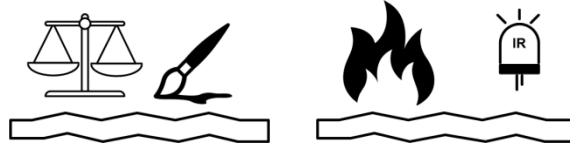


Description



Single side coating weight and polymer coating measurement MRP BW CW IRR2008 and MRP BW CW IRRU2018

Coating weight and binder measurement according to the infrared absorption principle

The continuous and contactless measurement of the coatweight, the polymer coating or a possibly existing binder on running webs is in many processes an essential aid to evaluate the quality of the product. It is important to measure the coatweight, the polymer coating or a binder with high accuracy under extreme environmental conditions. The use of such a sensor therefore helps to ensure product quality as well as to minimize waste.

If the absorption at this wavelength is compared with the absorption at a reference wavelength (which does not react to the number of molecules), the result is a calibrated measure for the desired measurement. In this way, selective measurements can also be realized. A further wavelength is used for adaptation to the product properties.

Indicator / Characteristics

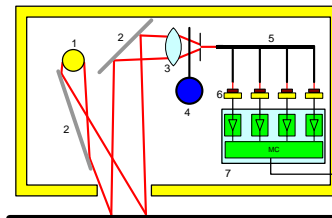
The infrared measurement for coating weight measurement, for layer thickness measurement or for binder determination is characterized by the following features:

- non-contact
- online capable
- applicable in industrial environment
- same spot

Electrical - optical principle

The systems can be designed in transmission or in remission.

Design in remission (IRR)

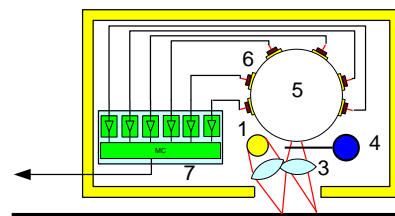


- 1 lamp
- 2 mirrors
- 3 Lens
- 4 Motor with chopper wheel
- 5 FIBER OPTIC CABLE
- 6 filters + detectors
- 7 Evaluation electronics

Physical principle

The infrared sensor works according to the infrared absorption principle and evaluates the effect that coating weight molecules (e.g. calcium carbonate, clay or titanium dioxide) or polymer molecules (coating or binder materials such as PE, PA, PP, EVA, EVOH ...) have the property of absorbing light at a certain wavelength (the coating weight or polymer wavelength). The absorption of light in these wavelength ranges is a measure of the number of coatweight or polymer molecules and thus directly of the coating weight of the paper or the layer thickness.

Design in remission (IRRU)



- 1 lamp
- 3 Lens
- 4 Motor with chopper wheel
- 5 Integrating sphere
- 6 filters + detectors
- 7 Evaluation electronics

The material web is illuminated with a light beam from a broadband infrared light source (1). Depending on the different measuring tasks, this illumination can be designed in reflection or transmission geometry. The description for the transmission sensor is given in a separate data sheet MRP BW IRT 2008. The illuminated material web is viewed via an optical imaging system consisting of components (1) and (2)/(3). In the image plane of this imaging system there is the entrance surface of a collective bundle of optical fibers of the type MRP IRR. This is divided into several sub-bundles, each of which is terminated with a combination of spectral filter and infrared detector (6). In the IRRU type, the reflected light is directed into an integrating sphere via a lens

system. The detectors with their specific wavelength filters are mounted in this integrating sphere. This results in a true "same spot" measurement. The spectral information is recorded both at the same time and from the same location on the material web. Up to six spectral channels can be installed depending on the task. The light-intensive, optical imaging system constricts the measuring spot on the material web to a size of 5 mm in transverse direction and 20 mm in longitudinal direction. The complete signal processing takes place inside the sensor housing, only a 24V supply voltage is required from the outside. The sensor output signal is available as Profibus DP signal.

Measurement accuracy

Typ	MRP-BW CW IRR-2008 MRP BW CW IRRU 2018
Model	Reflection / one-sided
Measuring range	0.5 - 100 g/m ²
Resolution	0,01 g/m ²
accuracy - 2 sigma at 1 sec	±0.5% but not better than ±0.1g/m ²
Operating temperature	10°C-70°C

Sensors in high temperature version are also available.

The infrared coating measurement can also be designed as moisture measurement.