Döscher & Döscher

In-Line Moisture Measurement

Measurement systems for bulk goods

MoistureScan series
MoistureScan
MoistureScan XT
MoistureScan EX
MoistureScan TP
MoistureScan TI

MoistureScan series

Microwave-based 2PMR measurement technology

- very precise and fast measurement
- monitoring of core and surface moisture
- long-term stable process
- measurement independent of the density, weight, colour, structure, and surface of the product

Optimized process

- automated process control
- current information on process control
- fast and timely detection of faults

Simple handling

- measurement can be tracked on a monitor
- simple calibration
- extensive options for evaluation
- online support

Effects on your production

The devices of the MoistureScan series
- prevent costly production downtimes
- permit faster achievement of product quality
- minimize waste
- reduce costs due to complaints
- optimize use of personnel
- reduce energy costs

Special features of the device versions

MoistureScan XT
- designed for extreme temperature conditions
- reliable performance monitoring of dryers, presses and roasters

MoistureScan EX
- designed for areas subject to explosion hazards (Ex zone 20)

MoistureScan TP
- sensor head for sticky products, such as glue-covered chips and fibres

MoistureScan TI
- sensor head suitable for very abrasive substances

The sensor design patented by us is made entirely of ceramics and metal. The sensor is soldered and not glued and is therefore extraordinarily thermally stable.

steel
ceramics
ceramic ring
steel
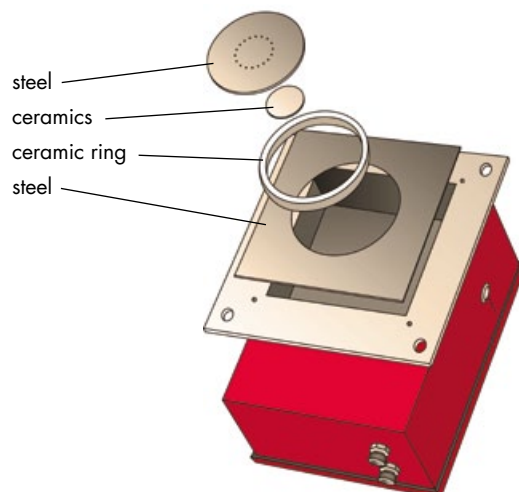
Tailored to your needs

Monitoring directly in the product flow

The MoistureScan series is suitable for a wide range of different bulk goods. The sensor head with a patented sensor structure can be flexibly integrated into the product flow. MoistureScan provides the necessary data for optimized process control.

The 2PMR technology from Döscher& Döscher that is used permits

- measurement irrespective of the material density and filling level

MoistureScan

- continuously monitors the water content over the entire production process
- determines the moisture parameter quickly and reliably

Further characteristics

- minimum calibration effort without previous knowledge
- high measurement accuracy
- reproducibility
- high long-term stability
- patented reference resonator

The reference resonator

Use of the patented reference resonator (for its method of operation, see diagram on the right) permits very good long-term stability. Constant measurement of the emptied sensor head, which is difficult during the production process, is no longer necessary.

Non-wearing, precise, for extreme conditions

The sensor surfaces are insensitive to dirt and maintenance-free. The MoistureScan XT and MoistureScan EX versions of the series are designed for extreme temperature conditions or for areas subject to explosion hazards. Further special aspects of the series: The coated sensor head of the MoistureScan TP avoids adhesion; the MoistureScan TI is especially resistant to abrasive substances.

Sensor tailored to your needs

Which type of sensor head that is integrated directly into the product flow depends on your product and on your specific production conditions. We will find the perfect solution in a personal discussion on your site.

