

Airline Manufacturing Installs State-of-the-Art Rough Mill

by Philip Steele and Duane Motsenbocker

Two-years ago Airline Manufacturing Company embarked on a modernization program of their furniture dimension parts manufacturing facility located in Columbus, MS. Process improvements focused on adopting Lean Manufacturing techniques where feasible. Both work cells and flow lines have dramatically increased productivity and speed. Equipment modernization included acquisition of new-generation CNC routers, panel saws and others.

“We dedicated ourselves to improving processes and equipment to increase product quality and to reduce costs and delivery times,” said Judy Dunaway, Airline Manufacturing Company president.

The latest equipment installation is a state-of-the-art rough mill. The rough mill is composed of a Paul gang rip saw, two high-speed optimizing crosscut saws and an automated sorting system.

The Paul gang rip saw is a C/gL with a Model AB 920 in-feed system. Lumber enters the system from a tilt-hoist infeed with an unscrambler that feeds a chain transfer. The chain transfer transports the lumber to a position near the laser lumber scanners. The laser scanners are comprised of 15 laser modules positioned at one-foot intervals to detect lumber width and wane over a maximum 16-foot length.

After passing under the scanners, serrated pick-up bars lift the lumber and position it on rollers where it is held firmly by a traveling infeed chain. This reduces vibration and lumber movement which can result in inaccurate board placement with respect to the rip saws. The scanned lumber is fed through 6 selective rip saw blades that all move to allow maximum utilization of lumber width.

The system software solution considers lumber width, length, wane, crook and sweep from scanner information to maximize yield of cut parts. A frequent concern with selective rip saw systems is the ability to provide a glue-line quality edge. “The Paul representatives assured us we would have the edge quality that is required for the numerous edge-glued panels we produce. Their system has more than lived up to this guarantee,” said Mike Dunaway, director of manufacturing operations.

Productivity with the rip saw has lived up to Airline’s expectations. The system can process 15,000 BF of 12-foot long, 4/4 thickness lumber in an 8-hour shift. The productivity of the system has allowed the company to discontinue use of 10 straight-line rip saws and reassign 20 employees who were required to run them.

The ripped strips from the gang rip saw are hand marked for defects and transported to two optimizing parallel crosscuts. These crosscut optimizers are high-speed Paul Model 180s with MEGA upgrade. The high-speed crosscuts are necessary to handle the high volume of production from the new gang rip saw. However, the high productivity of the rip saw has also provided the expansion potential to meet future demand. Tim Vann, director of product development said the unused capacity available with the rip saw allows the company to increase future production potential simply by adding a third optimizing crosscut saw.

Crosscut parts from the optimizers flow to a new automated sorting system that allows for high-speed sorting and final packaging of the produced parts.

“We estimated our returns from this investment based on increasing our parts yield from an average of 52 to 62 percent. At this point we are pleased that our actual yield increase has met these expectations,” stated Dunaway. Tim Vann praises the ability of the new rough mill system to allow simultaneous processing of multiple cutting orders. “The ability to group large numbers of parts widths and lengths results in maximization of lumber length and width utilization. It took some effort to develop our information systems to fully capitalize on this aspect but now that has been completed and we are very pleased with the result.”

In addition to the improved productivity and quality, the system has increased the accuracy of parts cost

estimation. “Previously, lumber yield and labor costs were difficult to estimate. Estimated costs are now very accurate, assuring our customers of excellent products priced fairly for both parties,” Vann added.

Those interested in a virtual tour of the Airline Manufacturing plant, including the new Paul rough mill system, can obtain a newly released CD from James Williamson, information systems manager, at jamesw@airlinemfg.com.



MSU Extension Instructor Duane Motsenbocker and Judy Dunaway

