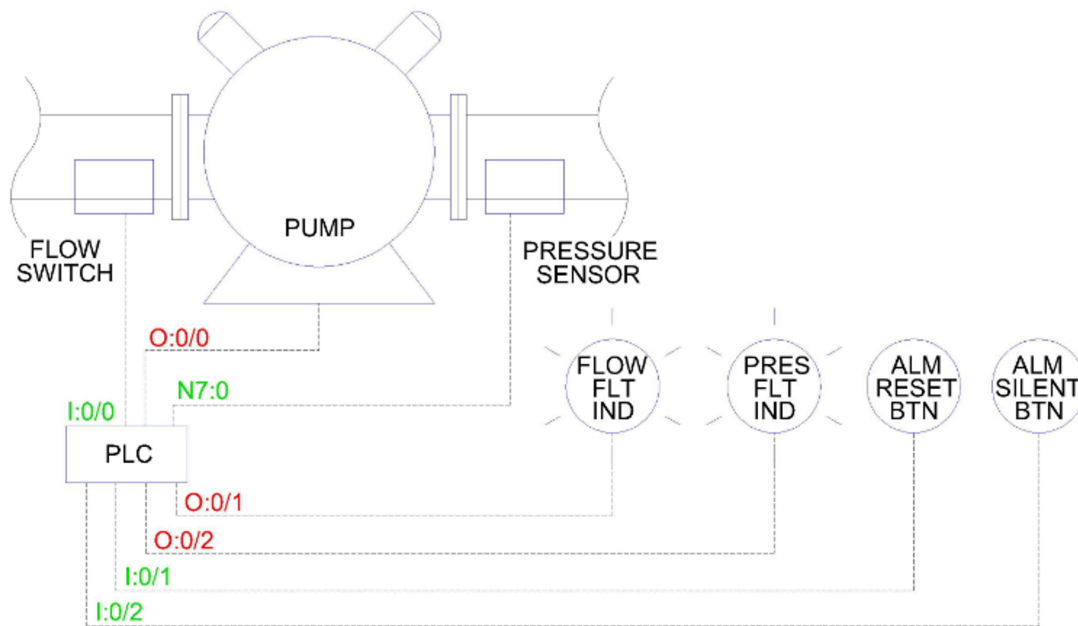


Project 10 - Pump Protection

Tuesday, 11 August 2020 6:03 PM



This final project is a control & safety system for a pump. We must protect the pump from damaging itself if there is no flow, and damage from cavitation if the pressure is too high.

The pump is to do the following sequence continuously:

- Run for 30 seconds
- Stop for 10 seconds

This cycle will terminate if the following occurs:

- If no flow is detected within 5 seconds (no flow alarm bit)
- If the pressure exceeds 30 psi for 5 seconds (cavitation alarm bit)

Alarm questions:

- Should there be a single "fault" alarm bit that is shared between both alarms?
- Should there be a single "fault" notification bit that informs the operator of an issue?

The system also needs to have HOA controls. Hand will energize the pump, but only if the following conditions are true:

- Hand is being pushed continuously
- No active alarm (cavitation or low flow)

When the hand button is released, the cycle is to go back into whatever mode it was in. The pump cannot be in "auto" mode while an alarm is active.

Inputs:

Alarm Reset Button (D)
Alarm Silence Button (D)
Hand Pushbutton (D)
Off Pushbutton (D)
Auto Pushbutton (D)
Flow Switch (D)
Pressure Sensor (A, 0-55 psi)

Outputs:

Pump Engage (D)
Flow Fault Indicator (D)
Pressure Fault Indicator (D)