

Forest, Wildlife, and Range Experiment Station

## An Experimental Wood Preservation Cylinder

by John P. Howe and Robert W. Nix<sup>1</sup>

The University of Idaho has been active in research in wood preservation ever since the pioneering work of Dr. Ernest E. Hubert in the early 1930s. To aid in this work a vacuum-pressure cylinder has been installed in the Wood Utilization Laboratory of the University of Idaho's College of Forestry, Wildlife and Range Sciences. It is designed for the treatment of wood with preservatives and fire retardants. The unit is a design modification of a cylinder built by Potlatch Forests, Inc. and described by Markley (1962). Our cylinder is being used for the instruction of students and for research of interest to Idaho's forest products industries.

### Description of Cylinder

The cylinder is made of  $\frac{3}{8}$  in. thick steel and is mounted on legs (Fig. 1). The inside diameter is 20 in. and the inside length is 4 ft.  $7\frac{3}{4}$  in. The door is double-hinged and has an "O" ring seal to assure an airtight fit. A wide variety of treatments is possible since the cylinder is supplied with steam, water, vacuum and air (Fig. 2). It may also be hooked up to bottled gas. The plumbing is color-coded for easy identification.

### Features of Special Interest

1. The cylinder was designed for 150 psi. operating pressure. It was static tested at over 400 psi. The safety valve is set at 300 psi.
2. The cylinder can be pressurized with water or nitrogen gas to 150 psi. Heating with steam to 60 psi. gives a chamber temperature of approximately 285 degrees F. When installed in the new forestry building in mid-1971, the cylinder will be hooked

up to 90 psi. steam. This will allow temperatures to be raised to 320 degrees F.

3. Water pressure in the cylinder can be raised to 300 psi. by the use of a manual pump.
4. The cylinder can be put under a maximum vacuum of 25 in. of mercury.
5. Present air pressure to cylinder is  $90 \pm 5$  psi.
6. Closed steam coils provide a means of heating the contents of the cylinder.
7. The cylinder is provided with removable shelving.
8. A safety switch prevents use of the cylinder except when the door is properly sealed.

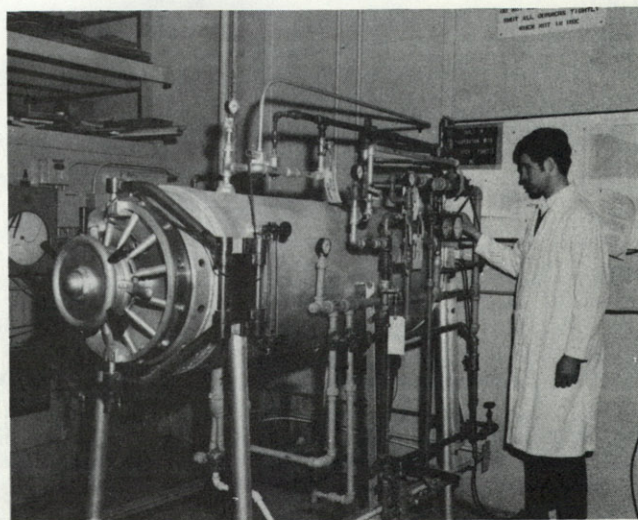


Figure 1. The experimental wood preservation cylinder.

