Conveyor Control with HMI

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EET275: Intro to PLC
LAB#5
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Lab Objective:

Control Systems:

Deliverables 2:
- Solenoid = SOLR, Motor = CNVR
- A latch for start and stop (ACT)
- ACT = 1; SOLR (Reset)
- ACT = 1; 3.75s On Delay Timer then CNVR (Set)
- CNVR = 1; 3.25s On Delay Timer then SOLR (Set)
- SOLR = 1; 10s On Delay Time then CNVR (Reset)

Deliverables 3:
- Green Pilot Light = GL and Red Pilot Light = RL
- PROX = Proximity Sensor
- ACT = 1; GL (Set) and RL (Reset)
- ACT = 0; RL (Set) and GL (Reset)
- PROX = 1; INSP (Set)
- PROX = 1 for 3s; Pass (Set) and INSP (Reset)
- Pass = 1; CNVR (Set) Delay Timer On for 5s CNVR (Reset)
- CNVR = 0; Pass (Reset)
- ACT = 0 OR INSP = 1; Fail (Set)
- INSP = 0; Fail (Reset)

Lab Details:

To begin the lab we used the same ladder logic diagram as the previous lab. To begin we divided and conquered with one of us beginning Deliverable 1 and the other finishing Deliverable 2. The first deliverable is the process wiring, which was achieved using the sensor as the only input that needed wired. The outputs used were 02 and 03 for the conveyor motor and the solenoid respectively. After wiring and making sure the ethernet connection was good, we created our HMI.

For Deliverable 2 we used our ladder logic diagram from lab 4 and just implemented our HMI into our ladder logic diagram instead of the start push button, stop pushbutton, and pilot lights. After creating our display with the pilot lights and buttons we declared them to our addresses in our PLC. For Deliverables 3 we were unable to attempt this step due to sickness.

Name	Address	Input/Output	Device
STA	IO_EM_D1_00	Input	Normally Open PB
STO	IO_EM_D1_01	Input	Normally Closed PB
PROX	IO_EM_D1_02	Input	Sensor
SOLR	IO_EM_DO_03	Output	Solenoid
CNVR	IO_EM_DO_02	Output	Motor
GL	IO_EM_DO_04	Output	Green Pilot Light
RL	IO_EM_DO_05	Output	Red Pilot Light

Local Variables	
Name	**Data Type**
ACT	BOOL
INSP	BOOL
Pass	BOOL
Fail	BOOL

System Schematic:
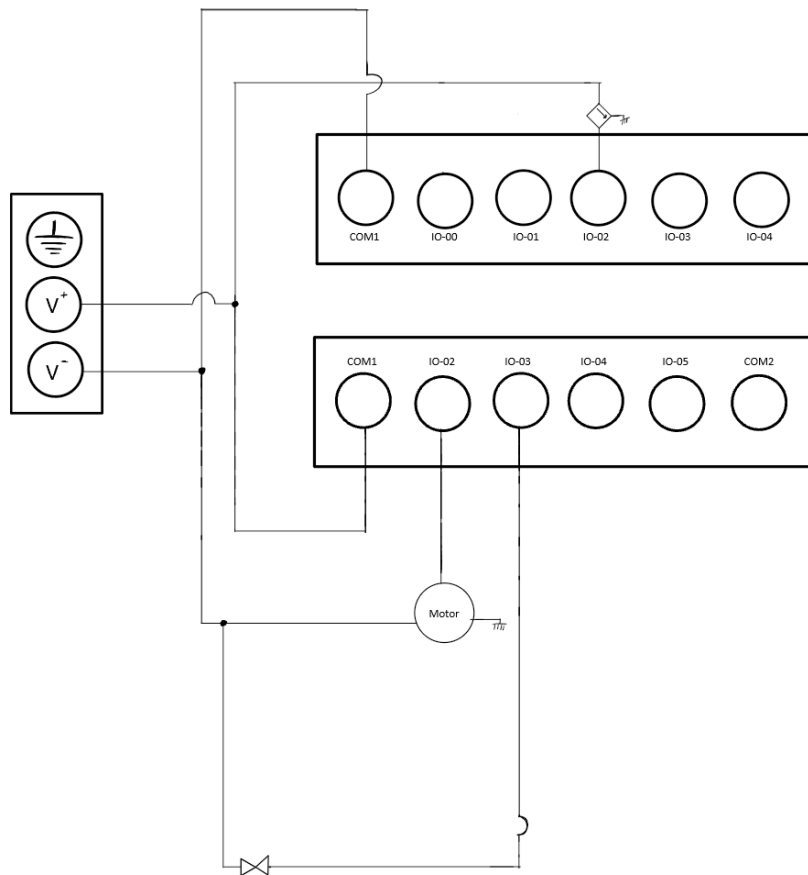
Conclusion:
The purpose of this lab was to learn more about using HMI and the benefits that come with it. Some benefits were less wiring and could be set up and tested away from the PLC. In future labs we can use HMI to test our Ladder Logic Diagram before the lab to test different ideas to save time.