MCT360-T Tobacco Moisture Sensor
World’s Leading Supplier of Tobacco Moisture Analyzers

- Process Sensors founded in 1996. Over 400 man years experience in tobacco moisture measurement.
- World Headquarters in Milford, Ma USA.
- Sales and Service Offices in China, Malaysia, North America, UK, and Poland.
- Distributors Worldwide.
Strong, Stable, Diversified, Privately Held Company

Industry Breakdown

- Tobacco
- Food
- Paper & Film Converting
- Wood
- Animal Feeds
- Pharma, Chem Other
Reasons for Moisture Measurement in Tobacco

- **Quality Control**
  - Final product moisture

- **Improved Processing**
  - Dry for storage (no rot)
  - Wet for handling/cutting (won’t crumble)

- **Flavoring Control**
  - Flavors are based on %dry weight.
  - Use %moisture to correct weigh belt.
Tobacco Moisture Is Critical In All Phases Of Processing

- Moisture impacts smoking quality, flavor, burn, fill, waste, and machine operation from green leaf threshing to primary processing.
- Each operation such as drying, re-moisturizing, rolling, cutting, and conditioning have an optimum moisture level to maximize efficiency.
Tobacco Products

- Whole Leaf
- Stems
- Reconstituted
- Chewing Tobacco
- Lamina Strips
- Cut Tobacco

- Expanded
- Blended Tobacco
- Pipe Tobacco
- Cigar Filler
- Cigar Wrapper
- Roll Your Own Tobacco
MCT360-T
No Drift Operating Principle

- Internal Reference (Prime) Beam
- Filter Wheel
  Up to 6 Filters
- Halogen Lamp
- External (Product) Beam
- Detector
- Sample
MT 360-T Tobacco Moisture Transmitter

Surface mount board

Rear connectors – digital, analog and ethernet

MCT 360-T gauge and touch screen OI
Near Infrared Absorption Curve

- Glycerin
- Propylene Glycol
- Water

Wavelength (nm)
Absorbance

0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80
1100 1300 1500 1700 1900 2100 2300 2500
Wavelength (nm)
**Tobacco Blends**

- Different blends need different calibrations
  - Why?
    - Casings/Humectants/Volatiles
      - Look like water in an oven moisture test
    - Different Tobacco Types
      - Different NIR reflectance
  - Affects every NIR instrument on the market
Different Tobacco Types

Absorbance

Wavelength (nm)

- Light Reconstituted
- Burley
- Expanded
- Virginia
- Dark Reconstituted
- Turkish
MCT360-T Provides Digital Display, Analog Outputs, and Digital Interface
**Tobacco Moisture Measurement Locations**

- **Leaf Tobacco**
  - Conditioning
  - Dryer
  - Storage Silo
  - Steam Cylinder

- **Burley Tobacco**
  - Conditioning
  - Dryer
  - Storage Silo
  - Flavor Cylinder

- **Reconstituted Tobacco**
  - Storage Silo
  - Steam Cylinder

- **Expanded Tobacco**
  - Remoister
  - Expansion Chamber

- **Tobacco In**

- **Blending**
  - Cutters
  - Flavor Cylinder

- **Final Cut Blended Filler**
  - To Cigarette Makers

- **Conditioning Cylinders**
- **Silos**
- **Steam and Re-moisturising Cylinders**
- **After Blending**
- **After Cutting**
- **Final Cut Filler**
The Intelligent Gauge Concept

* Gauge carries out all signal processing
* Calibrated measurements derived in gauge head
* There is no need for control units
* The gauge is a network device
* It can communicate with other devices for data display
* Inbuilt features, PID Controller, Product Temperature, Humidity Compensation
* Single PCB Design
MCT360-T Sensor Performance

- **Accuracy**
  - Depends on lab, sampling, tobacco type
  - Strip, Stem & Whole Leaf Tobacco: +/- 0.3%
  - Cut Tobacco: +/- 0.1%
  - Reconstituted & Expanded Tobacco: +/- 0.1%
- **Lamp Life** 5-10+ years.
- **Stability**
  - Excellent: +/- 0.1%/yr
- **Height Sensitivity**
  - 15-40 cm (6-16”) Excellent
Excellence in Measurement

- Backscatter, Single or Multi-Component intelligent NIR gauge
- Unrivalled measurement accuracy, stability and capability
  * high speed measurement offering enhanced accuracy
  * up to 3 component analysis
  * Optional IR Product Temperature Measurement
- Pre-calibrated measurements
- Easy to use, Multi-lingual Operator Interface
- Active diagnostics
- No Routine Maintenance
- Networkable gauge using “AnyBus” communication standards with connectivity to the process. ProfiBus, DeviceNet, Ethernet Etc...
Easier Customer Operation

- Multiple Languages including Chinese Selectable by Operator
- All sensors have the same span
  - Same sensor
  - Detectors have same output characteristics
  - Same algorithm, filters, settings
  - Same application, product
- Zero is fine-tuned at target to account for local laboratory methods
MCT660-Bench Top Moisture Analyzer

The MCT-660 is a bench top, multiple constituent tester. Samples are placed in the sample dish, rotated automatically and tested within 10 seconds. Reducing sugars and nicotine measurements available on select ground samples.

