

Youngstown in Chicago

THE YOUNGSTOWN SHEET and TUBE COMPANY ranks sixth among the steel producers of the United States, with a production capacity of 5,520,000 tons of ingots per year and a well-diversified line of products. Organized in 1900, an important step in the development of the company was entry into the Chicago area in 1923 through the purchase of the plants of the Steel and Tube Company of America. These plants, now known as the Chicago District of the parent company, have been expanded and modernized, and today present a completely integrated operation located near important markets and with easy access by rail and water to raw material supplies.

Annual capacities are now set at 2,676,000 tons of open hearth steel ingots, 1,976,600 tons of iron, and 1,538,500 tons of coke.

Five Elliott centrifugal compressors now serve the three batteries of Koppers by-product coke ovens at the Indiana Harbor plant. This line, illustrated, will soon be augmented by two more Elliott units, which will serve a new battery of 75 coke ovens, now under construction.

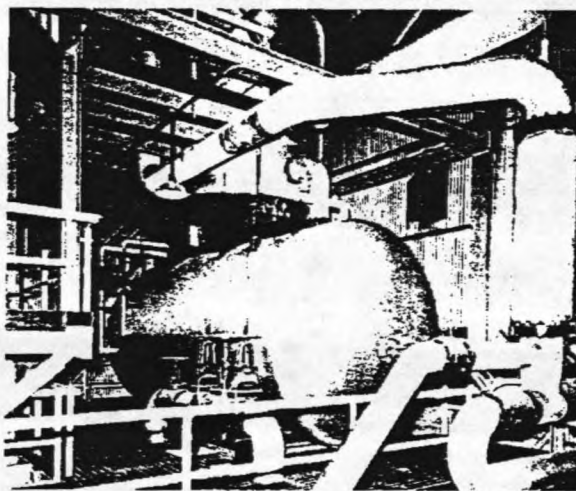
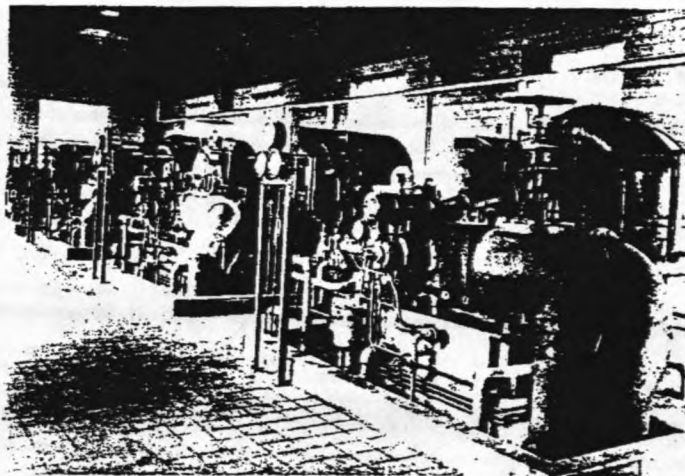
Coal is now coked in three batteries of ovens. One battery contains 75 ovens and the other two batteries each have 60 ovens of horizontal flue design, taking a 15-ton coal charge. The larger unit takes an 18-ton coal charge. All ovens are under-fired with coke-oven gas, consuming about 44 percent of the total gas make. Under normal operations, the large battery operates on an 18-hr coking time and cokes 1800 tons of coal per day, 100 ovens being pushed each day. The two smaller batteries usually work on a 17½-hr coking time and combine to push 165 ovens and coke 2475 tons of coal per day.

Surplus coke gas to the extent of 26,000,000 cu ft per day is boosted to 5 psi pressure and distributed to various furnaces in the steel plant. Straight coke-oven gas is used in the strip, sheet, and tin mills. Coke gas is also distributed through the steel plant, and when the supply is inadequate, an equivalent mixture of natural gas and air is added.

New coke ovens were included in an expansion program started in 1950 and completed in 1954.

The above information was taken from a lengthy article which was published in the September 1955 *Iron and Steel Engineer*.

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The top picture shows three coke-oven gas exhausters and two gas boosters. The exhausters are each rated 28,150 cfm of gas, which is compressed from minus 15-in. water gage to 3.5 psig discharge pressure. They are driven by 712-hp, 1570-rpm, single-stage steam turbines. The boosters are each rated 27,000 cfm, taking the gas at 8-in. water gage and discharging at 5 psig. The turbines are rated 725 hp, 1500 rpm. One more exhauster and one more booster, more an order, will soon be added to this line.

Bottom picture is the Elliott deaerating feedwater heater serving the power plant. Rated 589,267 lb per hr, it consists of a vertical deaerating heater mounted on a horizontal storage tank. A duplicate unit is on order to take care of current expansion.