



Oil & Gas Testing & Commissioning Training Course



Oil & Gas Testing & Commissioning Training Course

Introduction:

The Oil and Gas Testing and Commissioning training course imparts a comprehensive understanding of electrical installation and commissioning principles. Ensuring equipment readiness for commercial service involves rigorous testing of all its functions under varied conditions. Participants will underscore the importance of thorough testing for the reliable operation of electrical systems.

Equipment validation culminates in its energization and load testing during the start-up phase initial energization. The Oil and Gas Testing and Commissioning training encapsulates seismic testing of oil and gas facilities, thorough drug testing protocols, and a detailed examination of the industry commissioning activities.

Commissioning is a crucial stage for identifying errors from earlier project phases. Engineers must handle both high and low voltages and currents during testing. To mitigate risks of injuries and damages, they must receive training to comprehend the processes thoroughly and meticulously plan every step of the commissioning procedure.

Testing and commissioning in the oil and gas sector are vital aspects of project delivery. This Oil and Gas Testing and Commissioning course explores the definition, meaning, and procedure of testing and commissioning within this field, emphasizing how it pertains to oil and gas corrosion testing, pressure testing, well testing, and production testing.

Targeted Groups:

- Testing Engineers / Technicians.
- Maintenance Engineers / Technicians.
- Managers of Engineering departments.
- Consulting Engineers / Technicians.
- Project Engineers.
- Safety Professionals.

Targeted Competencies:

At the end of this Oil and Gas Testing and Commissioning training, participants competencies will:

- Importance of Start-Up, Commissioning, and Testing of Electrical Systems.
- Commissioning Test Equipment e.g., CPC 100, Omicron 356, CIBANO, ARCO, TESTRANO and Circuit Breakers including Instrument Transformers.
- IR test, Primary Injection Test, Secondary Injection Test.
- Commissioning Test Equipment for Transformers Integrity.
- Transformer Noise.
- Commissioning Test for Earthing and Lightning Systems.
- Neutral Earthing Resistors.
- Restricted Earth Fault.
- First Energization and Commissioning Documentation.

Course Objectives:

By the end of this Oil and Gas Testing and Commissioning course, the participants will be able to:

- Understand the testing and commissioning process.
- Plan and prepare for testing.
- Plan and carry out inspections.
- Perform primary and secondary injections.
- Plan the first energization.
- Perform phasing tests.
- Consider safety aspects during testing and commissioning.
- Train staff to conduct testing and commissioning effectively.
- Make participants aware of equipment testing during construction or maintenance stages.
- Facilitate knowledge sharing and interaction regarding experiences related to testing and commissioning.
- Convey the concept and criticality of equipment testing in electrical power systems' operational and maintenance contexts.
- Enhance awareness of safety during the testing and commissioning phases.

Course Content:

Unit 1: Importance of Start-Up, Commissioning, and Testing of Electrical Systems:

- Definition of Start-up, Commissioning, and Testing.
- Pre-commissioning Procedures.
- Reasons for Start-up, Commissioning, and Testing.
- Substation Commissioning - Gas-Insulated Substation.
- Managing Commissioning with IEC 61850 and GOOSE.
- Earthing Systems include Clean Earth, Intrinsic Safe Earth, and Planet Earth.
- Major Components of GIS Substations.
- GIS with Vacuum Interrupter.

Unit 2: Commissioning Test Equipment CPC 100, Omicron 356, CIBANO, ARCO, TESTRANO and Circuit Breakers including Instrument Transformers:

- Types of Tests and Equipment for Commissioning.
- IR test, Primary Injection Test, Secondary Injection Test.
- HV Test, AC Hipot Test, DC Hipot Test, and Connections.
- Infrared and Partial Discharge Monitoring.
- Circuit Breaker Functional Tests.
- Tests for SF6 Circuit Breaker.
- SF6 Management.
- Construction and Test for Current Transformer and Voltage Transformers.

Unit 3: Commissioning Test Equipment for Transformers Integrity:

- Transformer Noise.
- Commissioning Test and Test Equipment for Power Transformers.
- Functional Tests for Power Transformer.
- Vector Group of Transformer.
- Transformer Oil Characteristics and Tests.
- Sweep Frequency Response Analysis SFRA Test Significance.
- Tan Delta Test and Polarization Index.
- Transformer Protection with Multi-functional Numerical Relays.

Unit 4: Commissioning Test for Earthing and Lightning Systems:

- Importance of Earthing.
- Network Earthing.
- Neutral Earthing Resistors.
- Restricted Earth Fault.
- Sensitive Earth Fault.
- Lightning Protection Systems.
- Commissioning Testing for Protection.
- Numerical Relays Functionalities.

Unit 5: First Energization and Commissioning Documentation:

- Battery Charger Commissioning Tests.
- Commissioning Switching Plans.
- Managing the First Energisation.
- Switching Plans.
- Soak Tests and Phasing Tests.
- Commissioning Certificates.