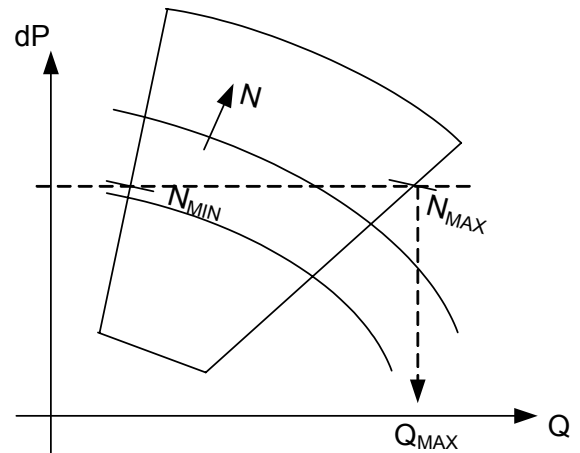


Hamilton-Wentworth 6B Pumping Station

The H-W6B is a large potable water pumping station with an ultimate capacity of $5\text{m}^3/\text{s}$, discharging to a closed system, for the Region of Hamilton-Wentworth. The initial phase consisted of three variable speed pumping units. The plant includes significant advances in pumping system control. The facility is unmanned, with operation and control integrated into the overall Regional SCADA System.

The main electrical equipment includes two main 13.8 kV electrical feeders, double ended indoor 3000/4000 kVA substation, 5 kV auto-transfer switchgear, 2000 kW standby generator and three 12 pulse variable frequency drives. A Digital Metering System (DMS) is implemented to monitor all the pertinent power related parameters. This information as well as the status of various switchgear equipment is displayed graphically on operator screens.



Variable Speed Pump:
Efficient Operation

The key control features include:

Optimized control of pump operating points whereby the pump operating point is kept within a pre-defined regime on the pump performance curve, commensurate with maintaining pump efficiency. This is important, especially with the large pumping units in the station (800 hp each).

Advanced pump sequencing control, based on maximum deliverable flow which is *dynamically calculated on-line* (using pump performance curves) at the measured head and at maximum speeds which are based on pump efficiencies. This helps accommodate large suction side pressure variations (100-150 kPa).

Integrated control of pumping units and re-circulation/by-pass valves, enabling further savings in energy consumption. Dual Bristol RPUs are used to provide hot standby redundancy. These RPUs communicate with a central location via telephone lines. The RPUs have full capability of controlling the station. The central workstations monitor and perform supervisory control as required.

Various levels of operator interface are provided. The primary one, in the station control room, consists of an industrial NEMATRON work-station mounted in the panel.

