

GULF INSTITUTE



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Diesel Engine

INTRODUCTION

- This Diesel Engine training seminar is a comprehensive program that covers basic diesel engine operation including the function, operation and maintenance of the air intake system, fuel system, exhaust system, lubricating oil system, and cooling system.
- Proper maintenance inspections allow participants to catch problems before they become bigger, more expensive ones. This training course discusses the type of maintenance programs participants will encounter, and the types of routine inspections participants will be expected to carry out. Also, this course includes diesel engine operation, including how the diesel cycle differs from other types of engine cycles.
- The training course also introduces several major diesel engine components and moves on to cover shop safety and tools. Moreover, this Diesel Engine training course will cover all aspects of a modern diesel engine and associated systems including the modern injection systems, exhaust gas recirculation EGR system and engine management system. Some engine problems such as diesel knock will be covered.

This training seminar will highlight:

- Principles of operation of diesel engines
- Function and operation of the major components as well as auxiliary systems of diesel engine
- Modern Injection systems and Engine Management System
- The proper operation problems of diesel engine
- The best maintenance practice of diesel engine

OBJECTIVES

At the end of this training seminar, you will learn to:

- Understand the combustion process in diesel engines
- Consolidate and update the understanding of diesel engine components and auxiliaries
- Identify the functions and the operation of various injection systems
- Understand the modern diesel engine management system
- Recognize the engine operation procedures
- Identify engine problems and repairs

TRAINING METHODOLOGY

- This Diesel Engine training seminar will be delivered along workshop principles with presentation, video clips, multimedia illustrations and interactive worked examples. Group discussions will be followed to enhance the skills of the participants. Relevant case studies will be provided and discussed. Amount of time will be devoted to teaching the participants how to read and understand service manuals to enhance their maintenance skills.

ORGANISATIONAL IMPACT

The organization will benefit from this training seminar by:

- Improving plant reliability by enhancing the staff skills
- Minimizing pollutant emissions by optimal operation
- Improving the performance of the equipment
- Reducing down time and repair Cost
- Increasing plant and staff safety
- Saving money and time by enhancing the troubleshooting skills

PERSONAL IMPACT

Some important benefits for the participants of this Diesel Engine training seminar are:

- Enhancing their basic knowledge related to diesel engines
- Improving the ability to solve the problems
- Enhancing their adaptation to changing technology
- Improving the ability to read and understand service manuals
- Utilizing best practices in fault finding techniques and procedures to reduce costly downtime
- Contributing to superior plant safety records and emission compliance

WHO SHOULD ATTEND?

This training seminar is intended for all employees involved in the operations and maintenance of Diesel engines and will also benefit:

- Mechanical Engineers
- Mechanical Technicians
- Supervisors and Operators
- Environmental and Safety Technicians

Course Outline

Basic Principles of the Diesel Engine

- Method of Operation
- Four and Two Stroke Engines
- Torque and Power Output and Engine Efficiency
- Operating Conditions
- Combustion in Diesel Engines
- Fuel-injection System
- Combustion Chambers
- Alternative Fuels for Diesel Engines

Diesel Engines Components and Auxiliary Systems

- Main Components of Diesel Engines
- Lubrication and Cooling Systems
- Supercharging and Turbochargers
- Air Supply and Exhaust Systems
- Starting System

Diesel Fuel Injection System

- Functions of Injection Systems
- Fuel-injection Parameters
- Nozzle and Nozzle Holder Designs
- Unit Injector System
- Unit Pump System
- common-rail Systems
- EGR System
- Engine Management System EMS

Diesel Engines Operation and Troubleshooting

- Pre-checks for Operation
- Normal Operation Observation and Monitoring
- Shutdown Procedures
- Abnormal Operating Conditions
- Common Problems for Diesel Engines
- Diesel Knock
- Troubleshooting Matrix

Diesel Engine Maintenance

- Diesel Monitoring System
- Vibration and Indicator Diagrams
- Compression Testing
- Fuel-injection Pump Test Benches
- Preventive Maintenance Program
- Overhaul Maintenance
- Case Studies

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