



جامعة القاهرة كلية الهندسة
قسم هندسة القوى الميكانيكية
معمل التحكم الأوتوماتيكي



ACC
Virtual Labs
Automatic Control Circuits & Virtual Labs
for Mechanical Power Systems
معمل التحكم الأوتوماتيكي و المعامل الافتراضية لأنظمة القوى الميكانيكية

MEP 480 B. Sc. Design Project- Year 2007/2008

Using PLC in Automatic control of Practical Mixing of Two Liquids Process

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Abstract: Supervised by Prof. Ashrif Sabry, MEP Chairman & Dr. Mohsen Sayed Soliman ,ACC Manager

The PLC is used to control, time & regulate the sequence of Practical Mixing of Two Liquids Process. The PLC is used to control 2 pumps to fill 2 tanks with 2 different liquids using 2 Solenoid Valves along with 2 level switch sensors to stop 2 feed pumps. PLC controls any of the ON/OFF Solenoid valves because mixing of 2 Chemical fluids in different ratios needs to shut off the 2 feed pumps before any of the 2 fluid Tanks are being filled. Also PLC is used to shut off the fluid to a solenoid valve whenever certain time is passed to achieve the required fluids mixing ratio.

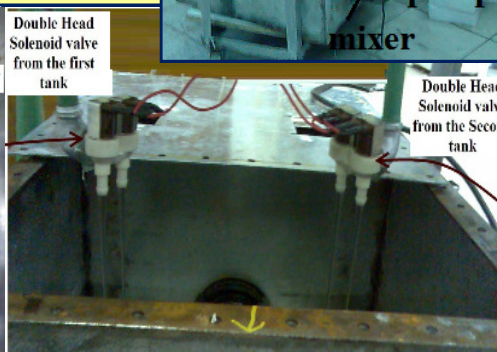
Project Description: First, the 2 liquids come from 2 feed pumps as these pumps are actuated by PLC signals. That happens after pushing the start button. Waiting for the sensor (level switch) to detect the level of the two liquids in the upper tanks. Where the pumps will stop immediately ..then the solenoids are actuated to allow the 2 fluids to fill the third tank ..and the levels supported in the upper tanks change its state to stop the solenoids and begin the main process which is the mixing process. After the mixing process is occurred to a certain pre-determined time the pumps will be actuated and the process will occur again by all its steps(pumps-solenoids-mixing)...

Main Components: The Project Consists Of 7 main Components

1. PLC
2. Pumps
3. Mixing motor
4. Solenoid valve
5. Level Switch
6. Relays & contactors(actuators)
7. Start and stop switches

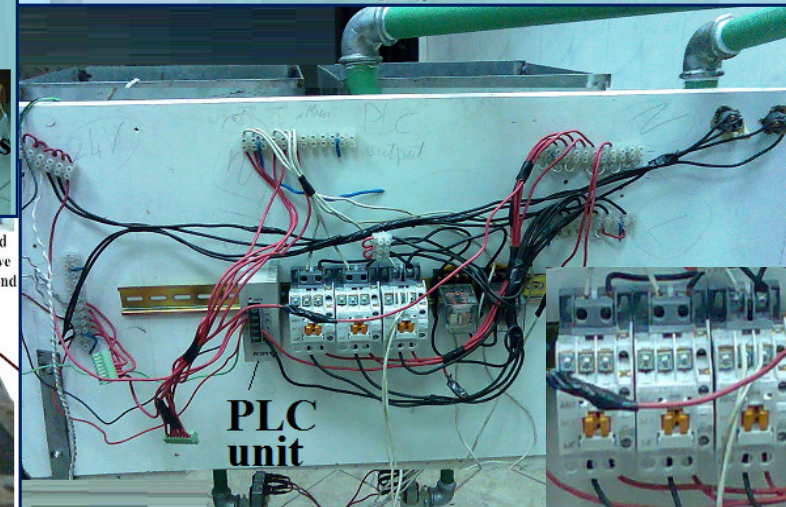
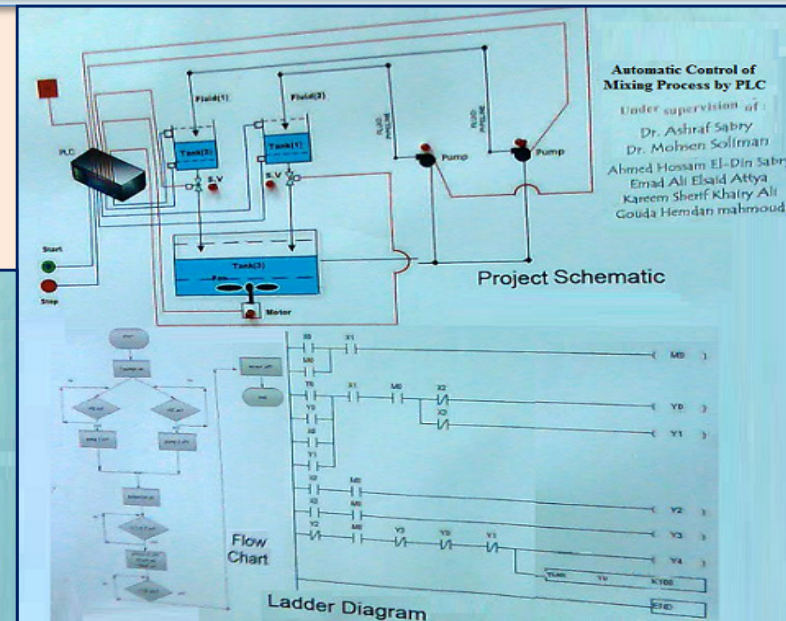


