

## COURSE OFFERED

### INDUSTRIAL AUTOMATION

#### AE 01: Placement Oriented Course (3/6 Months)

- RLC & PLC
- SCADA/HMI
- FIELD INSTRUMENTATION(Measurement & Control)
- MOTION CONTROLLER
- ELECTRICAL & CONTROL PANEL DESIGN
- BASIC INTRODUCTION TO LT SWITCH GEAR
- E-PLAN
- DCS(Overview)

#### AE 02: Summer/Winter Training (4/6 Weeks)(In-AEAB/In-House)

- PLC & SCADA
- MOTOR & DRIVE

#### AE 03: Professional (Weekend) Training (In-AEAB/On-Site)

- BASIC TRAINING OF AC & DC DRIVE
- ADVANCE TRAINING OF DC DRIVE(6RA70)
- SIMATIC S7-300 SCADA/HMI(Basic)
- SIMATIC S7-300,400 SCADA/HMI(Advance)
- SIMATIC S7-1200
- SINAMIC G120
- SINAMIC S120
- SINAMIC V20
- E-PLAN

### EMBEDDED SYSTEM

#### AE 04: Placement Oriented Course (4/5 Months)

- INTRODUCTION OF EMBEDDED SYSTEM
- EMBEDDED C AND C++
- AVR MICROCONTROLLERS
- ARM MICROCONTROLLERS

#### AE 05: Summer/Winter Training (4/6 Weeks (In-AEAB/In-House)

- ARDUINO
- IOT
- AVR
- PIC
- ARM

Automation Engineers A.B. Pvt. Ltd. Company is certified partner of Siemens Industry Automation & Drive Technologies.

## COURSES CONTENT

### INDUSTRIAL AUTOMATION

#### MODULE 1: RLC & PLC

- Introduction to the realm of Automation
- Basic Electrical & Electronic principles
- Understanding Number system involved
- Understanding RLC principle / logic theory as well as practical
- Interlocking System
- Understanding PLC which is discuss about LOGO, S7-200,S7-300
- Difference B/W RLC & PLC
- PLC Architecture & PLC Hardware elements
- Selection of PLC hardware – Inputs/outputs
- Addressing & Scheduling the Inputs / Outputs
- Memory structure and Types of Memory module
- PLC Programming – Ladder Diagram & STL (Statement list)
- Downloading & uploading of the application software to PLC
- Fault Finding & rectification of PLC controller, Plant devices or I/O module.
- Hands on experience on equipment and develop projects on 'Real Life application'

#### MODULE 2: HMI / SCADA

- Insight into the HMI / SCADA System
- Selection criteria of SCADA
- Development & creation of mimic windows
- Understanding basic drawing instructions
- Development of drives & data transfers to a PLC
- Downloading / uploading of application programs on HMI
- Making a SCADA for sample application & communication
- Basics of system & application
- Engineering & fundamentals of Project Management

#### MODULE 3: FIELD INSTRUMENTATION (Measurement & Control)

- **Basics of field instrumentation**
- Measurement Practices
- **Erection & installation guidelines**
- Flow measurement
- Pressure measurement
- Level measurement
- Temperature measurement
- Sensors
  - Inductive Proximity sensors
  - Capacitive sensors
  - Photoelectric switches
  - Ultrasonic sensors

#### MODULE 4: Motion Controller Motor (AC & DC)

- Basic principle of electrical motors
- Motor Characteristics
- Starting method 3 ph Induction motor (DOL , RDOL ,Star-Delta, Autotransformer)
- Different types of motor braking
- **AC Drive / VFD (MM440 , G120)**
- Basics of starters & variable frequency drives
- Main functions & parameterization of VFD
- Different control modes of VFD
- Effect of long distance cables on VFD
- Selection of VFD based on application
- Hands on experience on Integrated system (Automation with Drives)
- Basics of system & application engineering & fundamentals of Project Management

#### DC Drive

- Introduction of SIMOREG DC DRIVE
- SIMOREG DC DRIVE Principle /theory
- Main function & parameterization of SIMOREG 6RA70
- Selection of SIMOREG DC DRIVE

#### MODULE 5: Industrial Networking

- Basic of networking and brief history
- Different types of Networking architecture & their importance
- Topology & OSI model of Networking
- Training on nodes ,ports ,drives, Hardware

### EMBEDDED SYSTEM

#### MODULE 1 – INTRO TO EMBEDDED SYSTEMS

- Introduction to Embedded Systems
- Computational Devices
- Computer Architecture Fundamentals
- Computer Architecture Fundamentals
- Computer Languages

#### MODULE 2 – EMBEDDED C AND C++

- Programming in C Introduction to C++
- Advanced Topics in C Advanced Topics in C++

