

Professional Affairs

STATUS OF WOOD DRYING RESEARCH AND TECHNOLOGY SYMPOSIUM

The application of recent technological and theoretical development in wood drying was the topic of the North American Wood Drying Symposium held in November 1984, at the Mississippi Forest Products Utilization Laboratory (MFPUL). The symposium was cosponsored by SWST and MFPUL, in cooperation with the Mississippi Cooperative Extension Service.

The planning committee for the one and a half-day symposium was comprised of Phil Mitchell, Fred Taylor, Fran Wagner, and Duane Lyon, all of MFPUL, and Howard Rosen, North Central Forest Experiment Station. The symposium was attended by about 75 individuals representing education, research, government, and industry from twenty-eight states and six foreign countries.

In the opening paper, Peter Koch, Intermountain Forestry and Range Experiment Station, summarized his twenty-year research effort in which he was instrumental in developing and evaluating the high-temperature drying (HTD) of southern pine. The application of temperature drop across the load to control the high-temperature drying of southern pine lumber was discussed by Gene Wengert, Virginia Tech. Howard Rosen discussed the development and limitations of theoretical equations to describe HTD.

Energy was the subject of papers presented by Don Lewis, Nyle Corporation, Peter Garrahan, Forintek Canada Corporation, Don Arganbright, University of California, and Jim Armstrong, West Virginia University. Topics included: energy recovery from the exhaust air using a heat pump; the use of an air-to-air heat exchanger to recover exhaust heat; evaluating the energy consumption in a commercial dry kiln; and the results of a survey that targeted energy as the main concern of industry.

Techniques for reducing drying degrade in hardwoods were also discussed. Wengert described current research evaluating the use of diffusion resistant coatings, presurfacing, and better kiln control systems to reduce the checking of oak during kiln drying. Proper techniques for drying bacterially infected oak were discussed by Jim Ward, U.S. Forest Products Laboratory. Peter Stohr, National Timber Research Institute, reported on the development of new drying schedules for *Eucalyptus grandis*, which significantly reduces collapse.

Moisture content determination was the topic of papers presented by Kent Townsend, Weyerhaeuser Company, Yves Fortin, Laval University, and John Robinson, Kirby Forest Industries. Discussed were the final moisture content variability in a commercial southern pine kiln as determined by an in-line moisture meter; the measurement of water potential gradients using thermocouple hygrometers; and a mathematically derived equation applicable to the drying of wood veneer.

Moisture transport was the subject of several papers. John Siau, State University of New York, summarized the results of investigations into nonisothermal mois-

ture diffusion using equations based on activated moisture content and chemical potential. Chris Skaar, Virginia Tech, presented a paper that applies the principles of irreversible thermodynamics to define the relationship between coupled heat and moisture transport in wood. Other moisture transport topics discussed included a diffusion model based on the concept of spreading pressure, and a numerical analysis technique developed to relate diffusion coefficients and experimentally determined moisture gradients, as presented by Ralph Nelson, Southern Forest Experiment Station, and Robert Stevens, formerly of MFPUL.

Several papers dealt with innovative drying systems and their effect on wood quality. Don Laskowski, Wood Mizer Products, reviewed a new fast-drying kiln that uses alternating vacuum and heating with conductive blankets. John Phelps, University of Missouri, described anatomical changes resulting from the pressure steam drying of several hardwoods. Robert Harris, Clemson University, summarized studies that evaluated the quality of wood dried by the radio-frequency/vacuum technique. Other topics discussed included: the drying rates and moisture content variability in southern pine lumber dried using superheated steam; the press drying of 1-inch thick, quartersawn red oak; recent improvements in dehumidification technology; and the use of acoustic emissions from drying oak lumber to control the drying process.

This symposium provided a forum for the presentation of recent developments and innovations in both drying concepts and technologies. These papers are offered to SWST members in the form of a Proceedings which are available from the Mississippi Forest Products Laboratory.

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