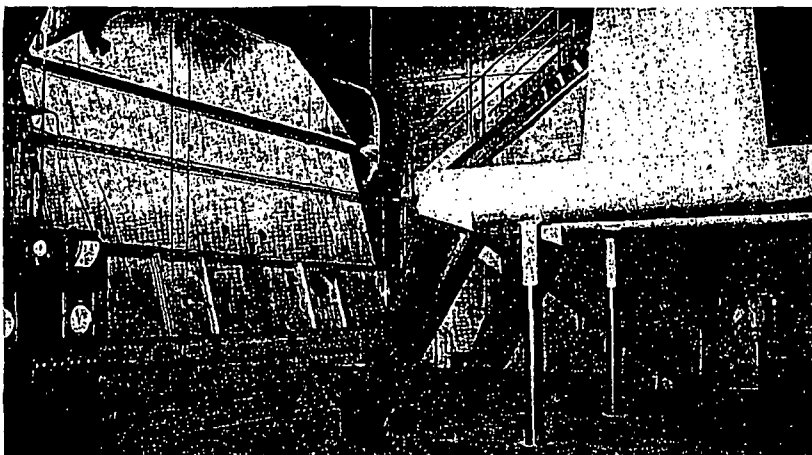
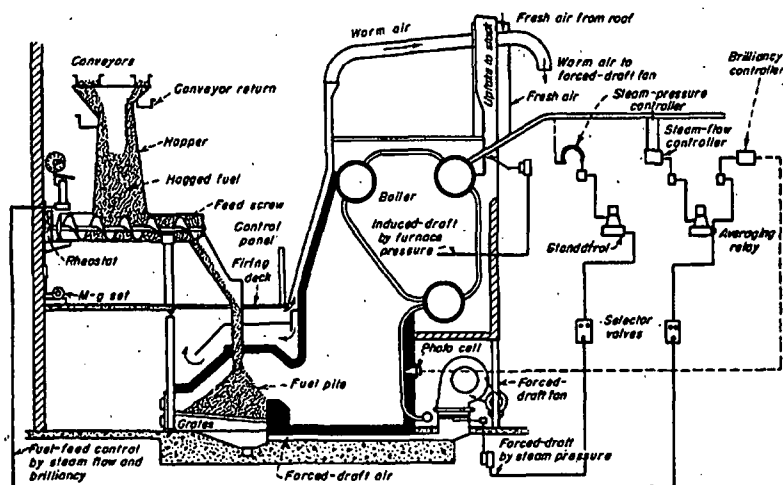




AUTOMATIC FEEDING is accomplished by a variable-speed screw in a trough under a hopper supplied from overhead conveyors. Complete filling of screw feeder shuts off excess air to the furnace tops; thus the air-fuel ratio may be controlled

Automatic Feeding of Woodwaste



AUTOMATIC CONTROL is outlined in a diagram that shows schematic hookup of combustion-control devices. Note location of the photo-electric cell for measuring the brilliancy of fire



HAND FIRING, even in a relatively up-to-date wood-burning boiler plant like this, is inefficient because an uncontrolled amount of excess air may enter through fuel chutes. High velocity of fuel from conveyors to grate causes pile to pack

Replaces Hand Firing, Saves Fuel

Control system developed at Klamath Falls plant, Weyerhaeuser Timber Co., uses fire's brilliancy to adjust automatically for differences in fuels, holds air-fuel ratio constant for smoke-free combustion. Harry Panning, mech supt, tells how it works

► WHEN CHANGING CONDITIONS made woodwaste scarce, higher efficiencies than could be obtained with hand firing were needed, at the Klamath Falls, Oregon, plant of Weyerhaeuser Timber Co. In collaboration with Bailey Meter Co. we developed automatic feeders and controls for the steam generators. This system includes measurement of fire brilliancy as a regulating factor in fuel-feed control.

Changes in the fuel situation that encouraged this development are being felt throughout the lumbering industry. The day is rapidly disappearing when disposal of woodwaste, consisting of sawdust, planer shavings and hogged fuel (chipped slabs), represents a troublesome and often expensive problem for the lumber manufacturer. In

the past, a small part of the waste served as fuel for steam generation while the remainder was disposed of in any way possible, often by incineration. Now, new developments on the one hand reduce amount of waste resulting from mill operations and, on the other hand, make the waste that is produced valuable for a variety of purposes.

Not a Waste Product. Power plants in the wood industries today thus burn a fuel that often has real economic value. Instead of a waste product to be disposed of by the least expensive means, which usually proved to be firing under a boiler. In many modern mills, supplementary fuels, such as oil and coal, must be burned because woodwaste supply for fuel purposes is inadequate. Accordingly, conditions are

beginning to put a premium on combustion efficiency whereas it might be fairly said that in the past there was a premium on inefficiency.

Usual Setup. In the commonest arrangement, woodwaste is fired on a flat or slightly inclined grate in a duct oven, or extension furnace. Most relatively modern plants have an overhead conveyor running through the boiler room, and the one or more duct-oven calls are fed by chutes (see photo above). Amount of fuel fed is controlled by an opening with a slide, in the bottom of the conveyor. This is operated by the fireman, who walks along the furnace tops, looking down on the fuel piles, and decides when to add fuel according to his best judgment. In addition to dependence on the human factor, a major defect of this arrangement lies in the uncontrolled excess air that enters through the fuel chutes. This makes impossible the close control of air-fuel ratio needed for high efficiency.

Automatic Feeding. The photo and diagram on the facing page show the automatic-feeding scheme developed at Klamath Falls to overcome these difficulties and boost combustion efficiency.