Productivity tools for online moisture analysis and control

MOISTSCAN

The global leader in online moisture analysis

REALtimeINSTRUMENTS

a division of Realtime Group Limited solutions for today and tomorrow

Realtime Instruments

Superior Technology

MoistScan® is the most technically advanced online moisture analyser in the world today.

Utilising sophisticated microwave technology, combined with powerful hardware and software, the **MoistScan**® reports total moisture in real-time as the product is being conveyed

Our patented **MoistScan**® dual measurement multi-frequency microwave generator measures attenuation and phase shift of the microwave signal at discrete pre-defined frequencies.

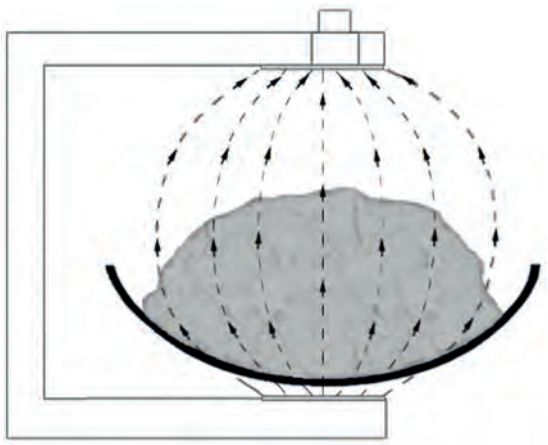
Using RTI's extensive application knowledge - derived from successful implementation of hundreds of online moisture analysis solutions throughout the world - **MoistScan**® sweeps a microwave frequency band that is highly responsive to moisture variation in your product type. This means that even subtle changes in moisture are detectable.

Where other analysers struggle to perform, the **MoistScan**® Series IV – excels – reporting results that are minimally affected by:

- Varying bed depth
- Vertical or horizontal segregation
- Varying particle size distribution
- Profiling anomalies
- Temperature fluctuations

Powerful Analytics

MoistScan® typically analyses greater than 90% of the product being conveyed.



Key Measurements

- Instantaneous moisture
- Time-averaged moisture
- Tonnes-weighted moisture
- Dry tonnage

Unlike alternative technologies **MoistScan**® generates a microwave field that analyses nearly all the material on the belt – from top to bottom and side to side – ensuring that the reported result accounts for variations in moisture throughout the product.

Flexible Design

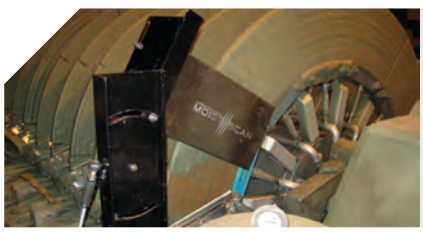
MoistScan®'s flexible design allows installation at any point in your process, enabling you to measure and control moisture where it is most critical

MoistScan® is supplied with a custom-made C-frame or alternative support structure depending on your application. The antennae and housings are also custom sized and shaped to enable installation at a point in your process that that gives you the most benefit. As standard, the **MoistScan**® control cabinet with HMI is mounted to the analyser frame. Alternatively, the cabinet and HMI can be installed at a convenient location elsewhere in the plant.

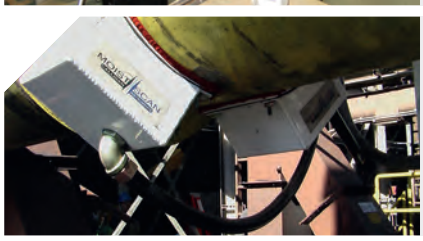
- Conveyor belt
- Pipe
- Screw-feeder
- Weigh-feeder
- Chute
- Bin
- Silo
- Horizontal Belt filter
- Vertical Disk filter

MoistScan® MA-500HD installed on the plant feed conveyor belt at a nickel ore refinery. Data from the **MoistScan**® is used to control the residence time of the ore in a rotary dryer.

