Gas Turbine Operation and Troubleshooting

4 – 8 January 2027
Düsseldorf (Germany)



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Ref: 3256016_214524 **Date:** 4 – 8 January 2027 **Location:** Düsseldorf (Germany) **Fees:** 5900 GBP

Introduction

This course provides **Senior Field Operators - Utilities & Offsite** with practical knowledge of gas turbine operation, startup, shutdown, monitoring, troubleshooting, alarms, trips, and abnormal conditions. The program emphasizes field application, practical problem-solving, and operator decision-making rather than advanced theory.

Course Objectives

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

- Understand gas turbine components, systems, and operating principles.
- Perform safe startup, normal operation, and shutdown procedures.
- Monitor critical operating parameters and identify abnormal conditions.
- Understand alarms, trips, interlocks, and protective systems.
- Troubleshoot common turbine, combustion, fuel, lubrication, and compressor problems.
- Improve field inspection, decision-making, and control-room coordination.
- Apply practices that improve equipment reliability, safety, and performance.

Course Outlines

Day 1: Gas Turbine Fundamentals

- Gas turbine operating principles and applications
- Major components and auxiliary systems
- Compressor, combustion, turbine, and exhaust systems
- Fuel, lubrication, cooling, and starting systems
- Critical operating parameters
- Practical equipment walkdown

Day 2: Startup, Operation & Shutdown



- Pre-startup checks and permissives
- Startup and acceleration sequence
- Loading and normal operation
- Monitoring temperature, pressure, speed, and vibration
- Normal and emergency shutdown
- Startup/shutdown practical scenarios

Day 3: Monitoring, Alarms & Abnormal Conditions

- Operating trends and field indications
- Alarms, trips, interlocks, and protection systems
- High temperature and temperature spread
- High vibration and bearing problems
- Flame failure and fuel gas problems
- Compressor surge and fouling
- Practical alarm and trip case studies

Day 4: Troubleshooting & Fault Diagnosis

- Systematic troubleshooting methodology
- High temperature and vibration
- Low power and compressor performance
- Fuel and combustion problems
- Lubrication and starting system problems
- Field checks and operator response
- Practical troubleshooting exercises

Day 5: Emergency Scenarios & Practical Assessment

- Gas turbine trips and emergency response
- Overspeed, vibration, flame failure, and fuel loss
- Lube oil and instrument air failures
- Restart after a trip
- Integrated operating scenario
- Practical assessment, review, and Q&A

Why Attend This Course: Wins & Losses!



- **Improve Troubleshooting Skills:** Identify and resolve common gas turbine problems faster.
- **Increase Operator Confidence:** Strengthen field operating and decision-making skills.
- **Improve Safety:** Respond effectively to alarms, trips, and emergency conditions.
- **Enhance Reliability:** Reduce equipment damage, downtime, and unnecessary trips.
- **Practical Learning:** Apply knowledge through realistic scenarios and troubleshooting exercises.

Conclusion

This one-week course equips Senior Field Operators with the practical skills required to **operate, monitor, and troubleshoot gas turbines safely and effectively**. The strong focus on field application, abnormal conditions, and practical scenarios helps improve operator confidence, equipment reliability, and overall Utilities & Offsite performance.

Frequently Asked Questions FAQ

Who should attend?
Senior Field Operators, Utilities & Offsite Operators, and Operations Supervisors.

Is the course practical?
Yes. The course emphasizes practical operation, troubleshooting, scenarios, and case studies.

Does it cover startup and shutdown?
Yes, including normal and emergency procedures.

Does it cover alarms and trips?
Yes, including interlocks, protective systems, and operator response.

Can it be customized?
Yes. The course can be adapted to the specific gas turbine manufacturer, model, control system, and site requirements.

