MAESTRO CONSULTANTS

PROCESS CONTROL INSTRUMENTATION

COURSE OUTLINE 2020

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TRAINING TITLE

PROCESS CONTROL INSTRUMENTATION

VENUE

Dubai, UAE

DURATION

5 Days

DATES

21 - 25 June 2020

PRICE

US$4,000 per attendee including training material/handouts, morning/afternoon coffee breaks and Lunch buffet daily.

TRAINING INTRODUCTION

This course has been designed to provide training on essential components of a control system used in Oil and Gas plant. Process variable monitoring and control is a very critical activity and proper understanding of process control will help in ensuring better quality &safe operation of process plants.

TRAINING OBJECTIVES

By the end of the course, participants who are almost all operators, Panel operators and shift supervisors in production operations, should become able to:

- Explain various process variables, unit of measurements
- Understand the concept of process control basics
- Study various pneumatic and electronic instruments in process control
- Understand measuring device, transmitters, controllers and final control elements.
- Discuss the difference between pneumatic control system and electronic control system,
- Understand the concept of PLC, SCADA and DCS and its application in Process control
- Explain process safe guards, ESD system and process safety integrity.

TRAINING AUDIENCE

Gas Plant field Operators, Oil station Operators, Control Room Operators, Production / process Supervisors, Gas Process Engineers, Instrument Technician, Supervisor and Process Control Engineers.

COURSE OUTLINE

DAY-1

1. Hydro Carbon Basics

   Hydro Carbon Fundamentals, Hydro Carbon Properties – Physical and Chemical, Crude oil – properties, Natural gas – properties

1. Oil and Gas Process

   Oil and Gas production facilities, Production gathering stations, Oil processing, Gas processing. LNG Process

1. Process Control basics

Process control fundamentals, process variable, set point, out put, sensing element, Transmitter, controller, control valve.

4. Measurement Instruments

Pressure- Definition, Units of measurements, conversion of units, analytical instruments for measuring pressure.

Temperature - Definition, Units of measurements, conversion of units, analytical instruments for measuring Temperature.

DAY -2

Level - Definition, Units of measurements, conversion of units, analytical instruments for measuring Level.

Flow - Definition, Units of measurements, conversion of units, analytical instruments for measuring Flow.

Piping and Instrumentation diagram- various symbols, representation of various lines, equipments, control signals, flow systems, Instrumentation systems, safe guarding systems, Practical review of Piping and Instrument Diagram.

Class room Practical – Understand various Level and Flow instruments in P&ID. ADGAS Instrumentation work shop visit to identify various instruments.

DAY -3

1. Process Control.

   Process variables. Definition, Normal operating value, set point,
   Transmission of signals- Pneumatic, electronic and other mode of transmission
   P&ID – How to read a P&ID, Basic instrument symbols
   Field Instruments, Remote, control room.DCS, PLC and SCADA.
   Class room Practical – Detailed reading P&ID – PFD,

1. Process Safe Guards Systems

   Shut down systems- Various instruments using for shut down systems
   Alarms, Switches – Pressure switch, Level switch, Flow switch and Temperature switches
   ESDs and BDVs – Instruments, and Valves using for ESD.
   Fire and Gas detection systems.
   Practical Task – Identify Alarms, Trip switches, shut down actuators, various shut down valves (SDVs and BDVs) using P&ID.

DAY- 4

1. Advanced Control Systems

   Selective control system. Cascade, Split range, Ratio Control systems, Adaptive control systems, over ride, Auctioneering control systems.

   Class room practical – understanding various advanced control loops using P&ID.

DAY - 5

1. Unit operation of process plant equipment.

   Separator, scrubber, Piping systems, Valves, Pumps, Compressors, Heat Exchangers, coolers., Distillation, Absorption, Adsorption, stripping, Gravity separation. Control system application on Process equipment.

Practical Task – Review P&ID for application of control system and safe guarding system on Process equipment.

Case Studies, Video Presentations. ADGAS P&ID review. Workshop visit.

TRAINING CERTIFICATE

MAESTRO CONSULTANTS Certificate of Completion for delegates who attend and complete the training course

METHODOLOGY

Our courses are highly interactive, typically taking a case study approach that we have found to be an effective method of fostering discussions and transferring knowledge. Participants will learn by active participation during the program through the use of individual exercises, questionnaires, team exercises, training videos and discussions of "real life" issues in their organizations. The material has been designed to enable delegates to apply all of the material with immediate effect back in the workplace.