

**Training Title**

**DIESEL ENGINE MAINTENANCE PLANNING AND TROUBLE SHOOTING**

**Training Duration**

**5 days**

**Training Venue and Dates**

REF	Diesel Engine Maintenance				Vienna,
RM050	Planning and Trouble Shooting	5	22 - 26 Jan. 2024	\$6,500	Austria

**In any of the 5-star hotels. The exact venue will be informed once finalized.**

**Training Fees**

- \$6,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch.

**Training Certificate**

**Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.**

**TRAINING OVERVIEW**

**TRAINING DESCRIPTION**

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 the 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. A short test on the course material will be performed to assess the delivery of the presented material.

**TRAINING OBJECTIVES**

- 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.

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- 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 yourself 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.

### **WHO SHOULD ATTEND?**

- Supervisor Maintenance.
- Foreman Mech Maintenance.
- Engineer Mechanical Maintenance.
- Engineer Gas & Water.
- Senior Foreman - Mech. Maintenance.

### **TRAINING METHODOLOGY:**

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. 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 the multiple-choice type will be made available on a daily basis to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work& Practical Exercises
- 20% Videos& General Discussions

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## DAILY OUTLINE

### **1- INTRODUCTION TO I. C. ENGINES**

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

### **2- DIESEL ENGINE CHARACTERISTICS**

- Performance Rating
- Engine Energy Balance

### **3- DIESEL FUEL SYSTEM**

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

### **4- ENGINE AIR INTAKE SYSTEM**

- Air Calculation
- Cleaner Types

### **5- ENGINE LUBRICATING SYSTEM**

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

### **6- ENGINE COOLING SYSTEM**

- Radiator and Fan
- Heat Exchangers
- Thermostat Function
- Cooling System Troubleshooting

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## 8- ENGINE AUXILIARIES

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

## 9- ENGINE INSTALLATION

- Foundation
- Alignment
- Vibration Isolation

## 10- OPERATION TROUBLESHOOTING OF DIESEL ENGINES

- Knocking
- Surging
- Cylinder Block Problems
- Cylinder Head Problems

### NOTE:

Pre & Post Tests will be conducted.

Case Studies, Individual & Group Exercises, Project works (making into groups), Role plays, Group Discussions, Last Day Review & Assessments will be carried out.

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