BAYUBALI LEARNING SOLUTIONS

BASIC INSTRUMENTATION FOR NON-INSTRUMENT PERSONNEL COURSE

Training Dates:	As per schedule	**Training Venue:**	Kuala Lumpur
Basic Fee:	RM4,600.00 + SST per participant (this includes course materials, meals, refreshment and attendance certificate)		

DURATION

28 hours (Four (4) days)

TARGET GROUP

Instrumentation and Control Engineers and Technicians, Plant Operators, Operation Engineers, Process and Utility Supervisors, and Technical Supervisory personnel involved in Industrial Process Measurement and Control. No specific prerequisite training or experience required for registration.

TARGETED INDUSTRY/INDUSTRIES

Oil and gas industries, power plant, petrochemical plant, food industries, pump oil plant and almost all plant need instrument to sense, to measure, to record, to control and some other reason like safety and soon. All this need well understanding about instrumentation.

CERTIFICATION

This course can be certified for continuing professional development program, for example program by board engineers Malaysia, TVET, Malaysian Skill Certificate and can be considered for instrument competency certificate.

COURSE OVERVIEW

The quality or performance of a plant control and plant safety is dependent on the quality of measurement and final control elements. The program was design for five days and will covers the working knowledge of basic instrumentation, basic control valve, fundamental of process control, plant safety , equipment operation , selection and installation and also their effect on process control. The participants will be exposed on how to control the processes using process simulator.

COURSE OBJECTIVE

The objective of the course is p to provide more understanding about instrumentation to the instrument engineers, process engineers, instrument tech and others plant personnel. By understanding all aspect about instrumentation, measurement, control, safety, trending and other thing about plant will be comprehensive.

COURSE OUTCOMES

At the end of the course, the participants should be able to:

- Interpret basic Industrial instrumentation.
- Read and locate PFD, P&ID, and loop drawing.
- Interpret measurement terminology
- Identify the instrumentation used in process control.
- Compare the methods and devices used in temperature, pressure, level, flow measurement
- Select which types of final control elements used in process control.
- Understand the operational of Control Valves.
- Understand the Process measurement and their affect on stability system.
- Understand why a systematic approach to troubleshooting is most effective
- Understand the basic process control.
- Tune a simple single loop and multiple loops.
- Identify the common causes of sensor, transmitter, controller, and final control element problems
- Understand the operation of pneumatic and electronic loops
- Understand the Process safety and instrumentation
  Introduction to Distributed Control System

TRAINING METHODOLOGY

- Lecture
- Classroom discussions
- Short video presentation
- Case study

COURSE CONTENTS

Purpose of Instrumentation

Instrumentation Documents

- Process Flow Diagram
- Piping & Instrumentation Drawing
- Instrumentation Drawing

Industrial Measurement Systems:

- Overview,
- Sensor Selection and Characteristics,
- Transmitters,
- Smart Transmitters
- Aux. Instrumentation

Control Valve

- Overview
- Types
- Operational

- Basic maintenance

Pressure Measurements:

- Concepts,
- Various pressure reading
- Differential Pressure Measurement

Level Measurement:

- Concepts,
- Hydrostatic Head Level Measurement,
- Capacitance Level Measurement,
- Ultrasonic Level Measurement,
- By Weight

Flow Measurement:

- Fluid Fundamentals,
- Methods and Concepts,
- Differential Head Flow Measurement,
- Velocity Flow Measurement Devices,
- Mass Flowmeters

Temperature Measurement:

- Concepts,
- Thermometers,
- Thermocouples,
- RTDs & Thermistors,
- Temperature Transmitters

Approaches to Troubleshooting:

- Purpose of Troubleshooting,
- Reasons for Troubleshooting Equipment History,
- Logical Analysis

PID process control.

- Process and controller characteristics.
- Feedback and stability
- PID tuning
- Enhance PID control.

Process safety and instrumentation

- Basic ISA
- Classified areas and electrical safety

Others

- DCS system components
- DCS supervision vs. Control
- DCS systems concepts
- Human Machine Interface

- DCS architecture
- Trends in SCADA / DCS

ABOUT THE INSTRUCTOR

Engr. Azahar bin Mat Noor, graduated with Bachelor of Engineering (Honors) in Electrical Engineering and major in control system from the University of Technology Malaysia.
He is a Registered Professional Engineer (Mechanical) with Board of Engineer, Malaysia and a Member, The Institution of Engineers, Malaysia. He also holds an Instrumentation and Control System certificate from YEW Mitaka, Tokyo.

He had working experiences with several companies such as the Institute Technology Petroleum Petronas (INSTEP) and Centre for Instructor and Advanced Skill Training (CIAST). Since the past 20 years in teaching, he had delivered for several courses such as;

- Process Design and Process and Instrumentation for process engineer.
- Process control technology for Instrument Engineer.
- Process control technology and application.
- Control valves service and repair.
- Instrumentation and measurement Engineering.
- Basic Instrumentation and Fundamental of Process Control.