

WHAT KILN SCAN CAN DO FOR YOU

Robert F. Hiller
Irvington-Moore
Portland, Oregon

First I would like to briefly recount some of the in-kiln devices that either monitor moisture content and/or weight changes of samples in dry kilns while the drying process is taking place.

Foxboro Instrument Company's Kiln Boy introduced in the late 30's had a series of levers extending into the kiln and a fixed mount on the kiln wall which held a sample of the stock being dried. Weight changes as moisture was removed were related either in changes of an air signal or direct percent of valve opening to control the temperatures at a pre-scheduled rate.

Raytheon Company worked with the Wilner Wood Heel Company in Norway, Maine about the same time using radio waves between two plates fixed to a known number of wood layers apart. The change in signal strength was plotted in relation to wood moisture content.

During World War II Tagliabue did some early work with gun stocks both by weight and solid state or resistance between pins in the wood. Later this method was improved on by Delmhorst with his Kiln-Mo-Trol or Kiln Eye and the Moore Bauer Meter. But, these devices had the problem of maintaining good pin contact in the wood as temperature and moisture content changed. Also some of the early wire leads gave problems; however, the new materials stand up quite well.

Then too, we had the total load weight change concept in which one kiln truck was either placed on a scale or load cells so that weight changes as water was removed could be read outside of the kiln.

The device I have here is the Irvington-Moore Kiln Scan which is an update of the Perry Meter developed for Weyerhaeuser Company.

This unit uses .040" thick aluminum probe placed across the width of the load a known height above the rail at six predetermined points in the kiln. These are connected to the control panel in your control room by special hi-temperature shielded coaxial cable. Using printed circuit boards an oscillator circuit supplies signal current to each probe and the impedance to ground through the lumber layers is continuously monitored and averaged. This signal is not read in moisture content but instead in micro-amperes. However, for a given kiln, species, and stock thickness this signal is proportional to and directly related to the stock moisture content from 30% down with consistent repeatability. Therefore, what we are saying is once you have your data bank for a particular load in a particular kiln this information can be used to your advantage in the following ways.

1. Moisture Content - When to shut down your kiln
2. Non-Uniform Drying - Wet spots
3. Drying Rate - How fast is drying progressing
4. Hot Spots - Leaky coil, fan problems, vents stuck, leak in the roof
5. Automatic Shut Down - When a predetermined point is reached

There are a lot of things about what this unit sees in a kiln we do not yet understand. However, the data we have collected so far proves

the worth of this unit and others like it to prevent over drying and maintain the fastest drying rate possible conducive with quality and yield.

Today's quality control concepts are more and more proving how many dollars are lost by overdrying lumber. If we can save just one dollar per MBF in a kiln handling 750 MBF per week this unit would pay for itself in one month.