

FUNDAMENTALS OF INSTRUMENTATION, MEASUREMENT, PROCESS CONTROL, PLC s, SCADA AND P&ID DOCUMENTATION FOR NON-INSTRUMENT PERSONNEL



WHAT YOU WILL GAIN:

- A fundamental understanding of Industrial Automation
- An introduction to Instrumentation and measurement
- The key know-how to work with control valves
- An ability to configure simple PLC and SCADA systems
- An ability to work with plant documentation such as P&ID's

WHO SHOULD ATTEND:

Anybody with an interest in gaining know-how in the full range of Fundamentals of Instrumentation, Measurement, Process Control, PLC's, SCADA and P&ID Documentation for Non-Instrument Personnel. This can range from the plant secretary, to operators, trades personnel (artisans), to technicians and engineers from other backgrounds such as mechanical, electrical and civil. And indeed also, managers from a wide variety of disciplines who are keen to understand the key workings and the future of their plants.

The Workshop

Have you ever wondered about getting a thorough introduction to the fundamentals of Instrumentation, Automation and Control; thus allowing you to do work and perform simple tasks in the area? The current challenges presented by the world economy mean that automation is more critical than ever before.

Over the last few decades, dependency on instrumentation equipment has increased tenfold. All of the major industries (mining, oil and gas, chemical plants, etc) have benefited from this technology, with noticeable improvements in quality, production and record keeping. Unfortunately, due to the rapid expansion of instrumentation technology, a lot of people have started to review this as a grey area, understandable only to the select few. This workshop aims to demystify the field of instrumentation, and to eliminate a lot of the myths that are out there. Furthermore, it hopes to promote closer synergy between non-instrumentation and instrumentation personnel, which can only be to the benefit of each and every operation.

The workshop represents a tremendous opportunity to grab expertise in all the key areas of the fast growing area of industrial automation in 5 days. Presented by an expert in the area who will pass the key chunks of know-how and expertise across to you in simple understandable bits which you can immediately apply to your job. This is most definitely not a boring lecture style presentation but an intensive learning experience where you will walk away with real skills as a result of the hands-on practical exercises, calculations, case studies and group sessions to ensure across the board take up and understanding of the theoretical concepts and ideas discussed. You are provided with these practical sessions at approximately 20 to 30 minute intervals to maximise the absorption rate.

It is not an in-depth workshop but one covering a wide range of topics in industrial automation to give you an overview and practical understanding of the key concepts. Nevertheless, a lot of material is covered, with the intent to give you an overview and practical understanding of the concepts and equipment, and how they all come together to create an efficient and safe control environment in instrumentation, process control, SCADA, PLC's and control valves.

Practical Sessions

The practical sessions will enable you to gain confidence and familiarity with items such as the calculation and calibration of

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The Program

INSTRUMENTATION

- Introduction to Process Measurement
- Pressure Measurement
- Level Measurement
- Temperature Measurement
- Flow measurement
- Process Considerations
- Integration of the System

PROCESS CONTROL

- Fundamentals of Loop Tuning
- Fundamentals of Tuning
- Different Tuning Rules
- Tuning of Valves
- Automated Tuning
- Simple Tuning of More Complex Systems
- Good Practice

CONTROL VALVES

- Introduction to Control Valve Theory
- Different Types of Control Valves
- Characteristics
- High Pressure Drop Applications
- Use of Computer Program for Valve Sizing
- Examples of High Pressure Drop Applications
- Actuators
- Positioners
- Pneumatic Circuits
- Materials
- Quality Standards
- Installation/Maintenance

SCADA AND PLC'S

- Background to SCADA
- SCADA Systems Hardware
- SCADA Systems Software
- Human Machine Interfaces (HMI's)
- Introduction to PLC's
- Fundamentals of PLC Hardware
- Fundamentals of PLC Software
- Using Ladderlogic for Simple Digital Functions
- Good Installation Practice
- Landline Media
- Wide Area Network (WAN) Technologies
- Local Area Networks (LAN's)
- Industrial Communications Protocols
- SCADA Network Security
- Troubleshooting and Maintenance
- Project Management of SCADA Systems

THE ROLE OF PLANT DOCUMENTATION, STANDARDS AND SPECIFICATIONS

- Drawing Types and Standards
- Piping and Instrument Diagrams (P&ID)
- Instrumentation
- Electrical
- Pneumatics & Hydraulics
- Ladder Logic
- Electro Pneumatic Circuits
- Explanation of Acronyms

OVERALL SUMMARY AND OPEN FORUM