Mixing Motor

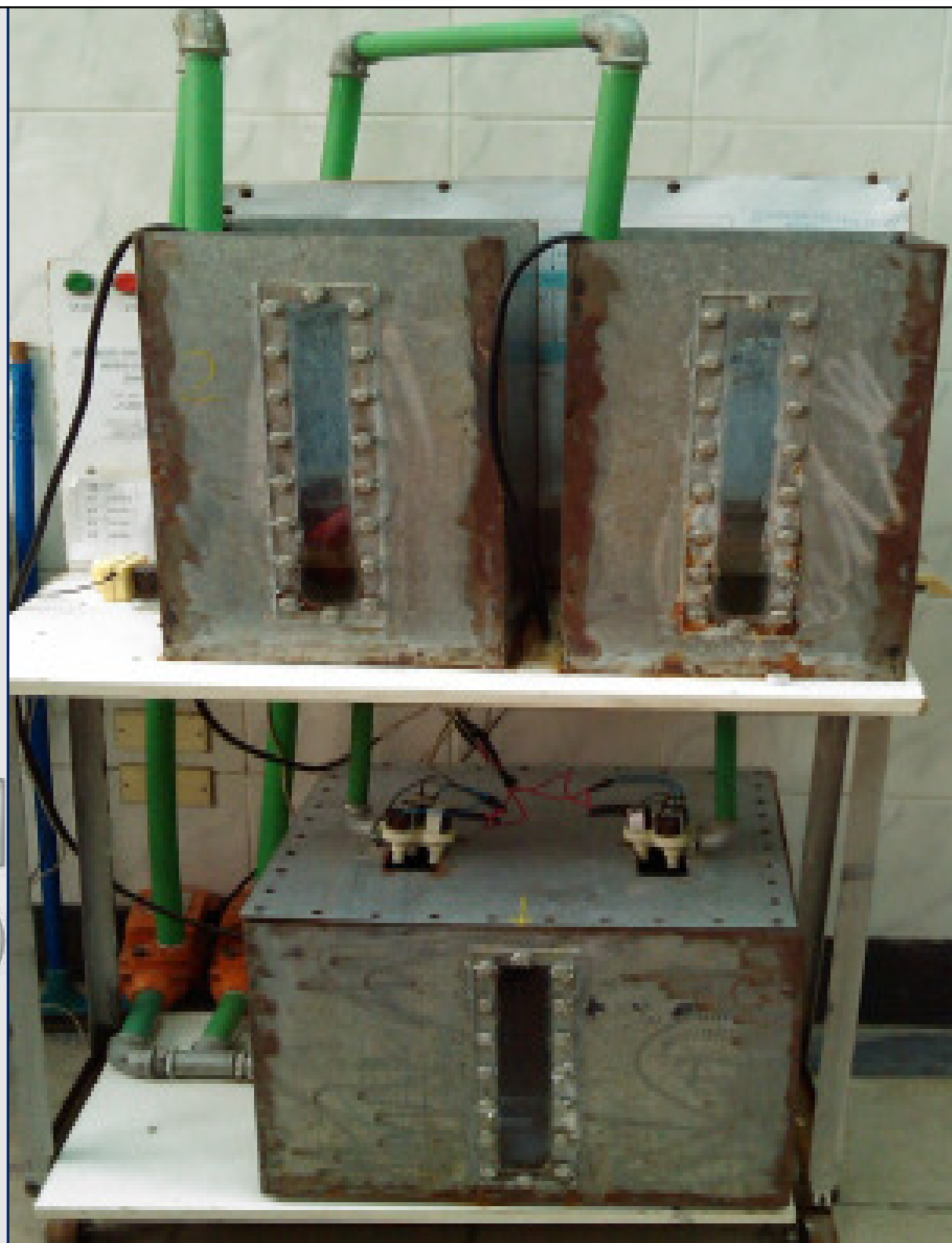
