Report on
One Week Training Program on
<mark>"Micro PLC: MELSEC iQ-F (FX5U series PLC Training Kit) -Hands on learning"</mark>

The Department of Electrical and Electronics SVITS successfully conducted a one week offline training on **"Micro PLC: MELSEC iQ-F (FX5U series PLC Training Kit) -Hands on learning"** for the students of School Of Instrumentation, Devi Ahilya Vishwavidyalaya, Indore under factory automation lab (ATC-FA, MEI) of industry academia collaboration with Mitsubishi Electric India.

The details of the training are as follows-

<mark>Particulars</mark>	<mark>Details</mark>
Objective	The objective of the training is to understand **"Micro PLC: MELSEC iQ-F (FX5U series PLC Training Kit) -Hands on learning"** and Hands-on experience on the FX5U PLC training kit in the Factory Automation Lab.
Date	9th Jan to 14th Jan 2023
Time	10:00am to 5:00 pm
Venue	EEE-201 ATC-FA LAB EEE Dept SVVV Campus
Topic	**"Micro PLC: MELSEC iQ-F (FX5U series PLC Training Kit) -Hands on learning"**
Resource Person	Experts from MEI- 1. Mr. Sudhir Kumar, Assistant Manager, FAID, MEI Indore 2. Mr. Ajay Shreewastava, Assistant Manager, FAID, MEI Indore 3. Mr. Pawan Patel, Engineer, Autotech indore, Channel Partner of Mitsubishi Trained faculty members of SVVV 1. Prof. Lalit Bhanwrela , Coordinator & Incharge, ATC-FA Lab 2. Prof. Jitendra Managre, Co-coordinator ATC-FA Lab .
No. of students registered	20

No. of students attended	17

Day wise Schedule of training

Duration	Activity/ Contents	Resource Person
Day 1 (9ᵗʰ Jan 2023)		
10:00 am - 10:30 am	Registration	**Mrs. Yamini Makasare** **Lab Instructor, EEE, SVITS, SVVV**
10:30 am To 1:00 pm	**Module 1**-Introduction to Factory Automation • Industrial Evolution • Introduction to Automation • Domain's of Automation • Components of automation • Sequence control • Advantages of Sequence control • Relay Operation and control contacts **Module 2**-Basics of PLC • PLC Overview • How to define PLC • Why PLC • Different types of PLC • Selection criteria for PLC • Architecture of PLC • PLC operation • PLC Features	**Prof. Lalit Bhanwrela** **Assistant Professor** **Coordinator and Incharge, ATC-FA, SVVV**
02:00 pm to 04:30 pm	**Module 3- Micro PLC: MELSEC iQ-F Basics** • Introduction to iQ-F series PLC • I/O addressing • Programming and interfacing concepts • PLC Programming: Ladder and GX works3	**Mr. Sudhir Kumar** **Assistant Manager,** **Mitsubishi Electric India**
04:30 pm To 05:00 pm	**Interaction/ Self-evaluation**	**Prof. Lalit Bhanwrela**

Day 2 (10th Jan 2023		
10:00 am to 11:00 am	Review of Day 1	Prof. Jitendra Managre Assistant Professor Co-coordinator ATC-FA, SVVV
11:00 am To 1:00 pm	Module 4-Digital Circuits • Boolean Algebra and Boolean laws • Logic Gates • Combinational Circuits	Prof. Lalit Bhanwrela
02:00 pm To 04:30 pm	LAB Session 2 – Digital Virtual Simulator	Prof. Lalit Bhanwrela
04:30 pm To 05:00 pm	Interaction/ Self-evaluation	Prof. Lalit Bhanwrela
Day 3 (11th Jan 2023)		
10:00 am to 11:00 am	Review of Day 2	Prof. Lalit Bhanwrela
11:00 am To 1:00 pm	Module 5- Introduction to GXWorks3 • Basics of Ladder programming • I/O instructions	Prof. Lalit Bhanwrela
02:30 pm To 04:30 pm	LAB Session 2 PLC Programming practice Exercise- 1 Exercise- 2	Prof. Jitendra Managre
04:30 pm To 05:00 pm	Interaction/ Self-evaluation	Prof. Lalit Bhanwrela
Day 4 (12th Jan 2023)		
10:00 am to 11:00 pm	Review of Day 3	Prof. Lalit Bhanwrela
11:00 am To 1:00 pm	Module 6-Timer and Counter applications of PLC • Concepts of Timer with PLC programming • Concepts of Counter with PLC programming	Prof. Lalit Bhanwrela

