

DIESEL ENGINE MAINTENANCE PLANNING AND TROUBLE SHOOTING



**MUE249
Mechanical &
Utility
Engineering**

COURSE TITLE**DIESEL ENGINE MAINTENANCE PLANNING AND TROUBLE SHOOTING****COURSE DATE/ VENUE**

31 August – 04 September 2020

London, UK

COURSE REFERENCE

MUE249

COURSE DURATION

05 days

DISCIPLINE

Mechanical & Utility Engineering

COURSE INTRODUCTION

Modern civilization cannot do without diesel engines. They are found in power plants, railways, bus & truck lines, offshore installation, mining camps, and many other applications. Keeping these engines running with least troubles and shutdown improves the profitability of the whole system. Right selection, application and operation in addition to effective maintenance programs, reliable monitoring system, and skilled personnel are essential requirements for prolonged engine life. All the above can be achieved via deeper understanding of the engine construction, operation, installation and the more common problems. This course will offer the opportunity to learn more about engines, performance curves, control and troubleshooting. The participant's discussions, comments, and own problems are welcomed and encouraged to orient the course. Short test on the course material will be performed to assess the delivering of the presented material.

COURSE OBJECTIVE

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

- ✓ Carry out preventive, predictive and corrective maintenance on diesel engines
- ✓ Carry out preventive, predictive and corrective maintenance on Gas and diesel engines (such as for CRU's, generators)
- ✓ Review the different types of engines
- ✓ Describe the appropriate operation by learning the characteristics of diesel engine
- ✓ Learn the importance and methods of diesel engine maintenance
- ✓ Highlight the requirements for proper engine installation
- ✓ Discuss the effect of knocking and surge in diesel engines
- ✓ Familiarize with the fuel, air intake, lubrication, cooling, and starting systems of diesel engine
- ✓ Have an overview and checklist of diesel engine problems
- ✓ Understand the four stroke and two stroke cycles
- ✓ Understand cylinder head mechanism
- ✓ Describe piston, rings, liners and connecting rod Functions
- ✓ Understand connecting rod / crankshaft bearings
- ✓ Demonstrate valve timing and firing sequence
- ✓ Perform valve tappet clearance
- ✓ Understand trouble shooting
- ✓ Be aware of failure analysis
- ✓ Engine testing and overhaul
- ✓ Understand engine compression test
- ✓ Perform dismantling and repair for valve, piston and con-rod assembly
- ✓ Perform engine timing

COURSE AUDIENCE

- Supervisor Maintenance
- Foreman Mechanical Maintenance
- Engineer Mechanical Maintenance

- Engineer Gas & Water
- Senior Foreman - Mechanical Maintenance

COURSE CONTENT

Introduction to I. C. Engines

- Spark Ignition Engines
- Compression Ignition Engines
- Four-stroke Engines
- Two-stroke Engines
- Superchargers and turbochargers
- Engine Terminology

Diesel Engine Characteristics

- Performance Rating
- Engine Energy Balance

Diesel Fuel System

- Diesel versus gasoline or gas
- Fuel Cycle
- Cetane Number
- Speed Regulator
- Fuel System Troubleshooting

Engine Air Intake System

- Air Calculation
- Cleaner Types

Engine Lubricating System

- Lubricating Methods
- Oil System Accessories
- Crank Case Ventilation
- Lubricating System Troubleshooting

Engine Cooling System

- Radiator and Fan

- Heat Exchangers
- Thermostat Function
- Cooling System Troubleshooting

Engine Auxiliaries

- Emergency shut-down devices
- Bearings
- Gears
- Couplings
- Vibration Monitoring

Engine Installation

- Foundation
- Alignment
- Vibration Isolation

Operation Troubleshooting of Diesel Engines

- Knocking
- Surging
- Cylinder Block Problems

Cylinder Head Problems

COURSE CERTIFICATE

TRAINIT ACADEMY will award an internationally recognized certificate(s) for each delegate on completion of training.

COURSE FEES

\$6,150 per Delegate. This rate includes participant's manual, Hand-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

COURSE METHODOLOGY

The training course will be highly participatory and the course leader will present, guide and facilitate learning, using a range of methods including formal presentation, discussions, sector-specific case studies and exercises. Above all, the course leader will

make extensive use of real-life case examples in which he has been personally involved. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Case studies & Practical Exercises
- 10% Role Play
- 10% Videos, Software or Simulators (as applicable) & General Discussions

