

MEASUREMENT AND CONTROL 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 converse regarding your plants key functions
- An ability to configure/understand simple PLC and SCADA systems
- An ability to work with and comprehend plant documentation such as P&IDs

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. This can range from the plant secretary, to operators, trades personnel (artisans), procurement staff, technicians, engineers from other backgrounds/ disciplines, such as mechanical, electrical and civil. Managers who are keen to understand the key workings and the future of their plants.



Technology Training that Works

The Workshop

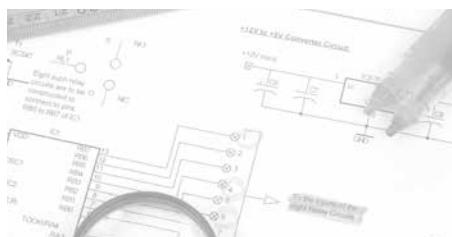
Have you ever wondered about getting a thorough introduction to the fundamentals of instrumentation, automation and control; thus allowing you to do work and perform simple tasks in the area? The current challenges presented by the world economy mean that automation is more critical than ever before.

This workshop represents a tremendous opportunity to grab expertise in all the key areas of the fast growing area of industrial automation. Presented by an expert in the area but who is obsessed with getting 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. Delegates are provided with these practical sessions at approximately 20 to 30 minute intervals to maximise the absorption rate.

The topics covered commence with a solid introduction to instrumentation and measurement ranging from pressure, level, temperature and flow devices. There is a formal review of process control including the all important topic of PID loop tuning and good practice in setting up your own system. There is also focus on valves with a review of the different valves and operating characteristics. SCADA and PLC systems are covered with an examination of both hardware and software, supplemented by writing your own PLC program. The all important topic of industrial data communication networks are also examined. Finally, the course is rounded off with a hands-on review of reading and interpreting simple plant documentation such as P&ID's so that you can see and understand the operation of the plant in your mind through the documentation.

The workshop is all presented in easy to understand practical English. All you need to benefit from this workshop is a basic understanding of mathematics and electrical theory. Contact us for comprehensive pre-course reading and preparation if you are unsure about your level of understanding.

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.



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
- The 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
- Positioner
- Pneumatic circuits
- Materials
- Quality standards
- Installation/maintenance

SCADA AND PLCs

- Background to SCADA
- SCADA systems hardware
- SCADA systems software
- Human Machine Interfaces (HMIs)
- Introduction to PLCs
- 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 (LANs)
- 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 and hydraulics
- Ladderlogic
- Electro pneumatic circuits
- Explanation of acronyms

SUMMARY, OPEN FORUM AND CLOSING

Practical Sessions

This is a practical, hands on workshop enabling you to work through practical exercises which reinforce the concepts discussed. Practical sessions include:

- **Develop basic hydraulic, electrical and pneumatic drawings**
- **Develop P&ID drawings for pressure, temperature, flow and level loops**
- **Detail the documentation for typical instruments**
- **Proceed through development of a full plant set of drawings from flow diagrams and process description to P&ID, electrical, hydraulic and pneumatic symbols**
- **Use software to undertake these typical tasks**

To gain full value from this workshop, please bring your laptop/notebook computer.



On-Site Training

- ✓ SAVE over 50% by having an IDC workshop presented at your premises.
- ✓ Customise the training to YOUR workplace.
- ✓ Have the training delivered when and where you need it.

Contact us for a FREE proposal.