



# POORNIMA UNIVERSITY

**REPORT ON PLC/SCADA WORKSHOP (23-24 Feb. 2015)**

**For**

**DEPARTMENT OF ELECTRICAL ENGINEERING**

**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

## **Objective**

The workshop was based on the applications of PLC (Programmable Logic Controller) and SCADA (Supervisory Control and Data Acquisition).

## **Resource persons**

**Mecstech Education & Research Centre (P) Ltd.** is an **ISO 9001:2008 certified company** which was established in 2008. It is now one of the leading names in Rajasthan to provide turnkey solutions to clients for automation requirements.

**Mr Jitendra Dhanjani**, the Business Development Manager of MERC conducted a workshop with some of his colleagues at **Poornima University** on **23<sup>rd</sup> and 24<sup>th</sup> of February**.



It was basically for the **B.Tech II year students of Electrical and Electronics & Communication Engineering**. Mr. Jitendra Dhanjani explained the present scenario of the industrialization. He focused over the demand of the various industries and differentiated between the work field of diploma students and engineers.

He shared his experience very well and also stated that the syllabi of engineering which is more than 30 years old when there was just initialization of the automation in industries, but now everything has changed and so the syllabi should also be based on the present scenario and as per the present demand of the industries.

**Generally students are unaware of some of the famous engineering companies. A brief description of these companies is given below:**

**ABB (Asia Brown Boveri)** the France company is the global leader in power and automation technologies based in Zurich, Switzerland. It is one of the world's largest engineering multinational companies with operations in around 100 countries. The company has five divisions: Power Products, Power Systems, Discrete Automation & Motion, Low Voltage Products and Process Automation.

**DFE (Dongfang Electronics)**, the China Company founded in 1957 and registered in 2009, has provided the intelligent automation control products and solutions in terms of power generation, power transmission, power transformation, power distribution and power utilization, and has made great achievements in the research and application of radio frequency identification (RFID) technology.

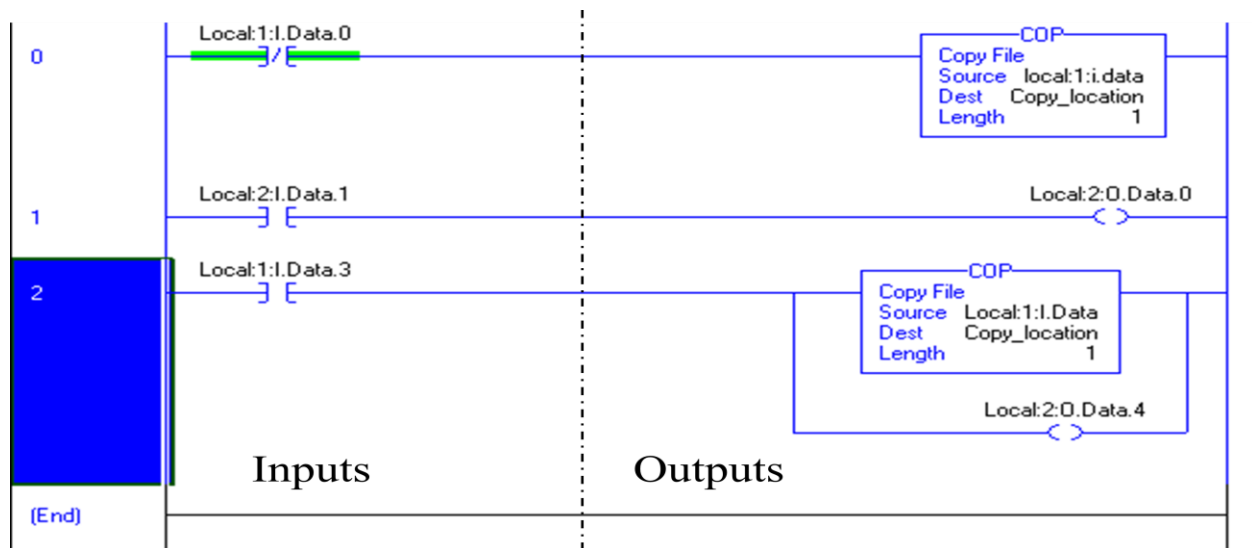
**Siemens**, founded in 1847 is a German electrical engineering and electronics company. The company's operations are focused on three sectors: industry, energy and healthcare. The industry sector products range from industry automation and drives products and services to building, lighting and mobility solutions and services as well as system integration and solutions for plant business. The energy sector offers products, services and solutions for the generation, transmission and distribution of power and for the extraction, conversion and transport of oil and gas.

The workshop was based on the applications of PLC (Programmable Logic Controller) and SCADA (Supervisory Control and Data Acquisition). Mr. Jitendra explained how the advantages of PLC dominated over the disadvantages of Microcontrollers in the terms of numbers of inputs and outputs, memory, networking etc.

He told that automation encompasses many different products that are all used to allow companies to make their products faster and in a more efficient manner. This allows the companies to make more products while spending less money, thus allowing them to be competitive in their marketplace. Industrial Automation is the industry of helping business to automate the systems that produce their goods or services in the most efficient manner possible. He explained more about automation by giving some examples that were automobile assembly line, parcel sorting system, batch brewing system, amusement park ride, bottling lines. In automation the most important part is control system. He gave a brief introduction on PLC (Programmable Logic Controller). PLCs look at states of Inputs. Based on these states, the

PLC makes decisions, and then commands output states. The instructions that tell the output devices what to do base on the conditions returned by the input devices are written in programs that are stored and run by the PLC. The earliest automation systems were nothing but directly wired systems i.e. a control system where all the components are designed and tested together and then sold as a complete system. You do not get many choices for controllers, I/O, networks, and software. Eventually, PLCs were developed that could be programmed. This allowed the engineers to easily create much more complex systems than relay panels allowed. It also allowed changes to be made to the system without having to change any actual wiring. PLCs are available in market of different companies. Some vendors of PLC are Siemens, Delta, Mitsubishi, KPIT.

They explained how to make a program in PLC using ladder logic language. An example was given by them so that the students can easily understand how to compile and run the PLC program. The example was:



Each line of code is known as a “rung”. In this example there are 4 rungs, numbered 0, 1 and 2, and the end rung marking the end of the program. The PLC executes the program 1 rung at a time, starting with the first rung and then working down. Each individual rung is executed from the left to the right. Therefore, you typically find the inputs on the left and the outputs on the right. Ladder logic rungs are basically if - then statements. If the input conditions are true, then command the outputs based on a true input. If the input conditions are false, then command the outputs based on a false input.

Some of the information regarding SCADA was delivered in the workshop such as: its features - dynamic process graphics, security, trends, data base connectivity etc; its tags – string, analog, discrete etc; its brands – Wonder ware (Intouch), Allen Bradley (RS view 32), Siemens (WinCC), KPIT (Astra) etc. The programming for PLC was practiced by the students and working on SCADA software was also taught.

At last, the team informed about various courses offered by MERC such as GATE/PSU/IES coaching, Embedded and Robotic Training, Industrial Panel Designing, Industrial Automation Training, PLC/SCADA etc.

