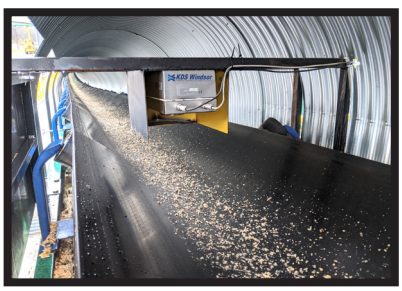
KDS Fuel Tracker M.C.

KDS FUEL TRACKER M.C.™
Wood Fuel Moisture Content Monitor



For Wood Fuel Applications:

- Green Sawdust Gasifier Systems
- Dry Shavings Burner Systems
- Boiler Systems
- Fuel Mixing Systems for Consistent Fuel M.C.
- And Other Applications

On-Line Near Infrared Moisture Measurement with the Pedigree of Stability for Process Control & Monitoring

- Improve Combustion Efficiency & Clean Burning
- Enhance Product Quality & Consistency
- Improve BTU Output of Energy Plants
- Easier Start-ups
- Increase Overall Process Productivity & Efficiency

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Real Time Measurements That Can Be Trusted

KDS Fuel Tracker M.C. ™ with 40 years of experience from the food and bulk materials processing industries now comes to the lumber manufacturing industry.

For years, generic instrumentation suppliers have offered moisture gauges which promise measurements at a low price. However, in practice, experience has not met expectation: these gauges need regular re-calibration, have poor measurement accuracy and instrument stability which limit their application where process control or even simple monitoring is important.

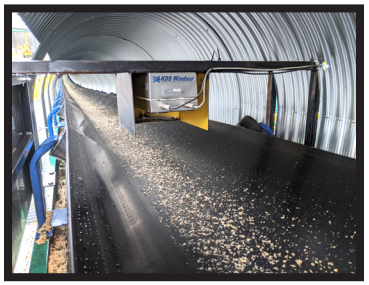
These same suppliers have said that for process monitoring gauge accuracy is not important. In reality, where measurement only is the chosen strategy, process adjustment decisions will be taken based upon the output of the gauge to manually adjust the process. Otherwise, why measure on-line at all. As such, reliable instrument performance is vital!

Now KDS offers a dependable, stable and accurate on-line measurement which allows processes to be tightly and consistently controlled manually or automatically with confidence in real time.

This system's pedigree of solid long-term instrument stability, no effects from ambient condition changes and tolerance to process physical changes (such as pass height) are all offered in KDS Fuel Tracker M.C. ™ so that end users can see the benefits of on-line process gauging and achieve an enduring return on investment and contribution to their bottom line.

Key Benefits of On-Line Measurement:

- Increasing operator awareness of fuel M.C. Changes
- Improving combustion efficiency and consistency to assure the cleanest combustion and gaining a competitive advantage
- Faster start-up and ability to change system settings to accommodate fuel M.C. changes
- Increasing product yield and quality through more efficient operation
- Maximize the ability to meet legislative compliance and safety standards
- Minimizing risk of fire or explosive damage



KDS Fuel Tracker M.C. ™ In The Process

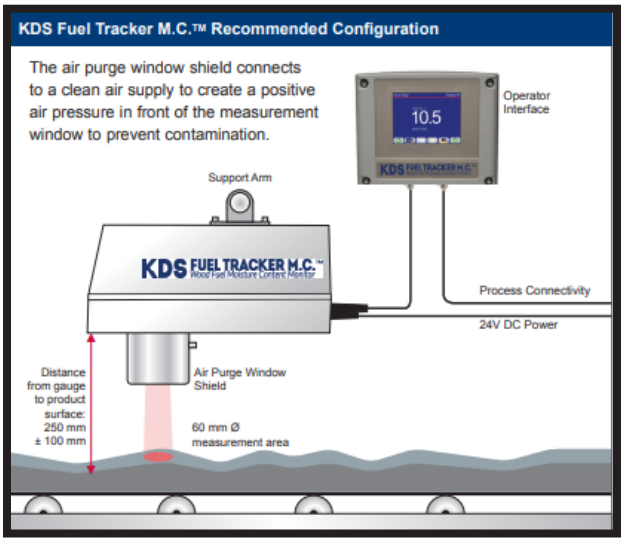
Gauging Configurations and Installation

Fuel Tracker M.C. TM in its most basic configuration is supplied as a single gauge with Operator Interface (OI), with 10 m of interconnecting cable. It is also available in a dual gauge configuration both connected into a single OI. These dual configurations allow for the most common single-point measurements, for example in a wet/dry fuel mixing system. With dual heads, measurements of the higher variable wet fuel and the resultant mixed fuel can be monitored. These values can then be incorporated into a PLC system to control the process.

