

## **PROJECT: 20" (500mm) Flow and Pump control valves - Jucazinho, Brazil**

### **Project objective**

- Regulate flow into a gravity fed, large reservoir.
- Prevent water hammer and pump motor overload due to excessive flow.

### **The Challenge**

1. The design of the system included supply to a large reservoir from 3 gravity fed mains.
  - Regulating the inlet flow at each inlet was required.
  - The designed supply pressure for main supply (Intake EE-03): 46 to 50 mwc.
  - The designed supply pressure from water treatment plants
  - WTP Salgado supply pressure: 162 to 166 mwc
  - WTP Metropolis supply pressure: 68 to 72 mwc
  - The downstream pressure (water level in the reservoir): 3 to 7 mwc
  - A flow regulating valve operated under those conditions would suffer rapid cavitation damage.
2. The pumping system out of the reservoir required:
  - Protection against water hammer during start-up and shutoff procedures.
  - Preventing overload due to excessive flow when operated against low head discharge system.

### **The Solution**

1. Install a system of 20" (500mm), hydraulically operated, flow control valves, on each of the supply inlets to the reservoirs. The valves are protected against cavitation damage by means of orifices positioned at the discharge outlet to the reservoir.
  - **Intake EE-03 - Install 3 Flow Control valves, Dorot model 77-20-FR.**
  - **Intake WTP Salgado Install 2 Flow Control valves, Dorot model 77-20-FR.**
  - **Intake WTP Metropolis Install 2 Flow Control valves, Dorot model 77-20-FR.**
2. Install a Pressure Sustaining - Pump Control valve on the discharge side of each pump. Selected Dorot Pump Control and Pressure Sustaining valves:
  - **14 of 20" (500mm) Dorot valves model 77-20-BC\PS**
  - **4 of 16" (400 mm) Dorot valves model 77-16-BC\PS**



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