



Moisture Measurement On Soft & Hard Wood Chips

A major pulp and paper producer processes both hard and soft wood chips at the same location, and has tried several on-line moisture systems (infrared, neutron backscatter, etc.), and nothing worked. They want to measure the moisture in their wood chips to control the addition of white liquor to their Kamyr digesters.

There are three belts at this location, two for soft wood (mostly pine) and one for a hard wood mix. The following are some of their specs.:

- Belt speed is 380 feet/min.
- Belt material is rubber
- Belt width is 30 inches
- Wood chip bed depth is between 3 to 6 inches
- Particle size 7/8 X 7/8 X 1/8 inches
- Moisture range: 40 to 55 %

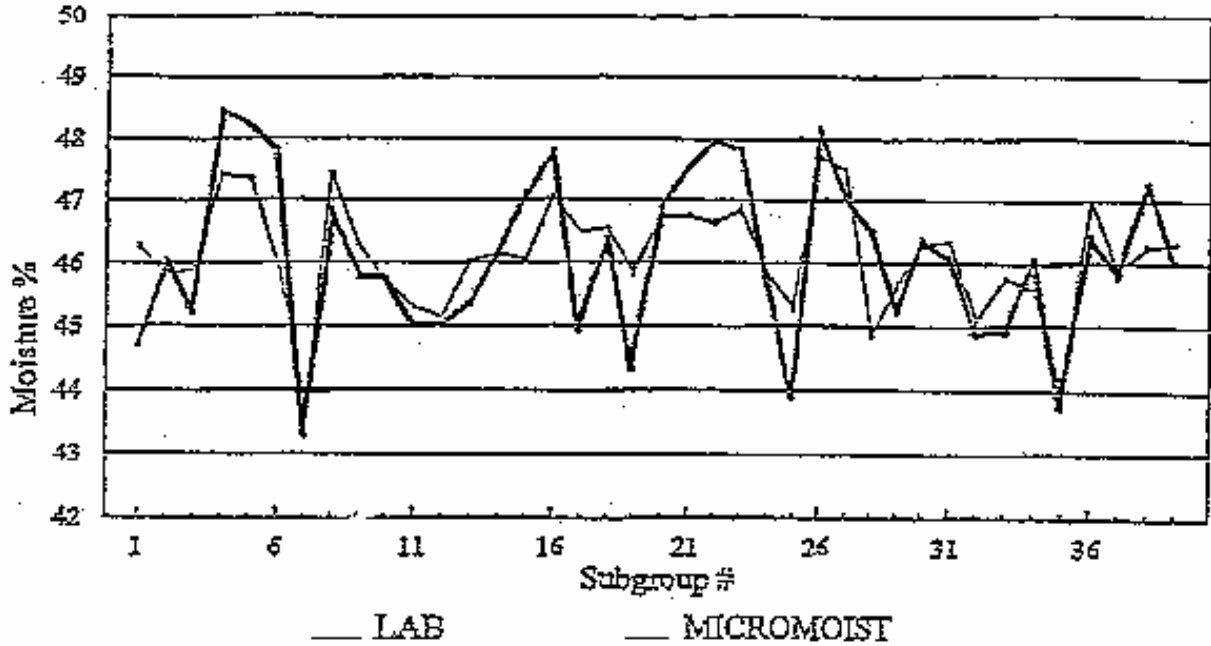
The company purchased a **Micro-Moist System**, and it was installed on the hard wood chip belt in March 1992. This belt was chosen because they will run both types of wood on it. Spiral horns were used as well as radiometric mass compensation. Over the next two months the **Micro-Moist** was operating on both hard and soft wood chips and data was collected for fine tuning the calibration. In May it was decided to have two separate calibrations, one for hard wood and one for soft. The system operated flawlessly over the next three months.

The accuracy of the **Micro-Moist** on hard wood chips was better than $\pm 1\%$. Based upon initial results on soft wood, the expected accuracy would be between 1 to 1.5%, which is very acceptable.

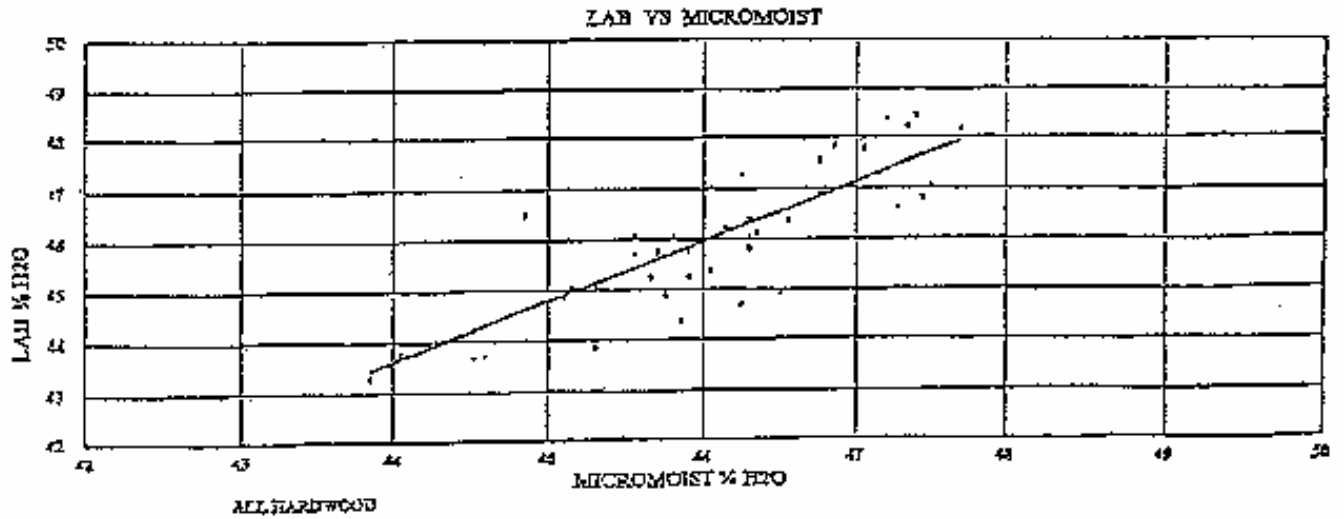
The 4 to 20 mA signal from the **Micro-Moist** is connected to their Honeywell distributed control system and is controlling the addition of white liquor to the digester. They have improved their Kappa number by better than 0.2.

This company has since purchased two additional **Micro-Moist** systems for soft wood chips.

HARDWOOD CHIP MOISTURE LAB VS MICROMOIST



Lab data were taken every 2 hrs (2 cupl avg—3 scoops/sample — 1 scoop/min) over a 6 minute period.
 Microm moist % is a 2 reading avg (1 reading every 3 minutes) during the same 6 minutes.



Regression Output:

Constant	-7.97195
Std Err of Y Est	0.850229 ✓
R Squared	0.59606 ✓
No. of Observations	39
Degrees of Freedom	37
X Coefficient(s)	1.172402
Std Err of Coef.	0.158668