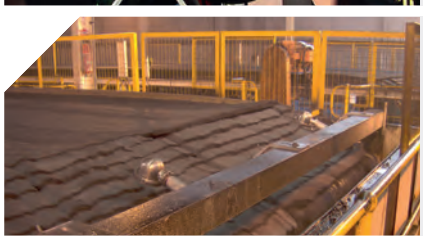
MoistScan® MA-700 analyser installed on the in-feed to a hydrator at a snack foods factory. The analyser measures the moisture in a mixture of polenta and rice. Data from the **MoistScan**® directly controls moisture addition to the hydrator to ensure the product meets quality specification.



MoistScan® MA-600 installed on a vertical disk filter at a copper processing plant. The analyser measures the moisture in filter cake. Data from the **MoistScan**® controls the vacuum pressure of the filter plates to produce a filter cake within a tight moisture specification of 7-8%.



MoistScan® MA-600 installed on a large screwfeeder conveying woodchips to a dryer at a wood char plant. Data from the **MoistScan**® is used to control the dryer such that the woodchip exiting the dryer is between 5-12% moisture.



MoistScan® MA-600 installed on a horizontal belt filter at a coal wash plant. The MA-600 has 3 sets of antennae across the belt. The analyser calculates average moisture across the belt which is used to control belt speed and flocculant addition.

MoistScan® MA-600 installed on the wall of a hopper feeding a briquetting press at a briquetting factory. The material is a mixture of sand, sodium nitrate and char. Control of the moisture content of the briquettes is critical. If the mixture is too dry the briquettes don't form correctly. If the mixture is too wet the briquettes may split in the fluidised bed dryer or in transit.

MoistScan® MA-500 installed on the coal receival belt of a power plant. The MA-500 is used in conjunction with an online elemental analyser to determine the total dry ash percentage and sulphur content of the received coal.

MoistScan® MA-500HDi measuring moisture content of iron ore pellets at a shipping port. The analyser is used to calculate the total dry tonnage as the product is loaded onto the ship.

Proven Performer on all Applications

Our record speaks for itself. **MoistScan**® is the most utilised online microwave moisture analyser in the world today.

You will find our analysers installed in mines, wash plants, ports, steel mills, power stations, refineries, sugar mills and food factories in every corner of the globe.

Mining

- Coal
- Iron Ore
- Bauxite
- Nickel ore
- Gold ore
- Copper ore
- Diamond Ore
- Rare Earth

Mineral Processing

- Sinters
- Pellets
- Hydrates
- Concentrates

Food

- Cheese
- Butter
- Snack foods
- Flour
- Starch
- Pet food
- Cereal
- Pasta

Building Products

- Sawn timber
- Fibreboard
- MDF
- Cement
- Clay
- Aggregate
- Sand
- Plasterboard

Chemicals

- Fertilisers
- Pharmaceuticals

Biofuels

- Bagasse
- Woodchip
- Sawdust
- Wood flake
- Hog fuel

Benefits and Features

Practical design and smart features make the **MoistScan**® exceptionally easy to install, set-up, calibrate and maintain.

Unrivalled Accuracy and Reliability

The **MoistScan**® Series IV tackles even the most difficult of applications. Our patented **MoistScan**® dual measurement multi-frequency microwave generator – measures attenuation and phase shift of the microwave signal, isolates noise and cancels it out, resulting in a measurement that correlates with moisture at an R^2 typically of .85 or greater. No other online moisture analyser is capable of such accuracy.

- Superior accuracy and repeatability
- Greater than 90% of the volume of material being conveyed is analysed
- Unaffected by dust
- Unaffected by humidity
- No optical surfaces to clean (as with NIR technology)

Rugged Construction

The **MoistScan**® is manufactured from non-corrosive materials. The 316 stainless steel control cabinet is IP66 rated. The frame is constructed of high grade aluminium. The local user interface is IP66 rated with a sun-proof, water and dust resistance cover.

- Stainless steel IP66 rated cabinet (with optional sun shield)
- High grade aluminium frame (stainless steel optional)
- IP66 industrial grade graphical user interface
- All parts non-corrodable

Hassle-free Installation

MoistScan® is delivered fully assembled. No modifications are required to existing structures to enable installation.

- No foundations required
- No modifications to existing structures
- Light weight
- Delivered fully assembled and integrated in C-Frame ensuring perfect permanent alignment of antennae

Seamless Plant Integration

The **MoistScan**® seamlessly integrates with your plant control system.

