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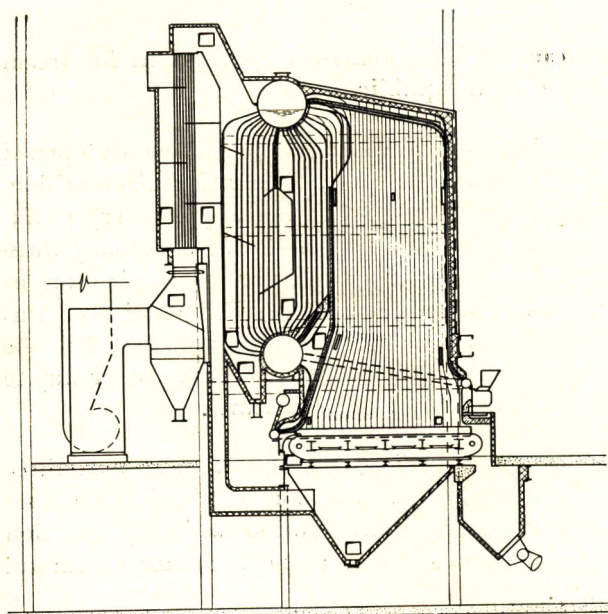
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OHIO EDISON COMPANY EXPANDS STEAM HEATING PLANT AT YOUNGSTOWN, OHIO

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The North Avenue Heating Plant of Ohio Edison Company supplies the space heating requirements for most of the downtown business section of the City of Youngstown, Ohio. This steam is supplied to the various customers through a low-pressure distribution system at a maximum pressure of 25 psig. The Youngstown Metropolitan Housing Project, which is about one-half mile from the plant is supplied with 150 psig steam for space and water heating. Three laundries are also supplied from the plant with 150 psig steam for space heating, water heating, and processing.



In 1946 it became apparent that additional capacity would be necessary in the near future. Since the existing boilers had been in service for many years and were relatively inefficient, it was decided to remove four of the old boilers and install three 90,000 lb-per-hr steam generators, retaining two of the old units as standby capacity. In the fall of 1947 the three new boilers were installed.

The three 90,000 lb-per-hr boilers are bent tube water tube ones, and are rated at 1193 hp. Each boiler has 10,953 sq ft of effective heating surface and 973 sq ft of water-wall surface. The boiler operating pressure is 150 psig.

The stokers are spreader type, consisting of four, under throw spreader units, with a traveling grate or continuous ash-discharge system.

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A cinder-return system picks up the fly ash from the boiler soot hoppers and the mechanical dust collector and returns it to the furnace.

Combustion control is a positioning-type control. Boiler pressure is accurately controlled by means of a master control which regulates an air-loading pressure which in turn positions the fuel feed and the damper position on the outlet of the forced-draft fan. The induced-draft-fan speed is controlled to maintain constant overfire draft.

With the demand on the plant increasing steadily since 1947, the two old 25,000 lb-per-hr boilers did not provide adequate dependable standby since total expected steam demand is almost 250,000 lb per hr. It was, therefore, decided to install a fourth 90,000 lb-per-hr unit and remove the two small old boilers. No new building will be required as there is sufficient room in the present building. With the completion of this fourth boiler, scheduled for November or December this year, any three of the 90,000 lb-per-hr units will be able to carry the load during an emergency outage of the fourth unit.

The new No. 4 boiler will have a 90,000 lb-per-hr continuous capacity at 150 psig, saturated-steam temperature. It will have a maximum four-hour-peak capacity of 100,000 lb-per-hr. The installation cost will be about \$500,000.

Coal used for all four boilers is local strip mine coal with an average as delivered Btu of 11,500.

The new boiler will be fired by a traveling-grate spreader stoker equipped with three over-throwing-type mechanical feeders. The stoker is 14 ft wide and 16 ft long, is driven by a hydraulic drive and discharges ash at the front of the boiler. Four zoned compartments are provided to give accurate distribution of air from the air chamber. These four-zoned compartments provide a better means of controlling combustion at low ratings which results in better efficiency and better smoke control.

A cinder reinjection system is used to return the fly ash from the boiler soot hoppers and the dust collector to the furnace. This fly-ash-return system is a straight-line reinjection system and is constructed of erosion-resisting material. The air for reinjection is supplied by the overfire-air fan and is so arranged that this air can be supplied from the air heater or from the ashpit at the discharge end of the stoker.