#### MODULE 3 – AVR MICRO CONTROLLERS

- AVR Microcontroller
- Registers & Memory of Atmega16
- Interfacing with an LED
- Interfacing with a Seven-Segment Display
- Interfacing with an LCD

- Networking Hardware & Network standards
- Networking protocols ethernet, profibus, modbus etc.
- Network comparisons
- Design case studies
- Scheme of remote I/O
- Design case of remote I/O
- Hands-on practical on Networking of PLC

#### MODULE 6: Electrical & Control Panel Design (E-Plan)

- Introduction
- Different symbols used for switchgear
- Selecting switchgear
- Electromagnetic contractors
- MCB / MCCB / ELCB / RCB
- Transformers / power supplies
- Wiring(size and color codes)
- Making electrical drawing
- General arrangement & schematic diagrams
- Control & power drawing
- PLC architecture diagram
- Field interlocking diagram/Termination diagram
- Ferrule marking & legends marking
- Testing – offline/online testing of panels
- Introduction to Project, Page Management, Free Graphics, Schematic Pages, Reports

#### MODULE 7: Basic introduction to LT switchgear

- Push buttons, switches, contractors, overload relays, MCB, MCCB, isolators
- Use of switchgears & control in panel design
- Selection & co-ordination criteria of switchgear.

#### MODULE 8: DCS (Distributed control system)

- Introduction to DCS
- DCS applications
- Hardware: Processor, I/O modules, communications, bus redundancy etc
- Application difference between PLC & DCS

#### MODULE 4 – ARM MICROCONTROLLERS

- ARM Processors Architecture Overview
- Serial communication in ARM
- Programming Timers & Counters
- Analog to Digital Converter (ADC) and Digital to Analog Converter (DAC)
- Advanced Displays on ARM
- Zigbee
- GSM Module using UART

AUTOMATION ENGINEERS  
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## AEAB INTRODUCTION

- M/s Automation Engineers A.B. Pvt. Ltd. was promoted by experienced engineering professionals with year of experience in the field of INDUSTRIAL AUTOMATION SOLUTION in association with M/s Siemens Ltd. in the year 1998.
- AEAB as an International Solution Partner & Authorized System House of Siemens Ltd. It has grown at an exceptional rate with healthy CAGR of 43.3% its inception.
- AEAB is guided by the philosophy to provide innovative solution that follow best manufacturing practices to deliver Quality and reliability.
- It is backed up by fully trained man power to achieve its goals.
- It has established a strong reference through installation across various industries like Cement, Paper, Steel, Pharmaceuticals, Food Processing, Packaging, Filament and Fiber yarn, Synthetics and many more.
- It believes in strong and lasting relation with all our clients.

## AEAB Associations

Siemens Ltd - A Global multinational brand in the field of Automation and Drives.

## How training at AEAB is unique...?

- State of art lab: AEAB has a fully functional laboratory for Automation products like modular PLC (in addition to compact PLC), Drive (Both AC & DC), HMI, SWITCHGEAR & CONTROL, INSTRUMENTATION (With all type of transducer & sensors).
- Comprehensive: courseware The course Contents includes a balance between theory & practical, designed with industry application in mind. Participants will get to work on real-time and on-site projects.
- Trained counselors for personality development: In addition to technical training equal importance is accorded to personality development of fresh engineering graduates preparing them for the eventual success in the interviews.
- 100% Assurance on Placement.

## Who Should undertake the training?

- B.Tech / B.E / Diploma Fresher / Experienced.
- Branch Electrical Engineering (EE), Electrical & Electronics Engineering (EEE), Electronics & Instrumentation Engineering (IE), Electronic & Communication (EC), and Mechatronics.
- Students in their final year can also purchase these courses on part time basis.
- Pursuing engineers can do the Summer/Winter Training (4 WEEKS & 6 WEEKS)
- Practicing maintenance and support engineers - Advanced courses will offer knowledge in engineering in planning & implementation of Automation projects, graduating them for the higher assignments and levels in the managements

## Why AEAB?

- FREE WORKSHOP Testing, Designing, Manufacturing, Mock interview
- 100% PLACEMENT ASSISTANCE
- How to develop Positive Attitude
- Interpersonal Skills
- How to get interviewed
- Effective Communication
- Team Management
- Stress Management



## BOTTLE INDUSTRY



## TEXTILE INDUSTRY



## PRINTING & PACKAGING



## STEEL INDUSTRY



## AUTOMATION INDUSTRY



## AEAB WORKSHOP

### Join AEAB For.

- \* Free Demo Classes
- \* Practical Workshop
- \* Project Based Learning
- \* Personality Development



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- |  |  |
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and many more.....

## Automation Engineers A. B. Pvt. Ltd.

### Training Division :

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