



MUE106

Turbo Expander: Operation, Performance, Maintenance & Troubleshooting

Course Introduction:

Turbo expander systems are growing more complex. With complexity comes greater information access and equipment reliability, together with the need for a better understanding of how to use the tools available. This course explains how turbo expander works and the critical conditions in expander operations. The course then discusses hydrate formation in turbo expanders and the operation of a turbo expander, including bearings and seals, lube oil system and the seal gas system.

Course Objectives:

Upon successful completion of this course, the delegates will be able to:

- ✓ Know the basic principles of the turbo expansion process
- ✓ Know the basic operation of a turbo expander
- ✓ Design fundamentals of turbo expander
- ✓ Carryout efficiency operation of the turbo expander
- ✓ Identify critical conditions in expander operations such as expander speed and hydrate formation in turbo expanders
- ✓ Explain turbo expander auxiliaries, turbo expanders and their relationship to your plant's process, turbo expander installation and commissioning, turbo expander startup and operations, turbo expander servicing and problem resolution
- ✓ Explain the overview of sub-vendor instrumentation information
- ✓ Identify bearings and seals, lube oil system, the seal gas system
- ✓ Apply turbo expander disassembly and assembly procedures as well as expander testing
- ✓ Describe turbo expander/generator, noise control
- ✓ Employ reliability/maintenance

Who Should Attend?

This course is designed for presentation to management level operations and maintenance Engineers, Supervisors and Technicians. It is also very important for operation staff

Course Outline:

Day 1:

- What is a Turbo Expander?
- When Turbo Expanders Used?
- Typical Turbo Expander Processes
- Typical Scope of Supply

- Applicable Codes & Standards
- Design Considerations
 - Materials of Construction
 - Design pressure

Day 2:

- Hydrocarbon Turbo Expanders
- Turbo Expanders Constructions and their functions
 - Inlet Guide Vanes
 - Expander wheels
 - Shaft
 - Magnetic bearings
 - Labyrinth seals
 - Dry gas seal

Day 3:

- Turbo Expander Auxiliaries
- Lube Oil System
- Seal Gas System
- Turbo Expander installation and commissioning
- Turbo Expander startup and operations
- Typical Turbo Expander Process
- Turbo Expander/Compressor Operation

Day 4:

- Typical Compressor Performance Map
- Turbo Expander servicing and problem resolution
- Turbo Expander Factory Testing
- Turbo Expander/Generator
- Integral Gear Expander

Day 5:

- Noise Control
- Reliability
- Turbo Expander Condition Monitoring
- Overview of sub-vendor instrumentation information
- Turbo Expander disassembly and assembly procedures

Course Certificate:

International Center for Training & Development (ICTD) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion
- Presentation

Course Fees:

To be advised as per the course location. This rate includes participant's manual, hand-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Timings:

Daily Course Timings:

08:00 - 08:20	Morning Coffee/Tea
08:20 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Coffee/Tea/Snacks)
13:30 - 15:00	Last Session

