

# Quality Drying of Lumber: From Laboratory to Industry

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Without an online tool to control quality of lumber during drying, the kiln operator is forced to employ a conservative drying schedule which could unnecessarily prolong the drying time and consume more energy. An attempt to reduce the drying time and energy by simply accelerating the drying rate might easily lead to a formation of several defects. Such drying defects mainly arise as a result of the internal stress (IS) built up within the lumber during drying. A new restoring force (RF) technique capable of real-time monitoring IS behavior during drying is presented. Analytical and numerical models have been developed to directly relate the measured RF to the magnitude of IS. In parallel, a semi-automatic kiln control system, *DryWoodD*, has been developed for an effective control of drying in the lumber industry. The system, connected using wire-less links, consists of up to 10 kiln control units, a microcontroller and a control software package. The system has been successfully installed and routinely used in two rubberwood sawmills.

In this talk, the effect of several conventional drying strategies on the development of IS will be discussed and the possible application of the measured RF as a controlling parameter in the drying of rubberwood lumber will be demonstrated.