

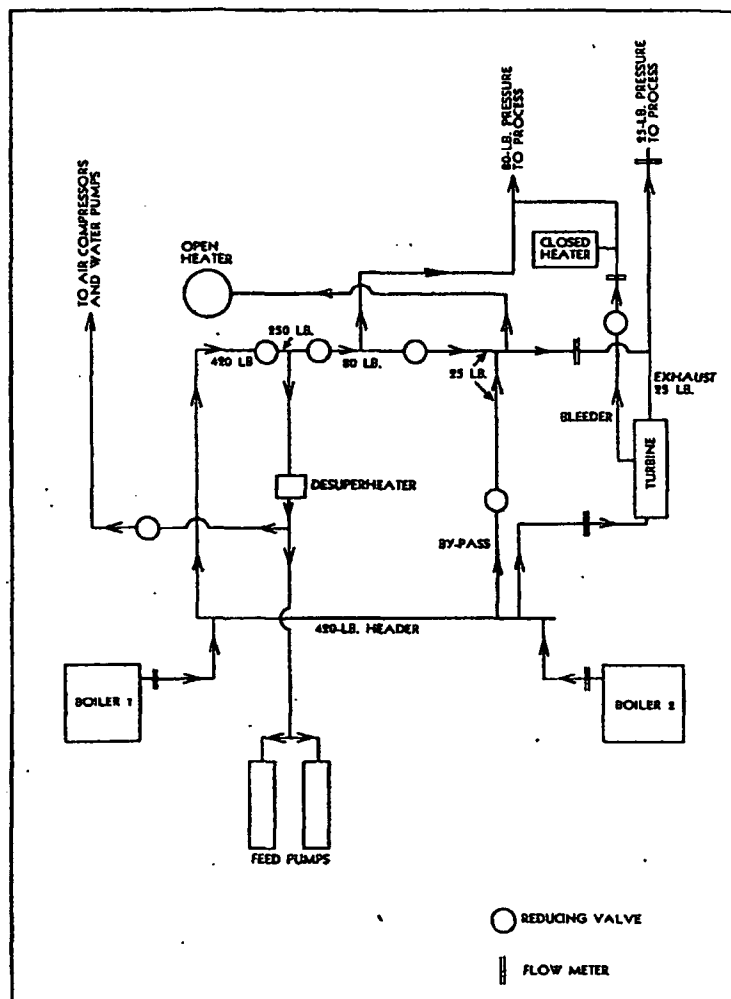


Fig. 4—Steam piping diagram, indicating the use of reducing valves and flow meters.

provided for non-automatic extraction of steam from two intermediate stages. The 80-lb. pressure stage was equipped with check and reducing valves. The 40-lb. stage was plugged to be available when expansion of process might require 40-lb. steam. The turbine exhausts against a back pressure of 25 lbs. The turbine is direct-connected to an Elliott alternating-current generator with direct-connected exciter. The turbine has the usual speed governing and emergency

overspeed features with main and auxiliary oil pumps, pressure feed lubrication, oil cooler, etc.

The alternating-current generator is rated at 1562 kv.-a., 480 volts, 3 phase, 60 cycles. An air filter provides clean air to be circulated in the generator windings.

The turbine, generator and exciter run at 3600 r.p.m.

At the time the installation of new equipment and revamping of the old was taking place, the factory was operating at 100% ca-

capacity and some departments were behind schedule. The problem of installing the equipment with a minimum of production interruptions was solved by a careful planning of the job.

It was essential that the old boilers be kept in operation until the new ones were installed. This was accomplished by installing one new boiler and operating it at 100-lb. pressure to carry the steam load, while the two old boilers were dismantled and the second new one installed. By changing the location of various pumps and auxiliaries, space was obtained for the first boiler and the second new boiler was put in the space vacated by the two old boilers.

Room had to be made for the new turbine-generator unit in the old engine room which was accomplished by removing some old drinking water treating and pumping equipment.

The installation of the entire steam and electric plant was completed with no lost time in production departments. The generator was put in operation August 1929, and carried the entire electrical load for the factory. In December 1929 the contract with the power company was canceled, and the unit has carried the entire electric and steam load for the factory ever since.

Cost Records

It was essential that a method of power plant cost distribution be worked out. Some of the manufacturing departments required large quantities of process steam and little electric power, while in others, the case was reversed.

It was decided to charge process steam and electric power by heat units. This led to an analysis of steam usages. It was found that the 25-lb. exhaust steam was not