	LAB Session 3 PLC Programming practice Exercise- 3	Prof. Jitendra Managre
02:00 pm To 04:30 pm	Module 7-Hardwiring concepts • Interfacing with FX5U series PLC training kit	Mr. Ajay Shreevastava Assistant Manager, Mitsubishi Electric India
04:30 pm To 05:00 pm	Interaction/ Self-evaluation	Prof. Lalit Bhanwrela
Day 5 (13th Jan 2023)		
10:00 am to 11:00 pm	Review of Day 4	Prof. Lalit Bhanwrela
11:00 am To 1:00 pm	Module 8- Advanced PLC programming concepts	Mr. Pawan Patel, Engineer, AutoTech Mitsubishi Electric India channel Partner
02:00 pm To 04:30 pm	LAB Session 4 PLC Programming practice Exercise- 4	Prof. Jitendra Managre
04:30 pm To 05:00 pm	Interaction/ Self-evaluation	Prof. Jitendra Managre
Day 6 (13th Jan 2023)		
10:00 am to 11:00 pm	Review of Day 5	Prof. Lalit Bhanwrela
11:00 am To 1:00 pm	Project Assignment- Concept development and simulation	Prof. Lalit Bhanwrela
02:00 pm To 04:30 pm	Project Demonstration	Prof. Jitendra Managre
04:30 pm To 05:00 pm	Feedback	Mr. Gopal Soni

Summary

Prof. Lalit Bhanwrela, Coordinator and Incharge, ATC-FA SVVV was the resource person on the Day1- first session and he covered the module -1 and Module-2 with the overview on PLC basics , architecture, types of PLCs and on its application. And Mr. Sudhir Kumar, Assistant Manager, FAID, MEI Indore *was the resource person in the second session and covered the Module-3 which is based on Micro PLC: MELSEC IQF Basics. He explained the basics of iQF PLC and basic programming on GX works 3. On the Day-2, review of day one covered by Prof. Jitendra Managre*, Co-Coordinator ATC-FA SVVV. After that Prof. Lalit Bhanwrela, covered the Module-4 on digital circuits and then the lab session also taken by him along with Prof. Jitendra Managre. On the Day-3 Module-5 of ladder programming concepts of GX Works-3 have been explained by Prof. Lalit Bhanwrela and after that Lab session and practice with hands on taken by Prof. Jitendra Managre. Day-4 started with the review of day-3 and exercises with practices on given problems of GX Works3. The concepts of timer and counter with module-6 have been completed by Prof Lalit Bhanwrela and then a Lab session taken by Prof. Jitendra Managre. *As per the schedule, Module-7, the PLC configuration and wiring concepts have been discussed by Mr. Ajay Shreewastva, Assistant Manager, FAID, MEI Indore. He gave a very nice and detailed explanation of the topic and after that, hands-on training was given by him on the FX5U training kit. During the workshop, different types of sensors have been discussed and interfaced with the PLC training kit at the input and output ends for both the source and sink types of sources for the wiring concept. On Day-5, Mr. Pawan Patel, Engineer, Auto Tech (MEI channel Partner) discussed the advanced programming concepts with special instructions of GX Works3 and various problem-solving practices were done by him. The lab session was done by Prof. Jitendra Managre and Prof Lalit Bhanwrela. On Day-6, after completing the review of day-5, Project assignment, concept of development and simulation part covered by Prof. Lalit Bhanwrela and then lab session and project demonstration done by the students of final year who had completed & submitted it previous semesters. And at last the feedback and self-evaluation process have been done. The workshop was Coordinated by Prof. Lalit Bhanwrela and Prof. Jitendra Managre, Coordinator and Co-Coordinator, ATC-FA Lab, SVVV, Indore. On the day 1 the registration process was done by technical staff Mrs. Yamini Makasare. All the technical issues in the lab during training and workshop are handled by Mr. Gopal Soni, Sr. Lab Technician, SVVV. The workshop was conducted in the ATC-FA Lab and specifically for the MTech (IOT) students of School of Instrumentation , DAVV, Indore. The time of the workshop was from 10:00 AM to 5:00 PM for one week. A total of 17 students out of 20 attended the training. During the training students asked various questions and all the questions were technically handled by the resource person and trained faculty members.*

==Glimpse of Workshop==

==*Offline Session*==