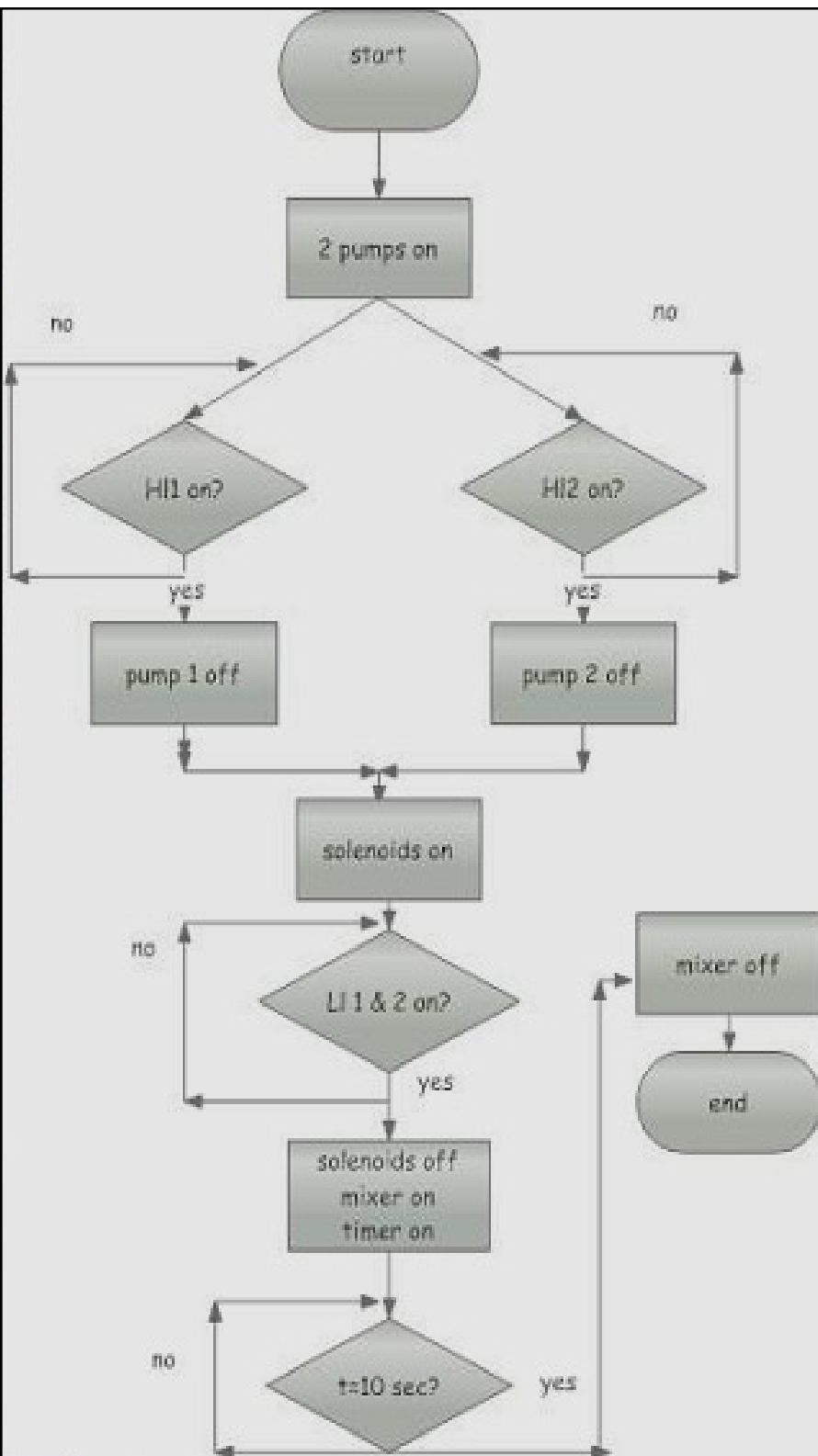