reference resonator
measurement resonator
base plate
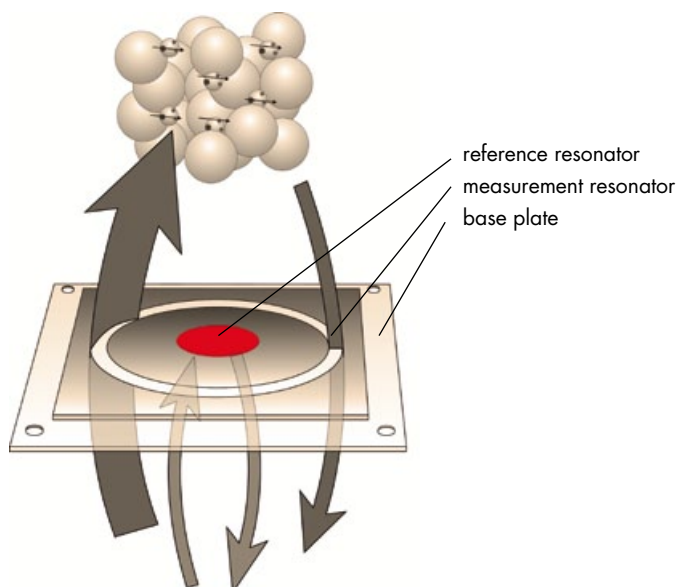
For extreme conditions

MoistureScan XT

for temperatures up to 140 °C

Until now, the extreme product temperature of 100°C or more at the outlet of the dryer, behind a press or a roasting oven with heavily fluctuating temperatures during start-up and shut-down has made product moisture measurement more difficult or prevented it altogether. The consequence: Longer start-up times and increased energy costs.

- The task:
  A customer would like to measure the product moisture at the dryer outlet. The temperatures there fluctuate between 100 and 140°C. The customer would like to improve the production process with precise measurement of the moisture at this point to enhance the quality of the product and save energy.

- The solution:
  Thanks to its components made of steel and ceramics, the patented sensor structure from Döscher & Döscher permits precise, reproducible and long-term stable measurements even at a product temperature up to 140°C. This substantially reduces energy costs.

MoistureScan EX

Explosion-protected for Ex zone 20

MoistureScan EX meets the health and safety requirements that are prescribed by law for equipment intended for use in explosion-protected zones.

- The task:
  A manufacturer of fruit gums relies on fast moisture measurement in the process for conditioning the corn starch used. Corn starch is explosive and all plant sections containing the product are classified as zone 20.

- The solution:
  MoistureScan EX is equipped with a sensor surface on the product side that is suitable for installation in hazardous zones. The measurement head is approved for use in zone 20. The other components of the measuring device are designed for zone 22.
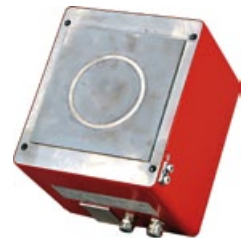
For special products

MoistureScan TP

Teflon prevents adhesion

Suitable for glued chips, fibres, and sticky products. The Moisture-Scan TP version of the series is only one of the many examples of how the needs of our customers directly translate into newly developed products.

■ The task:
A customer requires precise measurements that have to be determined in the midst of a cloud of wood fibres sprayed with adhesive.

■ The solution:
Teflon coating of the sensor. The method has proven ideal. Adhesion is avoided.
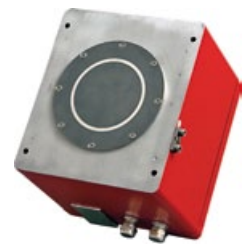
MoistureScan TI

Titanium provides lasting protection against wear

A further special solution for a production process under challenging conditions. After a successful test phase, this extraordinarily resistant sensor head is enhancing our standard program.

■ The task:
The customer processes very abrasive substances. The sensor head must withstand this extreme stress over a long period.

■ The solution:
The parts of the sensor head touching the product are made of titanium and ceramic. The required high protection against wear is ensured.

Software

The devices of the MoistureScan series are controlled
with extremely user-friendly software. All the work
steps you require are perfectly simple to perform:
From system setting, to calibration, to visualization of
the measurement results.
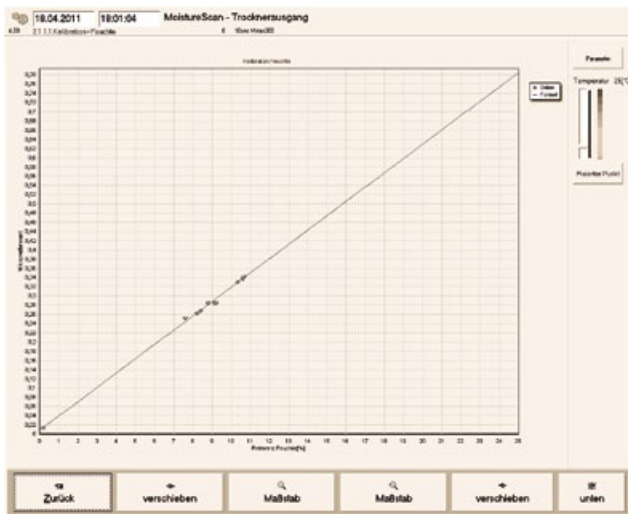
Calibration

