



Fig. 3 Online IRMA-7-D tester - NIR beam



Fig. 4: Sawdust/Wood chip testing

In addition, the online instrument has good distance and angle independence, sensing from 180 to 360 mm from the material surface for a wide range of materials. The process meter is designed for continuous operation in rugged conditions with integral air purge for cooling and cleaning. It has standard interfaces for connection to factory control systems.

SENSOR TECHNOLOGY AND FEATURES

The portable meter IRMA-7 model A (Fig. 1) has a miniaturised optical head combining the NIR light source operating at 75 Hz, and a very small detecting head. Small size is of great advantage when the user needs to get into crowded spaces common in modern machines. The meter is completely independent and has everything in it to complete all measurements. All data can be kept in a nonvolatile memory indefinitely, as can calibration libraries and other settings.

The process meter IRMA-7 model D (Fig. 2) is a compact instrument with all functions integrated to a small box. The optical head is larger than with the portable model A due to its optical sensitivity requirements. Only power and communications cables are required as external connections. High speed was set as the most important goal for the model D. It is the fastest NIR process moisture meter, with its 400 Hz moisture sampling frequency. High speed enables new possibilities in measuring and troubleshooting high-speed paper machines. It has signal processing features available for taking full advantage of the high speed. It has also an infrared thermometer for measuring the web temperature.

IN-HOUSE CALIBRATIONS

In-house calibrations are done at the Visilab humidity laboratory, where the material moisture content can be adjusted from 0 to 70%. Special work and machinery is required at the low moisture end, typically less than 2% and at the high moisture end, typically higher than 15%. These ranges are usually unattainable in regular climate chambers.

In-house calibration is typically done for the main paper



Fig. 5: Paper sheet testing in mill laboratory



Fig. 6 Paper roll testing

grades and is a multi-point calibration curve. One IRMA-7 gauge has the capacity of up to 100 calibrations and then can cover the complete paper mill requirements. The end user has easy access to any calibration data and can make his own onsite calibration changes as well.

APPLICATIONS IN PULP AND PAPER MILLS

The model A meter is designed for Quality Control (QC) in roll finishing and sheet stacks. Due to its low weight and excellent portability, one can use it over the reeling end, measuring slow webs, sheets, rolls and stacks. One can get a cross profile of a roll before it is wrapped and packed. It is an invaluable tool for checking and troubleshooting around the paper machinery and is always also in the laboratory, as well as for customer sales support.

Model D is targeted for continuous QC and rapid feedback of process data for machine control. The meter can be used as a fixed-point device (MD profiles) or in a scanner (CD profiles). High speed and good mill automation interfaces allow installations even for requiring applications. The small size enables positioning in very limited spaces.

PORTABLE TESTER APPLICATIONS

The portable IRMA-7-A testers can be used in many applications in paper and pulp mills. The unit has in-built calibration curves up to 100 grades and can be used at power plants and pulp mills to