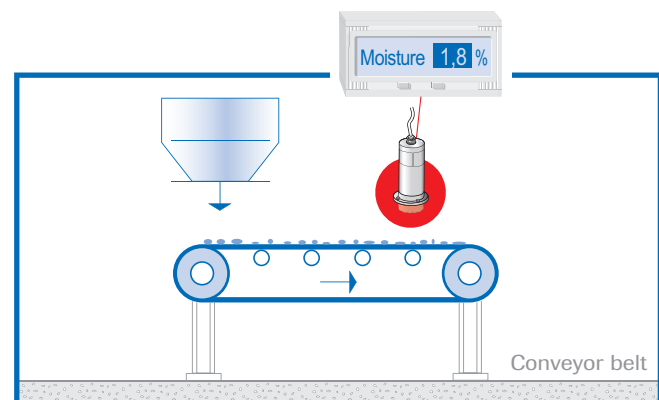
■ Installation in screw feeders

The installation of a moisture sensor in screw feeders proved to be very advantageous, since the material passes by the sensor window in even intervals and with relatively constant bulk density.



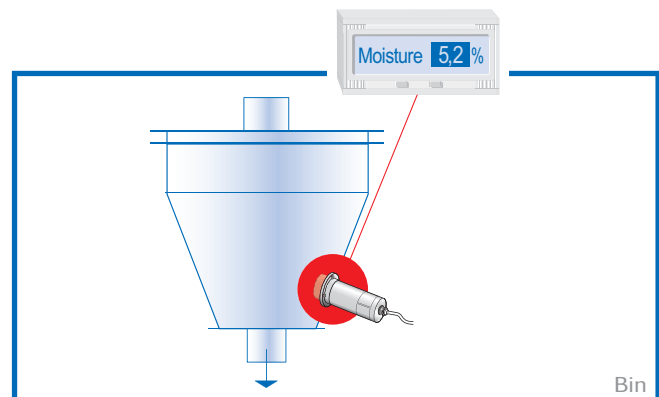
■ Installation on conveyor belts

By means of the online moisture measurement of solids on a conveyor belt, the operator can react in due time if the material is too humid or too dry.



■ Installation in bins

Another installation alternative is to mount a sensor at a bins outlet. Due to constant bulk density in case of a filled bin, the sensor finds an almost unchanging measuring field for monitoring the residual moisture. Thus, the M-Sens 2 sensor signals if the material becomes too damp before it reaches the next production stage or loading phase.



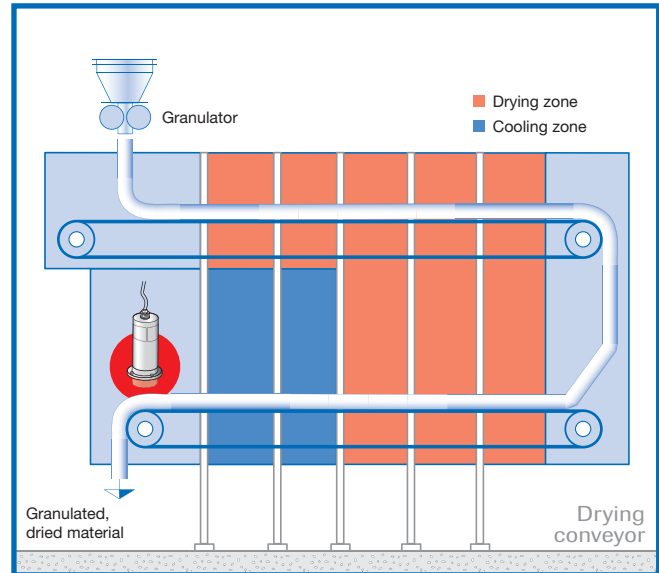
▪ Control of dryer by means of an online moisture measurement

After the material, lying on the belt, has passed through the dryer tunnel, it gets withdrawn from the hot air zone. At the end of the belt the dried material falls in a screw conveyor which transports it to the processing area.

The operator queries the following points:
Has the material reached the desired residual moisture value? That is, has he chosen the right cycle time and temperature?

M-Sens 2 provides accurate and reliable online moisture values for the process control, by which constant moisture in close tolerances of the output material can be met.

This process optimization enables the operator to manage high savings and quality improvements.

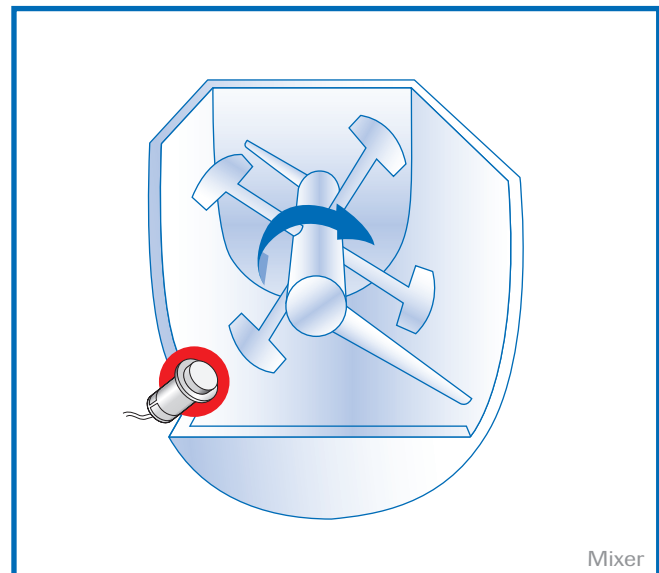


▪ Moisture measurement in a mixer

M-Sens 2 can be installed in all types of mixers. The measurement is performed during the mixing procedure.

