



Training Program:

Oil & Gas Electrical & Instrumentation Engineering

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Introduction:

There is a growing shortage, and hence opportunity, for Electrical and Instrumentation (E&I) technicians, technologists and engineers in the oil and gas industry. This is due to an increasing need for higher technology methods of obtaining and processing oil and gas as it is a finite declining resource. The price of oil is heading upwards steadily, thus making personnel and their associated oil and gas expertise in these industries even more valuable. The aim of this course is to provide the candidates with core E&I engineering skills to enhance their career and to benefit their firm.

This course provides a whole spectrum of activities ranging from basic electrical and instrumentation engineering to advanced practice including hazardous areas, data communications along with a vast array of E&I equipment utilized in an oil and gas environment as well as practical treatment of electrical power systems and instrumentation within the oil, gas, petrochemical and offshore industries. Whilst there is some theory this is used in a practical context giving you the necessary tools to ensure that the E&I hardware is delivering the results intended. No matter whether you are a new electrical, instrumentation or control technician/technologist/graduate engineer or indeed, even a practicing facilities engineer, you will find this course beneficial in improving your understanding, skills and knowledge.

Target Audience:

Electrical engineers, experienced electricians, fire and gas engineers, instrument and control systems engineers, instrument and process control technicians or technologists, instrument fitters, recent graduate electrical, instrumentation or mechanical engineers, chemical engineers, mechanical engineers

Training Objectives:

By the end of this course delegates will be able to:

- Skills and competencies in E&I oil and gas engineering
- Knowledge of the latest technologies in E&I oil and gas engineering
- Key techniques in operating your facility to the highest level of safety and in protecting the environment
- Decades of real experience distilled into the course presentations and materials
- Guidance from real E&I oil and gas experts in the field
- Extensive knowledge from the extensive experience of instructors, rather than the theoretical information from books and colleges
- Networking contacts in the oil and gas industry

Accreditation:

BTS attendance certificate will be issued to all attendees completing minimum of 80% of the total course duration.

Daily Agenda:

Introduction

- Fundamentals of electrical engineering
- Fundamentals of instrumentation, measurement and process control engineering

Instrumentation and Control

- General instrumentation standards in oil and gas
- Best practice in process, electrical and instrumentation drawings and documentation
- Process instrumentation
- Calibration, installation and maintenance of instruments
- Process control basics
- Control valves sizing, selection and maintenance (including pressure relief valves)
- Programmable Logic Controllers
- SCADA systems
- Distributed control systems
- Industrial data communications (including Fieldbus and industrial Ethernet)
- Safety instrumentation and emergency shutdown systems for oil and gas (IEC 61511 and IEC 61508) – basic introduction

- Wellhead and flowline control “ control systems
- Emergency wellhead blowout controls

Specialized Applications in Oil and Gas

- Power generation
- Cathodic protection
- Compressor control (including surge control)
- Drilling control systems and instrumentation
- Subsea instrumentation and control systems
- Pig launcher/receiver systems
- Critical flare knock out drum controls and instrumentation
- Flare flame front generator and ignition monitoring system
- Distributed control systems

Electrical Engineering in Oil and Gas

- Electrical drawings, documentation and schematics
- Transformers
- Troubleshooting, maintenance and protection of AC electrical motors
- Power distribution

- Power system protection and co-ordination (including fault calculations/stability and protective relays)
- Switchgear and distribution systems
- Cables and wires “ maintenance and installation practice
- Variable (or adjustable) Speed Drives (VSDs) for instrumentation and control systems
- Electrical safety
- Earthing/grounding, power system harmonics and power quality “ onshore/offshore
- Lightning and surge protection
- Uninterruptible Power Supplies (UPSs), batteries and battery chargers
- Emergency power supplies
- Electrical equipment in hazardous areas
- Electrical applications to an oil and gas platform and site