1. Southern Oregon-Northern California Seasoning Club

Pre-Drying Ponderosa Pine

For the Leonard Lundgren Lumber Company.

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During November, 1953, the Leonard Lundgren Lumber Company of Bend, Oregon, was faced with the problem of insufficient dry kiln capacity. We did not feel that we could afford additional kilns, so we began to seek another means of obtaining the necessary volume of dry lumber.

Thought was given to different ways of stacking, particularly air-drying, schedule changes, and other means, but none warranted consideration. Then a system of pre-drying entered my mind. I worked up preliminary sketches, presented them, and had them accepted.

Basically the Pre-drier is a shed, simple in design and construction, ahead of the kilns. The main structural members are 6 x 6 and 4 x 8" Douglas fir from our own mills. The rafters, long length 2 x 10, 2 x 8 and 2 x 6" Douglas fir were brought from the Willamette Valley. The lower cord of each truss is one continuous member 31 feet long. Our sheathing is white fir center match. The roof is covered with #5 S4S Ponderosa Pine, overlaid with 60# roofing paper. The doors are one piece construction and are mounted on over-head rolls.

The heating system is made up of 2550 feet of 1" steel fin pipe, used in vertical coils similar to the center or booster coils in a multiple track kiln. The outside coils consist of 27 horizontal lines; the interior, of 16 lines. Steam is furnished from a 2" header and 1¼" feed lines. The average steam pressure is 110 pounds.

The fan system is composed of eight units. Each unit is made up of a 3 HP, 300 RPM gearhead motor and a 60" fan. Each outside fan is mounted in a bay-window type structure to facilitate air circulation in both summer and winter. In summer the air flow pattern is a direct flow, entering on one side of the shed and leaving on the other. Then the temperature inside the shed is approximately 80-86° F. During the winter months, the shed is closed and the air is recirculated. The direction of air flow is reversed every four hours, on the same schedule as the kilns. In winter a temperature of 105-115° F is held. We make no attempt to control humidity, depending solely on the moisture leaving the lumber to maintain that important factor.

How much drying is accoplished in the shed? We figure about one per cent per hour is lost on frozen stock with a moisture content of 100% or over. In summer the loss is about twice this. With stock having less moisture, the loss rate is less. The following figures will give you some idea.

Moisture Content Loss Samples #1 SHED.

Lumber, Ponderosa Pine 4/4 Moulding, lumber frozen.

Date of check: 12-29-54.

Drying period in shed: 32 hours.

	INITIAL M. C.	FINAL M. C.	LOSS IN PERCENTAGE
1.	136 %	99 %	37 %
2.	141 %	90.8%	50.2%
3.	119 %	107.2%	11.8%
4.	122.5%	96 %	26.5%
5.	115.5%	77.8%	37.7%
6.	138 %	84.7%	53.3%
7.	42.3%	28.8%	13.5%
8.	127.8%	94.5%	33.3%
9.	106 %	69 %	37 %

Average drying approximately 33.4% in 32 hours.

Moisture Content Loss Samples #2 SHED.

Lumber, Ponderosa Pine 12", 4/4 #4 Common Heart.

Date of check: 12-29-54. Lumber frozen.

Drying period in shed: 38 hours.

	INITIAL M. C.	FINAL M. C.	LOSS IN PERCENTAGE
1.	42 %	13.8%	28.2%
2.	36.5%	19.6%	16.9%
3.	30.2%	15.7%	14.5%
4.	36.5%	13.3%	23.2%
5.	36.5%	23.6%	12.9%
6.	43.9%	16.3%	27.6%
7.	34.7%	18.8%	15.9%
8.	74.8%	20.2%	54.6%
9.	27 %	19.9%	7.1%

Average drying: approximately 22.4% in 38 hours.

The first month the Pre-drier was in operation, it increased our production six hundred thousand feet, board measure. With the exception of October, 1954, which was up one hundred and twenty thousand feet, the increase in volume dried per month has been within sixty thousand feet of the increase of the first month. The low volumes occur during the winter months when the number of our charges drop from an average of 52 to 50. However we do make a distinct gain in winter as all snow, ice, excess moisture, and frozen lumber is eliminated in the sheds. Six inches of snow on the lumber moving into the sheds will be melted and the lumber surfaces dried in eight hours. In our most extreme weather, our kilns are up to set temperature in one hour.

The cost of the sheds, including the equipment, all of which was second hand, was approximately $9,500.00.