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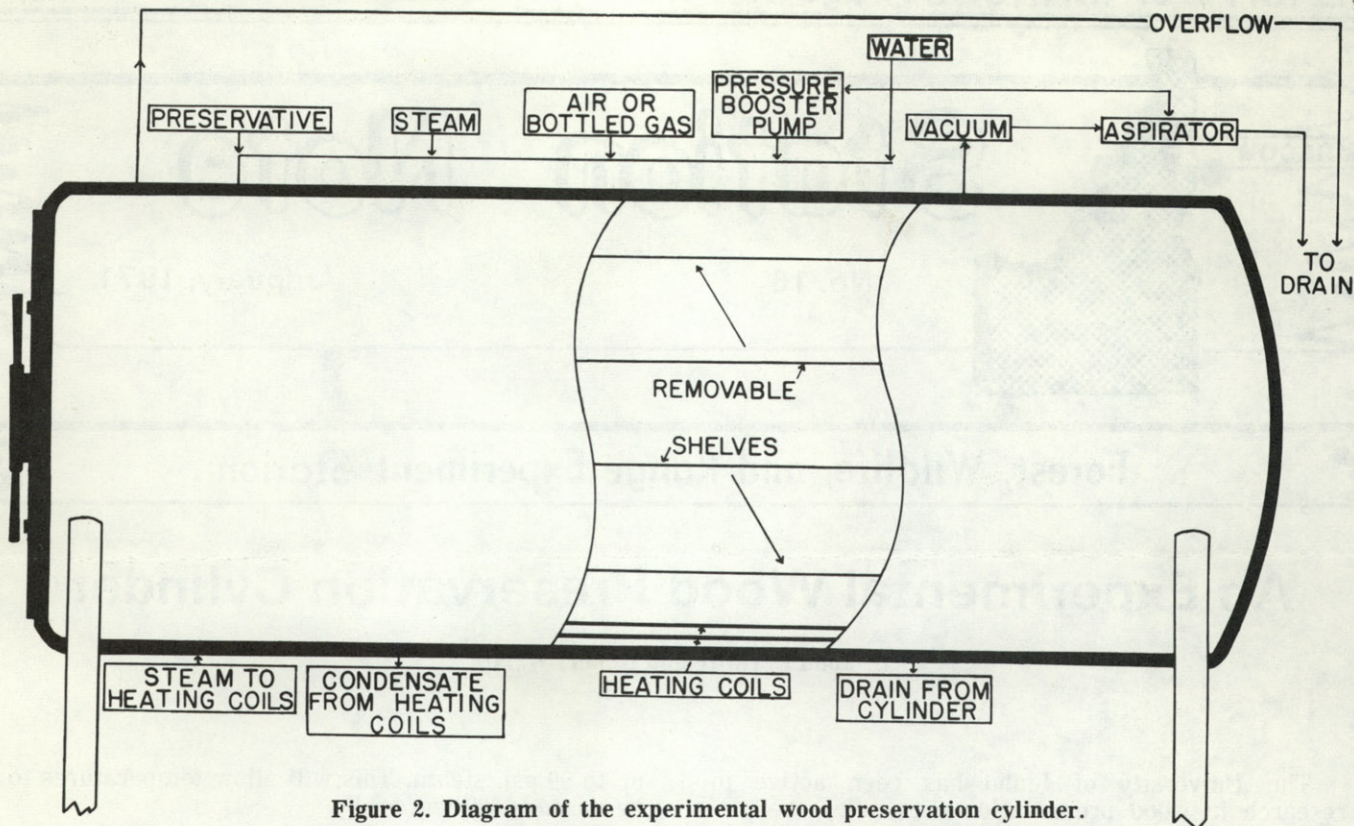


Figure 2. Diagram of the experimental wood preservation cylinder.

### Cost

The cylinder was fabricated in the University's machine shop. Excluding the cylinder and door which came from military surplus stock, a breakdown of costs follows:

Item	Cost
Materials	\$ 525
Labor	
Fabrication	\$1275
Installation	200
	<hr/>
	1475
Total	\$2000

The University of Idaho hopes that this cylinder will meet the research needs of industry as well as the needs of its students. Forest products companies dealing with wood preservation are most welcome to use this facility.

### Literature Cited

Markley, J. H. 1962. Construction of a simple vacuum-pressure cylinder. For. Prod. Jour. 12 (8): 384.

### Other Publications

The following publications are available at the College of Forestry, Wildlife and Range Sciences at the University of Idaho:

- A Small Dry Kiln. 1963. Howe, J. P. and W. S. McNamara. Forst Products Journal, Vol. 13 (9): 417-418.
- Current and Potential Forest Products Research in the Rocky Mountain States. 1969. Howe, J. P. Federation of Rocky Mountain States Research Note 1, 4pp.
- List of Bark Utilization and Marketing Publications. 1970. Howe, J. P. and K. M. Sowles. University of Idaho College of Forestry. Special Bulletin.
- List of Kiln Drying Publications. 1970. Howe, J. P. and K. M. Sowles. University of Idaho College of Forestry. Special Bulletin.

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