



The drive for No. 2 paper machine is an Elliott 250-hp, single-stage turbine. Since this installation photograph does not show detail well enough, a shop view of this turbine, which is equipped with a special paper-machine-drive governor, is shown at the right.

condensing power would be needed only an average of five months of the year; the rest of the time the condenser would be run at minimum load. Due to the fact that the turbine would be run only at times when extraction loads would be available, and that the expected average condenser load would only be 2000 kw, a condenser with capacity to operate under 4 in. of vacuum at full load was selected. Two half-capacity circulating water pumps and two half-capacity condensate pumps were selected in order to save power under high extraction conditions.

Electrical Equipment

The addition of the new block of power provided by the turbine-generator called for a complete review of the electrical connections between the various plants. The plants are connected by a 15-kw system originating at the 3600-kw Centralia plant connecting with the Port Edwards mill hydro- and steam-plant and thence to the Nekoosa mill hydro- and steam-plant. The new 6000-kw generation indicated that the interrupting capacity of the 15,000-volt switchgear at most locations was inadequate.

This condition was particularly apparent at the Nekoosa plant, and so it was decided that at this plant

a complete revision was necessary.

A new outdoor 7500-kva, 3-phase transformer was installed between the existing 15-kv line and the new turbine room. The existing 480-volt mill distribution bus was split in order to add safety to the existing distribution switchgear and a new 2000-kva, 3-phase 15,000/480-volt transformer was installed. New 15-kv air break metalclad switchgear was purchased for the transformer installations mentioned, as well as for existing 15-kv, 480-volt transformers and 1500/2300-volt transformers.

All of the above are rated 500-mva interrupting capacity and will be ample for a long time to come. Existing inadequate-size switchgear at other plants is presently being studied with a view to replacement on a planned program covering a number of years.

A new 2300-volt distribution center was set up in the turbine room distributing to the boiler plant, new paper machine, and tied back through the 7500-kva transformers, previously mentioned, into the old system. This should add stability to the system, particularly the new paper machine, in case of trouble on tie-lines between plants or at other plants.

Power is distributed to the paper machine at both 2300 and 480 volts,

all paper machine motors over 200 hp operating at 2300 volts and smaller sizes at 480. The boiler room is provided with a 2000-kva 2300/480-volt transformer load center; complete metalclad motor starters are used operated by remote control from the boiler operating panelboard. The paper machine and the 2300-volt motor starters are all of the latest metalclad type, with provisions for remote starting and stopping of motors from panels strategically located in the paper machine room for convenience of operation. Two 1500-kva 2300/480-volt transformers load centers are provided for the 480-volt motors in the paper machine and stock preparation rooms. All motor starters operating at 480 volts are also of the latest metalclad type with similar remote operation as noted above.

This equipment is all housed in separate rooms with provision for expansion of circuits. These rooms are provided with forced ventilation apparatus, featuring self-cleaning filters for maximum cleanliness.

Engineering design and construction were carried out by Chas. T. Main, Inc., Boston, Massachusetts, in co-operation with the engineering department of the Nekoosa-Edwards Paper Company.