

Measurement of humidity and other parameters in wood board production

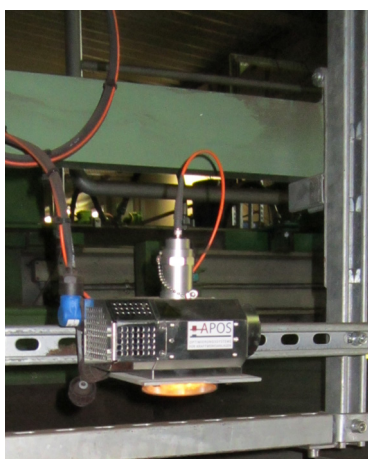
High accuracy – no drift – accurate even when density and material color changes – long term stability

The material parameter „humidity“ and other parameters in the wood board production, e.g. the MDF-/HDF- or OSB production are often used as a key variable for the plant control systems. Therefore, high accuracy of the online humidity signal is most important. Further, the online information has to be available permanently, in real time, drift-free when moisture content, grain size, density or color of the material change significantly. “Classical” technologies are not able to match these requirements with long-term stability and without recalibration. APOS ModularNIR applies the patented APOS NIR technology as used in many biomass power plants, where APOS` systems are used to measure water content, ash content and calorific value of the biomass. The values generated can be visualized in real time and / or transferred to a leading process control system. APOS offers multiple interfacing technologies.



APOS uses its proven measurement probe technology for contact or distance measurement. The probes are ruggedized to withstand harsh environmental conditions. The contact probe is typically used in dusty environments as the optics of the probe are kept clean by the material passing by. The contact probe is IP 65, so e.g. also a flooding triggered by a fire extinguishing system does not affect the continued operation.

Contact Probe



The distance sensor can be used if the installation of the contact measuring probe is not possible and if dust emissions at the installation are not significant.

Distance Probe



Each APOS system consists of one or more probes, the APOS Central Spectrometer Unit plus an industry standard PC used for calculations and visualisation.

Spectrometer Unit CSU

APOS' systems have a modular design, so one system can have multiple probes to analyze e.g. different layers of a board mat or different points of measurement during a drying process. Even combinations of contact and distance probes are possible. APOS' systems typically come with a calibration for the specific customer material already prepared on the system. If necessary, APOS develops a new calibration set for additional materials at the same price as a standard calibration.

As the optical system has almost no moving parts, maintenance is limited. Necessary annual maintenance is provided by APOS or its international partners.

Specification Measurement System

| | |
|----------------------|------------------------|
| Wavelength used | 950nm – 1690nm |
| Measurement interval | > 60 raw values/minute |
| Number of probes | 1 – 2 |

Central Spectrometer Unit (CSU)

| | |
|-----------------------------|---|
| Form Factor | 400mm x 500mm x 250mm// 15.7in x 19.7in x 9.8in |
| Weight | 25kg // 55.1lb |
| Electrical protection class | IP 54 |
| Ambient temperature | Heated, cooled -20°C to 50°C // -4°F to 122 °F |
| Interfaces | Ethernet |
| Power Supply | 230V AC // 120V AC |
| Relative air humidity | Max. 80%, non condensing |

Contact Probe

| | |
|-----------------------------|--|
| Form Factor | 165mm x 178mm // 6.5in x 7in |
| Weight | 4.5kg // 9.9lb |
| Measurement window | sapphire glass, 17,25mm // 0.67in diameter |
| Electrical protection class | IP 65 |
| Ambient temperature | -20 °C to 60°C // -4°F to 140°F |
| Flange Type | DN50 PN10-16s |
| Data transfer | RS 485 and fiber optic cable |
| Light sources | 2 x max. 5 W |
| Expected life time | Approx. 5,000h per bulb, two bulbs installed |
| Power Supply | 24V DC; 400mA |

Distance Probe

| | |
|-----------------------------|---|
| Form Factor | 164mm x 163mm x 110mm// 6.5in x 6.4in x 4.3in |
| Weight | 3,5 kg// 7.7lb |
| Electrical protection class | IP 64 |
| Ambient temperature | + 5°C bis + 40°C// 41°F to 104 °F |
| Data transfer | Optical |
| Light source | 20W (1 bulp) |
| Power supply | 12 VDC |
| Relative air humidity | max 80% not condensing |
| Distance from material | 150 - 400mm |

Calibration Models

| | |
|------------------------|-----------------------------|
| Water Content/Humidity | continously updated by APOS |
| Further Parameters | Upon request |

APOS Software

| | |
|------------------|---|
| Software release | ModularNIR |
| | Humidity / water content |
| | Min/max. values with alarm function |
| | Filtered via adjustable low pass filter |
| | Multiple interfacing technologies available |