System configuration

Settings
- language [German, English, others optional]
- communication interfaces
- interfaces for standard signals 24 VDC, 4-20 mA
- measurement parameters

Calibration
- recording of reference measurement points
- calculation and storage of calibrations

Moisture curve

Measurements
- continuous acquisition of the product moisture
- measurement data administration / archiving
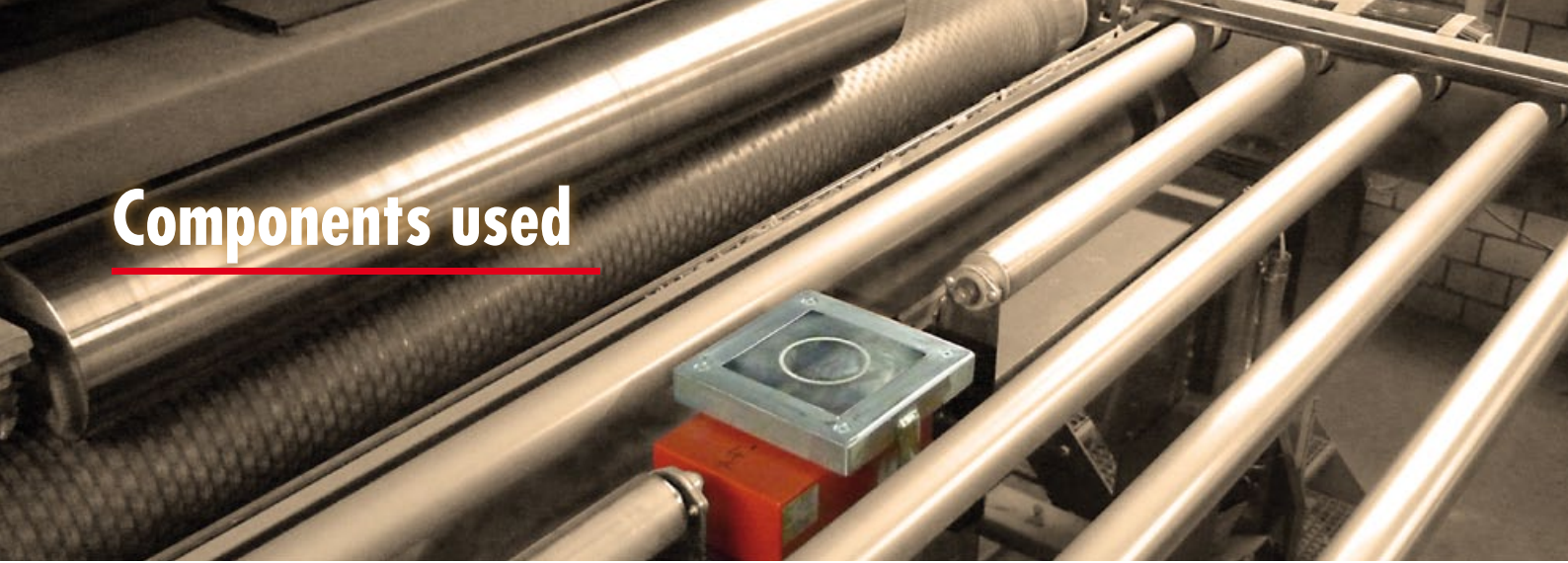 intervals / moisture thresholds for alarm functions

Visualization and data export
- graphical display of water content [%] and
  temperature [°C]
- setting of display parameters
- data export from the current daily data set
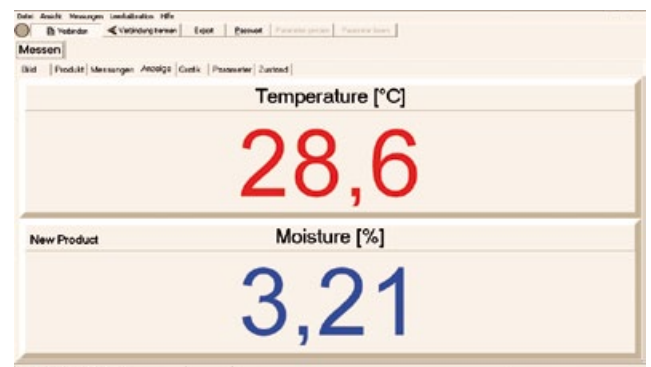
Measurement value display

Components used

Hardware

The software is installed on a workstation, supplemented by further tools (e.g. the latest remote maintenance software). The link to the sensor head is established using a serial interface RS422 or the network (TCP/IP).

