

PLC CONTROLLED PUMPING STATION-3 TANK



Example of realization

Description

- The equipment is delivery complete, instrumented with technical manual and practical work
- The system includes a tank and three return groups to feed the distribution tank (water tower)
- The buffer tank is fed by a stainless-steel centrifugal pump
- The water tower is supplied by 2 stainless steel centrifugal pumps
- Consumption is adjusted by 2 leak rate solenoid valves
- The cycle is managed by an industrial programmable logic controller

Experimental capabilities

- Study of the concept of a lifting unit
- Measurement of level parameters
- Pump rotation, maintenance management
- PID type control on frequency converter or TOR
- Programming on API

Operating principle

The principle of the bench is to study the concept of a pumping station and to simulate the operation of a water tower. It is equipped with three reservoirs: the well, the buffer reservoir and the water tower. The objective will be to maintain a certain level of water in the two upper tanks. For this we have a pump (on variable speed drive), to supply the buffer tank. This comprises an analog level sensor and 2 level detectors: minimum and maximum.

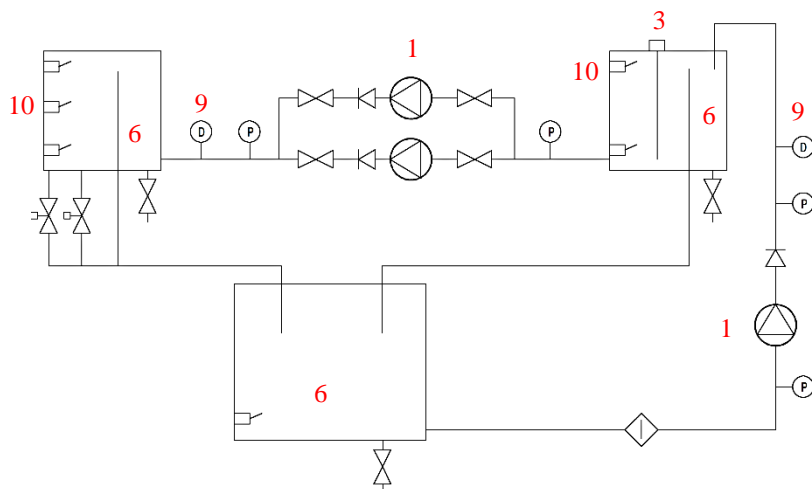
In addition, two centrifugal pumps supply the water tower. This tank has 3 level detectors: minimum, intermediate, and maximum. The bench is fitted with a programmable logic controller for performing several functions. Students can select different regulation methods Digital or PID.

The bench is also equipped with a supervision computer by means of a touch screen with Didatec interface included.

The robust design of this equipment makes it perfectly suited for use in schools.

Its anodized aluminum frame with legs gives it great strength as well as great flexibility of integration into your premises. The manufacturing of this equipment meets the European machine directive.

Illustrations



Technical details

- 3 identical multistage pumps**
 - Body, stainless steel wheel and axle
 - 4m³/h maximum, 0,37kW, 27 mCE
- Frequency inverter**
 - Simple vector control
 - Programming Keyboard
 - Setpoint input from the PLC
- Analog level sensor**
 - Floater technology 800 mm
 - Stem in contact with the fluid in stainless
 - 4-20 mA output
- Programmable Logic Controller Schneider**
 - Model TM 221
 - Digital inputs - digital outputs
 - Analog inputs
 - Supplied with programming software
 - Possibility of literal programming or contact
- Safety elements**
 - 30 mA differential circuit breaker
 - Level sensor low and high ...
- Tank**
 - The well: Polypropylene, capacity 150L
 - The buffer reservoir: Polypropylene, capacity 60L
 - The water tower: Polypropylene, capacity 60L
- Programming Touchscreen**
 - Selection of operating mode: manual or automatic
 - Selection of the regulation mode: PID or TOR
 - Characterization of pump states by color
 - Real-time graph of level curves: setpoint and measurement
 - Alarms page: description and acquittal
- Measurement of current and voltage sockets**
 - Measurement of current and voltage of each phase of power
 - Portable Multimeter included
- Electronic flow meter**
 - Vortex 9-150L/min
- Level controller**
 - Kobold type: NEK
- This unit is set up on a frame made of aluminum profile with 4 wheels. It includes an electrical cabinet with main switch and differential circuit breaker.**

Services required

- Power supply: 400 VAC – 50 Hz – 16 A
- Power supply type: 3 phases + neutral + earth
- Water supply: 15 L/min – 3 bars (Bin filling)
- Water disposal: at ground level
- Dimensions: (LxWxH mm): 1800 x 750 x 1850
weight (Kg): 190

Note : if the equipment installation is operated by our staff, all supplies and exhaust connections required must stand at less than 2m from the machine

Documentation

- User's manual
- Pedagogical manual
- Technical documentation of the components
- Lab exercises
- Electrical diagram
- Hydraulic diagram
- Software: SoMachine
- Certificate of conformity CE