''ज्ञानादेव तु कैवल्यम्''

Shri Shankaracharya College of Engineering & Technology

(Managed by Shri Gangajali Education Society, Bhilai)

JUNWANI, P.O. NEHRU NAGAR, BHILAI-490 020 (C.G.), INDIA

(AN ISO - 9001:2000 CERTIFIED INSTITUTION)

Department of Electronics & Instrumentation

Workshop on Industrial Automation

19th March 2012

Introduction to Industrial Automation

Industrial automation deals primarily with the automation of manufacturing, quality control and material handling processes. General purpose controllers for industrial processes include Programmable logic controllers, stand-alone I/O modules, and computers. Industrial automation is to replace the decision making of humans and manual command-response activities with the use of mechanized equipment and logical programming commands. One trend is increased use of Machine vision to provide automatic inspection and robot guidance functions; another is a continuing increase in the use of robots. Industrial automation is simply done at the industrial level.

Industrial automation eliminates healthcare costs and paid leave and holidays associated with a human operator. Further, industrial automation does not require other employee benefits such as bonuses, pension coverage etc. Above all, although it is associated with a high initial cost it saves the monthly wages of the workers which leads to substantial cost savings for the company. The maintenance cost associated with machinery used for industrial automation is less because it does not often fail. If it fails, only computer and maintenance engineers are required to repair it.

Industrial automation incorporates programmable logic controllers in the manufacturing process. Programmable logic controllers (PLCs) use a processing system which allows for variation of controls of inputs and outputs using simple programming. PLCs make use of programmable memory, storing instructions and functions like logic, sequencing, timing, counting, etc. Using a logic based language, a PLC can receive a variety of inputs and return a variety of logical outputs, the input devices being sensors and output devices being motors, valves, etc. PLCs are similar to computers, however, while computers are optimized for calculations, PLCs are optimized for control task and use in industrial environments. They are built so that only basic logic-based programming knowledge is needed and to handle vibrations, high temperatures, humidity and noise. The greatest advantage PLCs offer is their flexibility. With the same basic controllers, a PLC can operate a range of different control systems. PLCs make it unnecessary to rewire a system to change the control system. This flexibility leads to a cost-effective system for complex and varied control systems

Head of Department
Electronics & Instrumentation
SSCET JUNWANI BHILAI

Instructors:

Mr. Khemraj Deshmukh, (Asst. Prof., E&I)

Workshop Objectives:

Participants will be able to:

- Learn the major components of a Programmable Logic Controller (PLC);
- Learn the functions of the CPU, input modules, and output modules in a PLC;
- Learn basic logic functions: AND, OR, and NOT;
- Use timers for PLC programming;
- Learn counter instructions and their functions; and
- Some application related to ladder logic.

Schedule:

Day	Timing	Module Description
Day 1	11.00AM - 1.00PM	• Introduction to PLC & their Type • Power Supply, • CPU Architecture • Instruction set
Day 1	2.00PM - 4.00PM	• Practical Session

Chandrahas Sahu
Coordinator

Piyush Lotia
H.O.D. (E&I)

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