- Supports all popular communication protocols
- Simple plant connection options including 4-20mA connections, Ethernet and RS485
- Ultrasonic bed depth sensor means beltscale input not required (on belt conveyor models)

Multiple User Interface Options

Users can view and change settings, adjust calibrations and access data whilst standing beside the analyser, from the control room, or from the other side of the world.

- Touchscreen HMI graphical user interface at analyser
- Optional 3G modem connection with web browser interface (independent of plant PLC system thus eliminating IT security issues)
- Ethernet or RS485 connection with web browser interface accessible from PC, Tablet or Smartphone.

Simple Set-up and Calibration

A stand-out feature of the **MoistScan**® is its practical calibration procedure. The **MoistScan**® is the only microwave analyser on the market that is shipped with a base calibration already entered.

- Shipped with base calibration
- Easy step-by-step instructions displayed on HMI on front panel of control cabinet guide user through calibration procedure
- Simple calibration verification
- No laptop or PC connection required
- Multiple calibration storage and switching

Low Whole-of-Life Costs, Low Maintenance

Installed and set-up correctly, the **MoistScan**® is virtually maintenance-free. Apart from periodic calibration verification, little ongoing maintenance is required.

- Non-contact
- No moving parts
- No maintenance consumables
- Smart alerts via text and email (optional)
- Remote connectivity for product support (optional)

Product Support

MoistScan® Calibration Centre

RTI's unique calibration databank enables our engineers to fully support your analyser via remote access and connection. Should a calibration issue arise, our calibration experts can undertake data analysis and calibration verification providing you with corrective measures normally within 48 hours of receiving the necessary data from the analyser.

On-the-Ground Support

RTI's provides ongoing support via a global network of technical specialists in online instrumentation with business support partners based in the Asia's, America's, Europe, Oceania, Africa, and Middle East.

Real Time Instruments (RTI) specialises in the manufacture of world class on-line instruments and integration with process control systems.

We support our products and service our customers throughout the world via a global network of Sales Engineers and Technical Specialists.

MOISTSCAN

Specifications

Measurement Technique	Variable Frequency Microwave Transmission (VFMT™)
Parameter Measured	Total Moisture
Measurement Range	0-95% (application dependant)
Measurement Frequency	50Hz
Wavelength	0.5MHz – 3.0GHz (application dependent, application optimised)
Instrument Precision	Typically 0.3% at 1 SD (application dependent)
Plant Inputs	Conveyor running digital input Beltscale mass flow rate analogue or digital pulse (optional)
Plant Outputs	Instantaneous moisture Time averaged moisture (user defined) Tonnes weighted moisture
Power	Instrument quality 110/240VAC 60/50 Hz
Installation Options	Conveyor Belt, Pipe, Vertical Disk Filter, Horizontal Belt Filter, Chute, Bin, Hopper, Weigh-feeder, Screw-feeder, Auger
Plant Connections	2 x 4-20mA current loops, Ethernet, RS232, RS422, RS485 serial ports available
Communication Protocols	Modbus (standard) Other popular industrial protocols available via integrated protocol converter
Frame	High grade 6mm Aluminium (stainless steel option)
User Interface	At the analyser via graphical touchscreen HMI on the control cabinet. In the control room via web browser interface on standard PC. Anywhere in the world via web browser interface on PC, tablet or mobile phone
HMI	IP66 rated for dust and moisture ingress 7 inch WVGA 800 x 480 LCD colour touch screen
Control Cabinet	316 Stainless Steel IP66 rated for dust and moisture ingress
Remote Connection	Company authorized access via VPN connection 3G modem connection (optional)
Environmental	-4 to 140°F (-20 to 60°C) operational temperature range (standard) -40°F (-40°C) with optional heating of cabinet
Weight & Dimensions	Typically less than 65kg total weight (configuration dependent) Dimensions and weight are configuration-dependent

AMERICAS | ASIA | EUROPE | OCEANIA | AFRICA | MIDDLE EAST

South Africa Namibia Zimbabwe Botswana Mozambique

Local Representative

Johannesburg

Chromatech Services (Pty) Ltd

W www.chromatech.co.za
P +27 11 9581924
E sean@chromatech.co.za