



Dry Kilns for Lumber Service

Kiln drying is a standard practice in wood production mills and serves to efficiently bring green lumber moisture levels down to “workable” range—moisture content level. In the case of kiln dried lumber, the wood is dried in giant kilns with carefully controlled saturated steam temperature and humidity levels. The goal is to get the boards to dry quickly and evenly, and to prevent warping that could render the wood unusable. The alternative is air drying, in which lumber sits in a breezy area so that it loses moisture and contracts. Air drying tends to take longer, and it brings the moisture content closer to 15% than the desired 6% to 8%.

Specific Application/Service-Related Requirements

Temperatures. Conventional dry kilns commonly use initial drying temperatures, when the lumber is more than 50 percent moisture content, from 100 to 130 degrees F. As the lumber dries, temperatures are gradually raised. When the lumber is under 15 percent moisture content, temperatures, depending on species, range from 200 to 325 degrees F, although 280 degrees F is preferred in most cases. The heat source used to develop these temperatures is saturated steam with operating pressures of 75-150 PSIG.

Humidity. The control of relative humidity (AKA dry bulb/wet bulb) during kiln drying is necessary to avoid creating shrinkage associated defects, such as cracks, as well as to equalize and condition the wood with a high degree of precision. Today, many kilns use computerized controls. The control of RH is done with vents located on top of each kiln. Typically, each kiln will have between 6 to 12 vents operated and controlled with floor mounted damper drives.

Drying Times. Depending on species, drying times can range from 12 to 96 hours with the typical being 48 hours.

Standard Material

NOTE: Please consult A-T Controls for material selection for your application. These parameters are guidelines, and customers are responsible for materials of construction and lubricants being compatible with their kiln drying application.

NOTE: Due to the long drying times where the actuators expose to high process temperatures, we install a 4” mounting bracket and coupling between the valve and actuator to act as a thermal barrier

Valve Packages (*Others available*)

Series V8C - Sizes 1” – 2”, Full Port V-port Control Valve, Class 600/400; 2000/1500 BPVC (by size), ISO 5211 Direct Mounting Pad, Threaded, Socket Weld, or Butt Weld Ends, 30°/60°/90° v-notch options stock (others available).

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Series V9C - Sizes 1” – 2”, Full Port V-port Control Valve, Class 150 flanged ends, ASME B16.10 face-to-face, ISO 5211 Mounting Pad, 30°/60°/90° v-notch options stock (others available).

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Series VSC - sizes 1” – 2”, Full Port Equal Percentage V-port soft seat Segment Control Valve, Class 150/300 flanged and Wafer style, ISA S75.04 face-to-face, ISO 5211 Mounting Pad.

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Date Created: 04/27/2020

Date Modified: 07/01/2021

Series WEM690 Electric Actuators – 690 in*lbs. electric modulating actuator, TMC3 Modulating Control + 4-20mA Transmitter, NEMA 4 & 6, 110VAC/1PH.

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Series FDWEED Floor Mounted Damper Drives – WE style actuators, NEMA 4 & 6 110VAC/1PH with multiple options mounted to custom damper drives.

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