DIESEL ENGINE: DESIGNS, INSTALLATION, OPERATION, TROUBLESHOOTING AND MAINTENANCE

COURSE OVERVIEW

This 5-day training course delivers a thorough understanding of diesel engine technologies and their real-world applications. It focuses on the full lifecycle of diesel engine systems—from design principles and proper installation to efficient operation, preventive maintenance, and structured troubleshooting. Participants will explore engine systems in depth, including fuel injection, lubrication, cooling, exhaust, and electronic controls. Emphasis is placed on reliability, safety, fuel economy, emissions reduction, and root cause analysis. The course includes practical insights, case studies, and best practices to ensure equipment longevity and operational efficiency.

DATES, VENUES AND FEES

26 – 30 October 2025 - Dubai

(5 Days)

Fees US$ 4500

Note: Fee is per participant + 5% VAT (if applicable).
Groups from the same company can enjoy a **discounted** price.

WHO SHOULD ATTEND?

This course is appropriate for a wide range of professionals but not limited to:

- Mechanical, marine, and maintenance engineers
- Operations and field technicians
- Power generation and utility plant personnel
- Fleet and facility maintenance supervisors
- Reliability, asset integrity, and technical service engineers
- Project and commissioning personnel involved with diesel engine systems

CONTACT US NOW

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ACCREDITATION

This training course is certified by CPD.

The CPD Certification Service is the leading independent CPD accreditation institution operating across industry sectors to complement the Continuing Professional Development policies of professional institutes and academic bodies. The CPD Certification Service provides support, advice, and recognised independent CPD accreditation compatible with global CPD principles. CPD is the term used to describe the learning activities professionals engage in to develop and enhance their abilities and keep skills and knowledge up to date. CPD Units are only awarded to programmes after each programme is scrutinised to ensure integrity and quality according to CPD standards and benchmarks.

COURSE CERTIFICATE

MSTC certificate will be issued to all attendees completing a minimum of 80% of the total tuition hours of the course.

CPD internationally recognized certificate will be issued for all participants who will meet the course requirements.
CPD certificates will be issued within a month of the successful completion of the course.

TRAINING METHODOLOGY

- Expert-led sessions with dynamic visual aids
- Comprehensive course manual to support practical application and reinforcement
- Interactive discussions addressing participants' real-world projects and challenges
- Insightful case studies and proven best practices to enhance learning

LEARNING OBJECTIVES

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

- Understand diesel engine design, operating principles, and classifications.
- Apply industry standards and best practices in diesel engine installation and alignment.
- Monitor and operate diesel engines effectively under various load conditions.
- Conduct routine maintenance and implement preventive maintenance strategies.
- Diagnose and troubleshoot engine failures using structured methodologies.
- Improve overall engine performance, reliability, and safety compliance.

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COURSE OUTLINE

DAY 1

Diesel Engine Fundamentals and Design Principles

- Pre test
- Overview of diesel engine applications and classifications
- 4-stroke and 2-stroke operation cycles
- Major components: crankshaft, piston, cylinder head, valves, injectors
- Air-fuel combustion process and performance indicators
- Engine efficiency and emissions fundamentals
- Engine sizing, rating, and performance specifications

DAY 2

Installation, Alignment, and Commissioning

- Site preparation and foundation requirements
- Mounting techniques and vibration damping
- Engine alignment with generators, pumps, or mechanical loads
- Installation of support systems: air intake, exhaust, lubrication, fuel, cooling
- Electrical connections, control panels, and instrumentation
- Commissioning procedures and safety verifications
- Pre-start inspections and first-run monitoring

DAY 3

Diesel Engine Operation and Performance Optimization

- Operational procedures: start-up, load handling, shutdown
- Monitoring engine performance: temperature, pressure, vibration, RPM
- Fuel system management and fuel quality impact

Cont'd.

- Engine control systems and automation
- Load variations and steady-state vs. transient conditions
- Emissions monitoring and control techniques (EGR, DPF, SCR)
- Safe handling and emergency response procedures

DAY 4

Maintenance Planning and Execution

- Maintenance philosophies: corrective, preventive, and predictive
- Lubrication systems: oil grades, intervals, and contamination control
- Cooling system checks and fluid management
- Air and fuel filtration systems
- Battery systems and electrical maintenance
- Maintenance documentation, scheduling, and work order management
- Reliability-centered maintenance (RCM) basics

DAY 5

Troubleshooting Techniques and Root Cause Analysis

- Common engine faults and failure modes
- Structured troubleshooting approach and tools
- Mechanical failures: piston damage, valve leaks, bearing wear
- Fuel-related issues: injector clogs, poor combustion, contamination
- Oil and cooling system problems: leaks, overheating, pressure loss
- Use of diagnostic tools: borescope, vibration analyzer, oil lab reports
- Root cause analysis techniques (5 Whys, fishbone diagrams)
- Final workshop: practical troubleshooting scenarios and corrective planning
- Post test

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