

TECHLINE

Properties and Use of Wood, Composites, and Fiber Products

Computer Programs for Analyzing Rough Mill Processing Options

Individuals and companies who make furniture and cabinets are always searching for ways to convert lumber into rough dimension parts more efficiently with less wood waste and lower costs. Researchers with the USDA Northeastern Research Station's Princeton, West Virginia, Forestry Sciences Laboratory have created two computer programs to help furniture manufacturers become more efficient. The programs, ROMI-RIP (ROUgh Mill RIP-First Simulator) and ROMI-CROSS (ROUgh Mill CROSScut-First Simulator), were designed to help determine the best strategy for obtaining optimal wood utilization.

Both ROMI-RIP (Windows 95) and ROMI-CROSS (DOS) allow users to examine several options for cutting bills composed of solid and panel parts from rough lumber. (A panel part is made up of two or more solid parts that are glued together edgewise.) In addition, ROMI-RIP can handle random-length part requirements, such as molding stock. ROMI-RIP and ROMI-CROSS can handle part and processing sizes measured to the nearest 1/16 inch or 1 millimeter. In addition, users can experiment with different part prioritization and scheduling strategies as well as chapsaw and rip saw optimization settings. ROMI-RIP offers seven arbor types for processing lumber, including fixed blade optimizing, selective-rip, and all-blades-movable types. By allowing such a variety of options, many users can tailor the simulation program to match their processing situation.

The utility of these simulation programs depends not only on the scope and accuracy of the programs but also on the quality of the input data. The 1998 program data bank for kiln-dried red oak lumber contains 20,021 board feet of 4/4 lumber (3,487 boards) in grades ranging from FAS through 3A Common. These boards were graded with the new UGRS (Ultimate Grading and Remanufacturing System) computer program, which runs in Windows 95 or Windows version 3.1 with win32. A feature of UGRS is that the maximum grading surface area in the maximum number of grading cuttings can be calculated after a board's grade is determined following NHLA rules. This new maximum value is a better predictor of the potential utility

of individual boards. The data bank provides raw material inputs for the simulation programs described earlier.

These simulation programs are being widely used by the secondary wood processing industry, researchers, consultants to the industry, primary wood processors looking for value-added manufacturing opportunities, and individuals contemplating entry into secondary wood products manufacturing.

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