

ultraMOIST™ On-Line Microwave Moisture Monitor



Background

Moisture measurement has always been an important process parameter. Traditionally this has been carried out using the conventional laboratory analysis of a manual sample. The ultra**MOIST** On-Belt Moisture Measurement System now allows the accurate measurement of moisture in realtime

Competitive Advantages compared to other technologies:

Potential Limitation	ultraMOIST	Near Infra Red
Vertical segregation	Unaffected – beam penetrates full bed of material	Reflectance technique from surface molecules only
Sample presentation	Unaffected by position of material	Distance of material surface to receiver important
Colour	Unaffected	Significant effect
Ambient lighting	Unaffected	Requires shielding
Wear	No moving parts	Mechanical filter system
Presence of steam	Unaffected	Can cause interference
Dirty atmosphere	IP65 enclosures	Window requires to be kept clean

Suitable for all non-conducting materials such as:

coal
wood flakes
bauxite
sand

bagasse
chemicals
mineral ores
aggregates

grains
sugar
food
cotton

silica
wool
Etc
Etc

System Description

The ultra**MOIST** On-Belt Moisture Analyser consists of the following sub systems:

Measurement C-Bracket which provides the means of mounting ultra**MOIST** on the conveyor as well as accurate alignment of the microwave transmitter and receiver subsystems.

Electronics Control Cabinet – usually mounted on the Measurement C-Bracket. This cabinet contains electrical, electronic and microwave hardware which consists of:

- Processor / PLC.
- Power supplies.
- Electrical terminations.
- Microwave Components
- Display Panel and terminal.

Mass Flow Measurement – usually provided using a belt scale or weigh feeder. ultra**MOIST** is able to interface with this device for the calculation of weight percent moisture. For applications with no measurement device ultra**MOIST** can be supplied complete with an integrated beltscales.

Technical Specifications

Operational	
Conveyor width	Up to 1,400mm as standard (over 1,400 mm requires a customised On-belt frame)
Conveyor speed	No limit
Material top size	Typically up to 300mm (material dependent)
Bed depth range	Typically 20mm to 300mm (material dependent)
Moisture range	0 to 80%
Measurement update time	Typically 1 minute user configurable
Instrument precision	Typically 0.3% at 1 standard deviation (ultimate precision achievable 0.1%)
Electrical Requirements	
At the Electronics Control Cabinet	240 volt or 110 volt, single phase, 2 amp supply
Environmental Requirements	
Operating temperature range	0 to 45°C with protection from direct sun and rain
Humidity	0 to 95% relative (non condensing)
Outputs	
Instantaneous moisture	0 to 10 volts or 4 to 20 mA current loop
Tonnage weighted moisture	0 to 10 volts or 4 to 20 mA current loop
High moisture	Relay closure
Low moisture	Relay closure
Shipping mass	30 kg
Shipping dimensions	800mm long x 600mm wide x 1,000mm high

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