

Integrated Truss Fabrication System

Boozer Lumber Company, Columbia, SC, has recently opened a truss fabrication facility that uses advanced technologies to improve wood truss manufacturing. Boozer faced challenges arising from complex architectural designs, labor shortages, low efficiency and productivity, and the need to ensure quality and structural integrity of their product. Boozer launched a study to identify the industry's best tools and technologies to be used in a new facility. The Integrated Truss Fabrication Facility was created by a partnership involving Boozer Lumber Company; Virtek Vision Corporation of Waterloo, ON, Canada; MiTek Industries, Inc., of St. Louis, MO; and South Carolina Manufacturing Extension Partnership (SCMEP) of Columbia, SC. The first major component of the plant is the automated MiTek Cyber Saw which cuts lumber to critical lengths and angles. The engineered design file is downloaded to the saw which automatically calibrates and sets the blade angles and lengths of cuts. A high-speed printer attached to the saw prints important information directly on each cut board. An SCMEP designed material handling system transports the cut lumber to the truss assembly tables which were developed using technologies from the metal working and the aerospace industries. Each assembly table has a Virtek Vision laser projector mounted precisely over its center. The computer engineered data file is fed to the projector, and the truss outline and components are projected directly on the table surface, thus allowing operators to simply line up the cut boards with the laser lines. A further development is a laser jiggling positioning system with special fixtures. Using the engineered data file, the Virtek software calculates the correct position of the fixtures and projects that information on the table surface. The fixtures themselves have cross-hair targets on each unit allowing the operator to precisely align the fixture with the positioning laser line and to quickly secure the fixture in place.

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