The workstation of the MoistureScan consists of an amply dimensioned hard disk, a CD/DVD drive, USB2.0 interfaces, an integrated network connection LAN [RJ45], and further modern equipment.
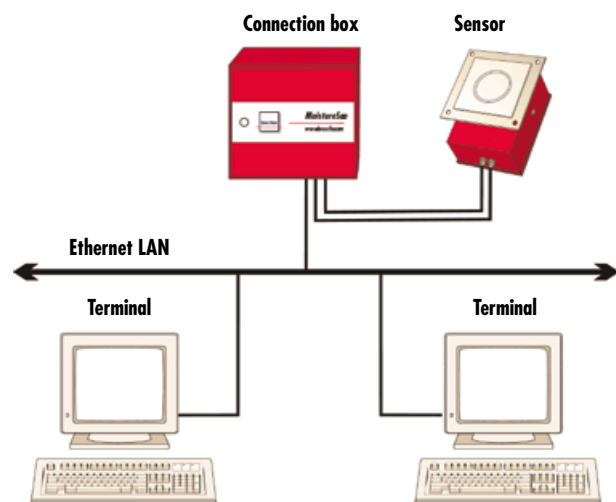Operating system: Windows XP.

Online support

After installation: We calibrate the device, check its function, and instruct you in the few necessary details. If you need help again, you can obtain support quickly, online if you wish. From Hamburg, we can check the function of the measuring device over a data link and perform corrections in direct interaction with you. The highest level of security is maintained during this procedure.
You decide whether you want this function and you enable it. The integrated LAN connection can be used for remote servicing.

RS422 connection set
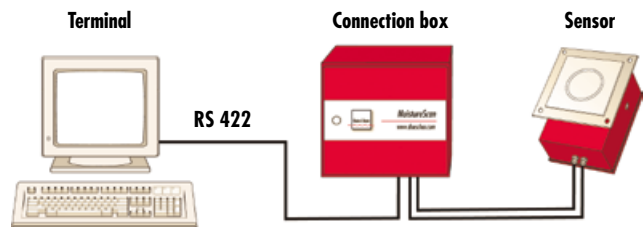
Direct link over RS422

COM server connection set

Direct link over Ethernet LAN

Technical data

	MoistureScan	XT	EX	TP	TI
Measuring range	depends on the type of sensor and product properties				
Repeatability	depends on the product properties				
Number of measurements	up to 600 measurements per second, average value settable in software				
Power supply	24 VDC				
Product temperature	0 – 70 °C	0 – 140°C	Temperature range as agreed	0 – 70 °C	0 – 70 °C
Ambient temperature	0 – 40 °C				
Max. number of different products in a plant	unlimited				
Data storage	hard disk				
Max. number of measurement data items	depends on the hard disk size				
Interfaces - serial - analogue - digital	RS 422 interface for connecting the operating terminal 2 x inputs: 4 – 20 mA / 0 – 10 volts 2 x outputs: 4 – 20 mA / 0 – 10 volts for moisture and temperature 2 x inputs and outputs				
Dimensions and weights - of the sensor head	225 mm x 225 mm x 190 mm, Weight 7,2 kg	180 mm x 170 mm x 300 mm, Weight 7,3 kg	200 mm x 180 mm x 230 mm, Weight 6,5 kg	180 mm x 170 mm x 300 mm, Weight 7,3 kg	200 mm x 180 mm x 230 mm, Weight 6,5 kg
- of the connection box	300 mm x 300 mm x 200 mm, weight 5,5 kg				
Products	< 3 cm	< 140°C	explosive	sticky	abrasive

Because we are continuously improving the MoistureScan series, we reserve the right to make technical changes.

Any questions? We will be glad to answer them!

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