* Rotating Sample Tray
* Non Contact Testing
* Pre-Calibrated
* Multiple Measurements
* Multi Language Display
* No Sample Preparation
Among Our Family Of Customers

- **Indonesia**
  - PT Gelora Djaja
  - PT Gandum
  - PT Stefania Ultra Tobacco
  - PT Martindo Inti Tobacco
  - PT Roberta Tobacco Ind.
- **PT Sampoerna**
- **PT Indonesia Tri Sembilan**
- **PT Norojo**
- **Vietnam**
  - Dong Nai Tobacco Co.
  - Thanh Hoa Tobacco Factory
- **Bangladesh**
  - Abu Khair Tobacco Co. Ltd
  - Nasir Tobacco Industry
- **Philippines**
  - Fortune Tobacco
- **Thailand**
  - Thai Tobacco
  - Monopoly (TTM) Thailand
- **South Korea**
  - KGT
  - Taiwan Tobacco (TTM)
  - Feng Yuan Tobacco
- **Australia**
  - Philip Morris
- **Vietnam**
  - Vietnam Tobacco Corporation
  - Vietnam Tobacco
- **Bangladesh**
  - Dhaka Tobacco Industries
  - International Tobacco (Azizuddin Industries Ltd.)
- **South Africa**
  - United Africa Tobacco
  - East London Cut Rag Processors
- **USA**
  - Lorrillard
  - Philip Morris USA
  - RJ Reynolds
  - Alliance One
  - Rothman's
  - Universal Leaf
- **UAE**
  - Vision Tobacco
Among Our Family Of Customers

- **Russia**
  - Imperial Tobacco
- **Japan Tobacco**
- **Poland**
- **Imperial Tobacco**
- **Ukraine**
- **Imperial Tobacco**
- **Japan Tobacco**
- **Kyrgyzstan**
- **Imperial Tobacco**
- **Serbia**
- **Japan Tobacco**
- **Republic of Moldova**
- **Tutin**
- **CTC**

- **Spain**
  - Certesa
- **Greece**
  - VIT (OEM)
- **Italy**
  - Comas (OEM)
  - Garbuio
  - Man. Tabacchi
  - BAT
  - TAC
  - RJ Reynolds
  - Philip Morris

- **Netherlands**
  - Imperial Tobacco
  - Heupink + Bloemen
- **Germany**
  - Von Eicken
  - DHT
- **France**
  - Imperial Tobacco
  - Senegal
  - Imperial Tobacco
  - Ivory Coast
  - SITAB Ivory Coast
  - UCAPT, France-Tabac
  - SWM/LTR
  - Sitab
- **Switzerland**
  - Japan Tobacco
- **Turkey**
  - European Tobacco
  - Turkey
PSC Viewer Software

* Operates On All PSC Equipment
* Calibrate PSC NIR Gauges
* Trend On-Line Information
* View Gauge Diagnostics
* Set Up Sensor Parameters
* Store Product Codes
* Gauge Networking
PSC Viewer Menus

* **Set-Up** - Allows changes to: Product Code, Zero, Span, Analogue Range
* **On-Line** - Provides historical trending, data logging and alarms
* **Products** - Product code naming
* **Calibration** - Regression of data and calibration of gauges, upload files
* **Diagnostics** - System analysis
* **Engineering** - Password protected
Service and Support

* Full Time Field Service Employees
* 24 Hour Response Time
* Application Analysis provided at no charge
* Pre - Calibration Service
* Customer training
* Service Contracts
How to Grab Samples

- Just downstream
- In line
- From the surface
- Many small samples
- "USE IN BUILT SAMPLING FACILITY"

Flow Direction

Grab from Here
Stability Check Procedure

- **Preparation**
  - 1) Read stability check(s) while the sensor is calibrated.
  - 2) Record the reference reading.

- **Test**
  - 1) Make sure the calibration is the same.
  - 2) Read the stability check(s).
  - 3) Compare to the reference readings.
  - 4) A significant difference means a problem.
Calibration Check Standards

- Use to verify instrument stability.

- How Many?
  - 1 check: Good
  - 2 checks: Better (Span and Zero)
Why PSC?

- True stand alone transmitter
- Support network with knowledge
- Fast, accurate, reliable measurement
- Ease of maintenance
- User friendly operation
- Cost effective solution
- Customer care

We want to continue to earn your confidence and your business. Please contact us with any questions.
Thank you for your consideration. We will make every effort for project success with strong support after sale.