

## In-line-moisture measurement with „tri<sup>2</sup>dent-moist“

Non-contact NIR moisture sensor



The in-line-measurement of material moisture is of great value in many processes in order to improve process and/or product quality. Additionally it may help to save energy in energy intensive processes.

With our new NIR multi-spectral sensor “tri<sup>2</sup>dent” Sensorik Austria offers an innovative platform for in-line moisture measurement:

- ✓ as compact NIR-sensor in „normal“ ambient conditions
- ✓ with fiber optic probe head for use in demanding environments (higher temperatures, narrow spaces, dust, mist, ...)
- ✓ as a complete fiber optic sensor system „SensoWeb Moist“ for applications in the rough environments of a paper mill

### Principles:

tri<sup>2</sup>dent is a multi-spectral sensor working in near-infrared (NIR) range. It utilizes the absorption of infrared light of specific wavelengths through water molecules. By comparing that to the absorption in neutral reference wavelengths, the relative moisture content is calculated. As multi-spectral sensor, tri<sup>2</sup>dent offers improved measurement-quality compared to common single channel sensors.

tri<sup>2</sup>dent can be used for different materials – however it may be necessary to work out a specific calibration model for specific materials.

### YOUR ADVANTAGES

- ✓ non-contact measurement
- ✓ suitable also for rough environments and narrow spaces
- ✓ easy integration in process control by means of analog output (4-20mA/0-20mA)
- ✓ PC-tool for parametrization and independent data logging

### **Already tested/realized applications (extract):**

- Measurement of moisture content in paper-production (drying group, press section)
- Measurement of moisture content in cardboard production (right before bonding)
- Measurement of moisture content of biogenic materials in agriculture
- Measurement of moisture content of plastic materials
- Measurement of surface moisture on hydrophobic materials

## TECHNICAL DATA

### tri<sup>2</sup>dent „moist“:



### Fiber optic cable/probe:



Sensor:	FSM60M	FSM30M
Light:	near infrared (1-2µm)	near infrared (1-2µm)
Working distance:	app. 100 mm	app. 100 mm
Moisture range:	0-100%; relative moisture	0-100%; relative moisture
Power supply:	24VDC / 230VAC	10-30VDC
Sensitivity against extraneous light:	insensitive	insensitive
Outputs:	up to 4 analog signals (4-20mA/0-20mA)	2 analog signals (4-20mA/0-20mA)
Protection:	IP 65	IP 54
Signal indicators:	green: power yellow: alarm	-
Connections:	clamp connection	cable
Ambient temperature:	- 10° ... + 40° C	- 10° ... + 40° C
Type code: fiber optic sensor:	24 VDC: FSM-60M-28-0x 230VAC: FSM-60M-18-0x	FSM-30M-28-0x
compact: (with fibre optic-head)	24 VDC: FSM-60M-28-0x 230VAC: FSM-60M-18-0x	FSM-30M-28-1x
<b>Fiber optic cable:</b>	quartz glass fiber bundles type 90-R-3N/3N//xxxx Si (xxxx ... length in mm)	
Protection hose:	silicon/steel hose, liquid tight, temperatures up to 200°C	
Light output:	axial	
Length:	0,3 ... 5m	
<b>Sensor head:</b>	depending on application (e.g. M8x50mm sleeve)	
<b>Accessories:</b>	ball joint bracket for sensor head air purge	