

# Trials of Prototype Roll-Feed, High-Temperature Dryer for 8/4 Southern Pine

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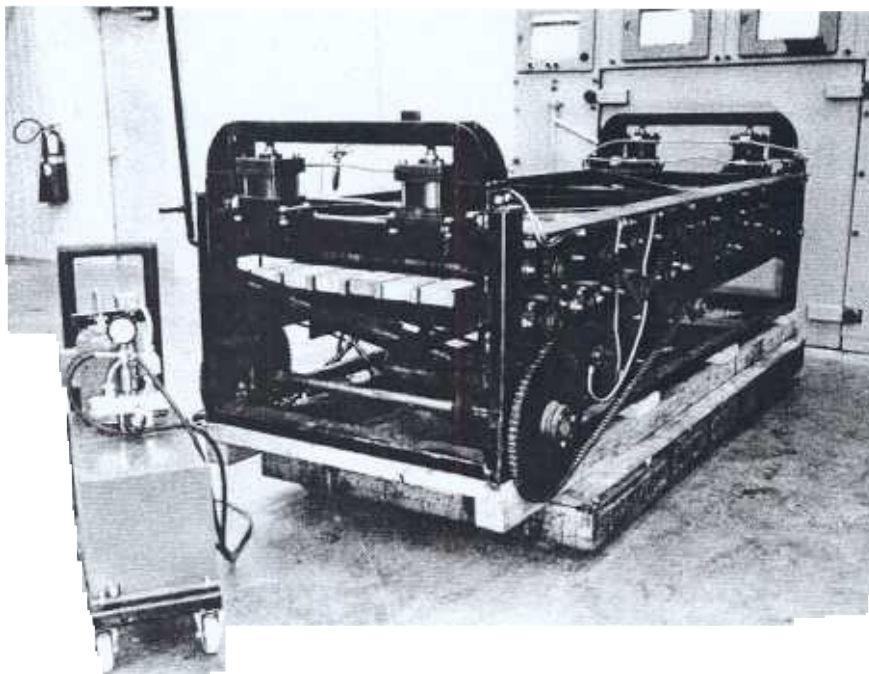


Figure 1. — Prototype roll-feed kiln. Fixed steel guidebars are observable on either side of each stud. The hydraulic power package (left foreground) by which rotation direction of the rolls was periodically reversed was mounted on wheels outside the kiln. Hydraulic and air lines were piped through the door of the compartment kiln (background) into which the roll-feed apparatus was inserted during the drying cycle.

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## Abstract

Eight-foot studs measuring 1.75 by 3.84 inches in cross section were cut from veneer cores and dried in a prototype continuous kiln that provided complete mechanical restraint against warp. Twenty-four hours on a high-temperature schedule brought the pieces from 87.9 to 8.3 percent moisture content without casehardening. Crook, bow, and twist were half that found in conventionally stickered studs dried on the same schedule. It was concluded that the reduction in warp (with resultant increase in lumber value), together with the system's inherent labor efficiency, justifies continuing work on mechanical design of roll-feed continuous kilns.

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**P**REVIOUS RESEARCH (Koch 1971b, 1972ab) showed that 8-foot southern pine studs measuring 4 inches wide and 1.9 inches thick can be dried to 9 percent moisture content in 21 hours in a kiln providing a cross-circulation velocity of 1,000 fpm at dry- and wet-bulb temperatures of 240°F and 160°F. Casehardening can be relieved during an additional 3 hours at 195°F dry-bulb and 185°F wet-bulb temperatures. Moreover, the research showed that very straight studs can be obtained if mechanical restraint is applied during the drying process.

The speed of drying possible at high temperature and the possibilities for economical mechanical restraint in a roll-feed dryer prompted construction and testing of

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