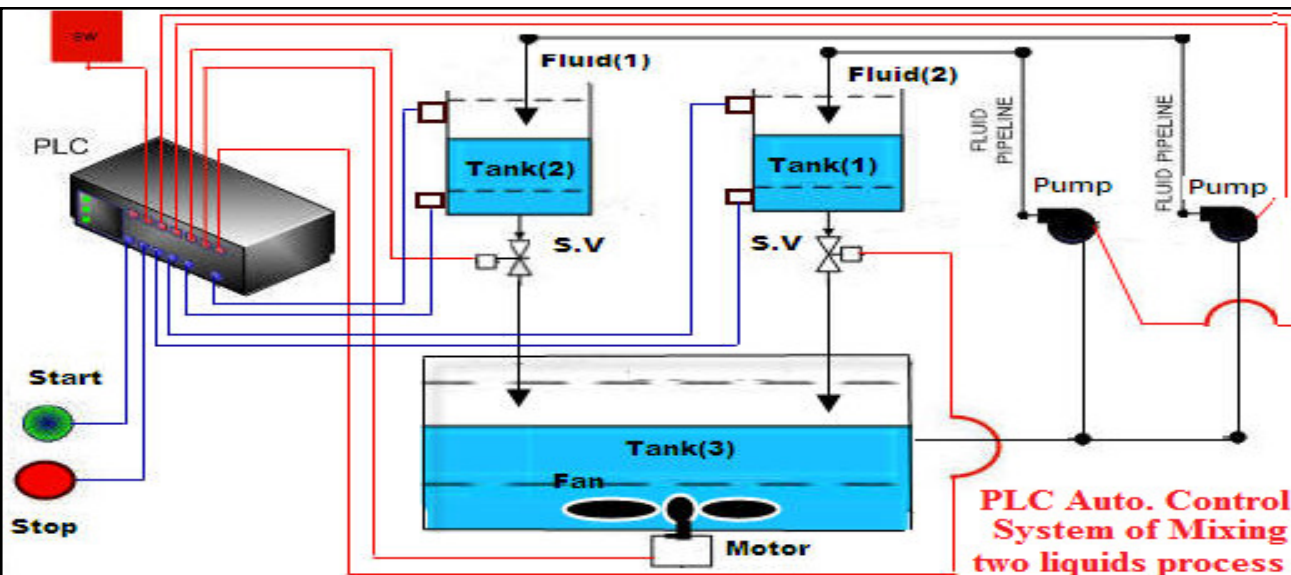
Double Head Solenoid valve from the first tank

Double Head Solenoid valve from the Second tank



PLC unit



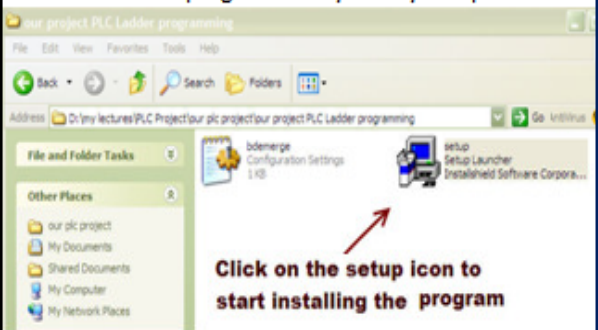


Delta DVP series PLC is built-in with RS-232 and RS-485 communication port and supports Ethernet, DeviceNet, CANopen networks, working flexibly with the peripheral equipment and devices.



Programming our ladder

1. First install the program easily as any computer software



2. Wait while the setup start.

