



# Design Criteria in Instrumentation Engineering

An **informatech** Training Course  
all copyrights reserved



( 5 Days Training Course )



## Why Choose this Training Course?

Take full advantage of the opportunity to attend one of the most beneficial training courses, presently being run. INFORMATECH is proud to announce a 5-day training course, jam packed with all you need to know, with respect to instrumentation design specific for the oil and gas industries. The control of a plant determines the efficiency of that plant. Therefore, the design of the instrumentation equipment used in the plant (used for measurement and control) is absolutely vital. This would be both from an operational as well as a safety point of view.

This training course focuses on getting the plant instrumentation component selection and integration just right. It progresses from selection, documentation, classification, and right through to final project management. At all times, it is actively presented, to fit in with the working environment of the delegates.

### **This training course will feature:**

- Crucial instrumentation design documentation (including data sheets, schedules, P&IDs, etc.)
- Control philosophy, with respect to selected instrumentation
- Equipment and instrumentation tagging philosophy
- Hazardous area classification and appropriate certification
- Instrumentation and final control element (valve) selection and sizing
- Project management

### **By the end of this training course, participants will be able to:**

- Assist in crucial decisions for instrument design and selection
- Interpret drawing and diagrams related to newly designed instrumentation
- Have a full understanding of the various process control strategies, and how to implement them
- Implement hazardous area zones, and select appropriate instrumentation and equipment for them
- Manage a project appropriately, from design to handover

### **Who is this Training Course for?**

It is irrelevant whether delegate instrumentation design knowledge and experience ranges from novice to advanced. The workshop starts from basic principles, and builds up, with the emphasis on delegate participation. Instructor guidance is delivered on a personal level, and delegates are encouraged to ask as many questions as necessary.

### **This training course is suitable to a wide range of professionals but will greatly benefit:**

- Instrumentation, electrical, mechanical, process and other engineers, specialists and staff
- Management
- Design teams
- Budgeting and financial staff
- Team leaders, supervisors and foremen

## **Day One: Signals, FDS, Vendors Interaction & P&IDs**

Understanding instrumentation signals  
Understanding process diagrams (including block, flow and where the P&ID fits in)  
Functional Design Specification (FDS) and drawing standards  
Vendor pre-qualification, interaction and quotation request  
Tag numbering and naming conventions  
Reading and creating P&IDs, including assorted P&ID symbology

## **Day Two: Instrumentation, Electrical and Pneumatic Diagrams, and Designing for Proper Acceptance Testing**

Instrumentation drawings and documents, including:  
Instrument selection report, instrument specification, data sheets, loop diagrams & schematics, cable schedules, hook-up diagrams, junction box wiring diagrams, cable racking layout, cable routing diagram, instrumentation index, history sheets, I/O lists, panel layout, power distribution, earthing diagrams and philosophy, PLC schematics, trip/alarm schedules, instrumentation detail, etc.  
Electrical schematics (related to instrumentation projects), including:  
Load lists, main & control circuits, electrical layout, single line diagrams, etc.  
Pneumatic and hydraulic instrumentation schematics  
Acceptance testing

## **Day Three: HMI Design Considerations, Area Classification, SIS and Instrumentation Selection & Sizing**

PLC, SCADA and DCS design criteria and specification  
Area and classification  
Instrument classification  
Safety Instrumented Systems (SIS) and SIS requirements, from a design point of view  
Instrumentation selection and sizing (including equipment for the most common measurements)

## **Day Four: Intelligent Communication, Valve Sizing, Protection & Material Selection**

Smart devices, HART and Fieldbus considerations for instrumentation plant design  
Digital data communication aspects  
Control valves and actuators, including selection and sizing  
Equipment protection  
Material selection

## **Day Five: Redundancy, Control Philosophy and Project Management**

Spares philosophy  
Design considerations for future expansion  
Redundancy and loss of power considerations  
Control philosophy, including:  
Feedback, feed forward, on/off, regulatory, cascade, ratio, advanced control, etc.  
Project management, including:  
Project life cycles, scope, time, cost and quality management, risk, etc.