With the measured moisture value of the material in the dryer, process parameters like detention time and dosage quantity can be controlled.

For this purpose M-Sens 2 is connected to a PLC or another process control system.



Uncomplicated commissioning

M-Sens 2 is calibrated by means of any number of reference points which are easy to enter. Even with only one reference point you get a sufficiently accurate display of the relative moisture.

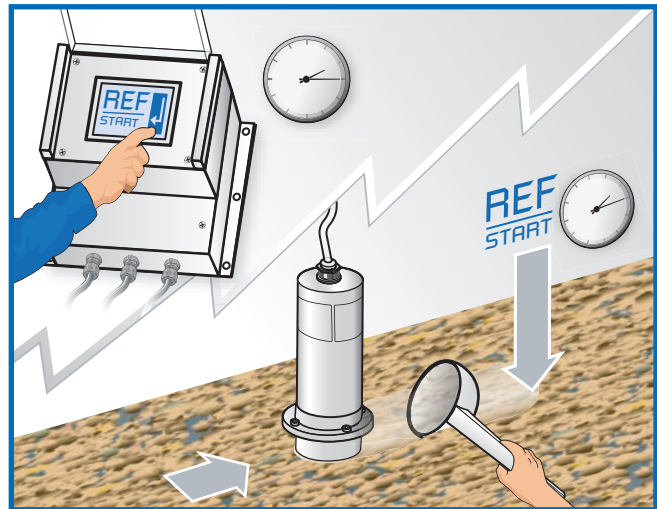
The more reference points you enter, the more accurately the M-Sens 2 transmitter measures the instantaneous relative moisture contents of your product.

1 Sampling

In order to calibrate M-Sens 2 start the reference point entry by the control panel of the transmitter. This reference point measurement by the M-Sens 2 sensor takes 1 minute.

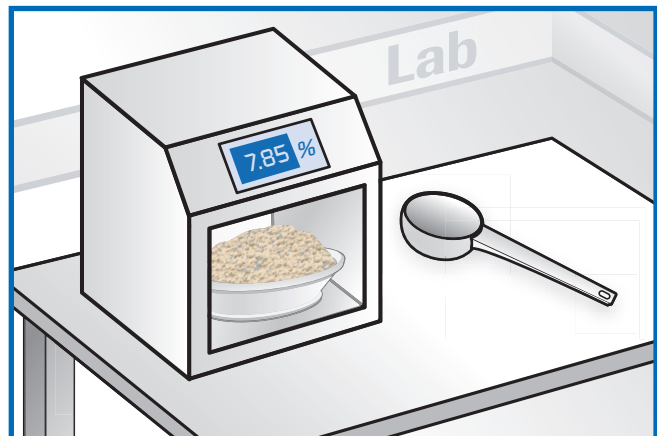
During this time when the material is moving, take several samples out of the material flow after the sensor. Ideally, take the samples very close to the sensor location. Ideally you take several small samples from the material flow during this time.

Is the point of your sampling located more distantly from the sensor (e. g. measurement in a silo or in a screw conveyor) then await the sampling as long as the material, which was under the sensor at the start, has arrived at this point. When the material is immovable, then await the end of the reference point measurement and take a sample under the M-Sens 2 sensor within the measurement zone.



2 Laboratory test

Determine the relative moisture contents of the extracted sample by a laboratory test. The better the sample which is taken from the zone directly under the sensor during the reference point measurement, the more accurate is the calibration of M-Sens 2.



3 Entry of the moisture value

When the reference point measurement of 1 min is over enter the determined relative moisture value in the control panel of the transmitter.



Technical Data

Sensor

Housing	Stainless steel 1.4571
Sensor surface	Ceramic
Ex-protection (optional)	Zone 20 (Dust), Zone 0 (Gas)
Protection category	IP 67 according to EN 60529
Material ambient temperature	0 ... +176 °F, optional 248 °F
Working pressure	Max. 10 bar
Power consumption	0.6 W
Response time	0.1 sec.
Weight	Approx. 35.2 oz
Measuring range	0 ... 65 % residual moisture (depending on material)
Accuracy	0.1 % absolutely in the calibrated measuring range
Connection cable	shielded cable 4-wired, 0.25 mm ²

Transmitter

Power supply	110/230 V AC (50 Hz) / 24 V DC
Power consumption	20 W / 24 V
Current consumption	Max. 1 A at 24 V
Protection category	IP 65 according to EN 60529/10.91
Operating temperature	14 ... +113 °F
Dimensions	258 x 237 x 174 mm (W x H x D)
Weight	Approx. 5.51 lbs
Interface	RS 232, RS 485 (ModBus)
Cable glands	3 x M16 (4.5 - 10 mm Ø)
Cable cross section	0.2-2.5 mm ² [AWG 24-14]
Current output signal	1 x 4 ... 20 mA (0 ... 20 mA), load < 500 Ω
Switched output measuring alarm	Relay with two-way contact max. 250 V AC, 1A
Digital inputs	2 inputs for active external control signals
Data protection	Flash