The gauge as standard is supplied with an Air Purge Window to keep the sapphire optics free of dust and other volatile contaminants. In line with best practices, window contamination can be monitored as standard and alarms output to a PLC in the event routine maintenance has been neglected.

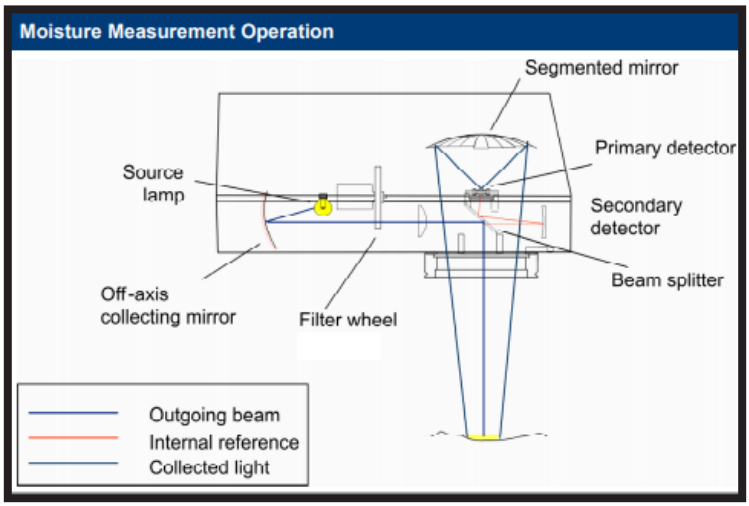
A critical application for the Fuel Tracker is for monitoring the incoming green or dry fuel for burners and boiler systems. This allows for the operators to monitor when fuel M.C. changes are about to affect the operation of their energy plant. This information can also be fed into the plant's PLC controls to effect immediate changes in settings for better combustion in a changing fuel situation.

The system can be installed easily in most processes and as a non-contact measurement it is typically installed above a conveyor belt carrying the product, or through the wall of a bin or transfer chute.



Typical Installation of Green Sawdust Burner System

How KDS Fuel Tracker M.C. ™ Measures Moisture & Specifications



KDS Fuel Tracker M.C. TM is based on proprietary technologies and proven optical filter technology. Light at a specific wavelength is absorbed by moisture. The rotating filter wheel projects pulses of light at this wavelength, and other reference wavelengths not absorbed by moisture, onto the product. Some of this light is absorbed and the rest is scattered/reflected.

The gauge light collecting optics focus the reflected intensities onto a detection system which compares the amount of moisture absorption with the reference wavelengths providing a measurement independent of pass height variations, changes in source lamp intensity and atmospheric dust.

Algorithms convert the infrared signals into an output that is proportional to moisture content and calibration is carried out using the normal slope and intercept (Span and Trim) controls to achieve agreement with the customer's primary reference method. The measurement speed is very fast (over 60Hz) and therefore delivers a continuous measurement of moisture which can be output by 4-20 mA analogue devices or using serial bus or Ethernet protocols to the process computer.

System Configuration

Source Lamp	Quartz halogen 20 W underrun, lifetime >40,000hrs
Filter Wheel Motor	24 V brushless DC
Operating Temperature Range	0-45°C (32-113°F)
Gauge and IO	10 m of interconnecting cable between gauge and OI, Cat 5e LAN cable
Power Consumption	35 W (Gauge and Operator Interface)
Head Construction	Stainless steel with Air Purge Window
Response Time	2-1000 seconds configurable
Measurement Speed	63 Hz
Environment	Gauge & OI IP65/Nema 4
Optical Window	Food-grade sapphire
Moisture Range	0-95% depending on application
Process Connectivity	4-20 mA standard, 8 Digital Inputs (Opto-Isolated), 8 Digital Outputs (FET Driven)
Optional	Ethernet IP, ProfiNet, Modbus TCP, Profibus, DeviceNet all from OI
CE compliant	EMC EN61326

Configuration includes one or two gauges, stainless steel with Air Purge Window(s), connected to an Operator Interface (OI) with 1/4 VGA colour touch screen and Universal Power Supply delivering 24V DC with 10m of cable to gauge and OI.