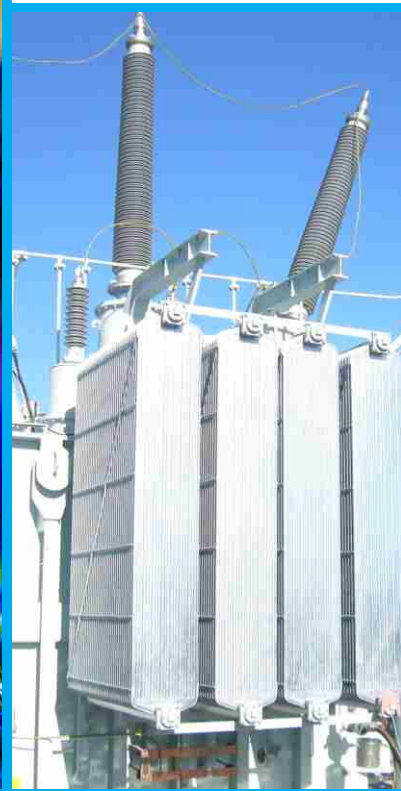


## FUNDAMENTALS OF **DIESEL POWER GENERATING PLANTS** for Engineers & Technicians



### What You **Will Learn...**

- Combustion processes and engine operation principles
- Types and applications
- Fuel and lube oil requirements
- ISO ratings and terminologies
- Engine components and their functions
- Generator principles and construction
- Plant layout requirements for single and multiple units
- Associated control panels and operation
- Testing and commissioning procedures
- Plant performance troubleshooting techniques
- Good maintenance practices

**SmartBrains** Oil and Energy Institute provides premium training courses for energy industry executives and fresh engineering graduates. Our success and distinguished reputation is thanks to our commitment to provide first-class programmes to our clients. Combining leading professionals from across the industry as lecturers and an interactive, practical format, the lessons learnt in a SmartBrains for Energy course are directly transferable back to the work place.

## Our Strategic Objectives

To be recognized by industry and employers as a highly reputable training organization. Provide dynamic leadership, sound management and excellence in training. Continue to improve our services through quality management processes. Invest in and value our people through professional development activities. Grow our business through innovation and to continue to be financially secure. Be influential in the economic development of the industries we serve nation wise

## Our Mission

“To provide quality training and assessment services and to prepare our students for a fulfilling professional career in their chosen industry. We are committed to upholding our values of providing excellence in training”

# Course STRUCTURE



“I would like to thanks T&P Team of Smartbrains who helped me to get skill set on Electrical System Design. The learning experience was good and placement is excellent”

**Zeeshan Ahmad**

Ankit Electrotech Engineers Pvt Ltd, Noida

### DAY ONE

#### INTRODUCTION

- Power generation methods
- AC power vs DC power
- Single phase and three phase AC power
- Prime movers
- Power plant types
- Diesel power plants
- Advantages of diesel power generation
- Engine types

#### DIESEL TECHNOLOGY AND CLASSIFICATIONS

- Basic engine processes
- Reciprocating engines
- Spark ignition engines
- Diesel engines
- Dual fuel engines
- Speed classifications
- Service classifications

### DAY TWO

#### DIESEL GENERATING SETS

- Coupling requirements
- Skid mounting
- Layout requirements
- Paralleling of multiple DG sets
- Standard control panels
- Interconnections

#### OTHER COMPONENTS

- Starting methods
- Starting characteristics
- Battery sizing
- Step load requirements
- Standby requirements
- Auto start and auto transfer schemes
- Auto transfer switches

## BASIC ENGINE DESIGN AND RATINGS

- Design characteristics and formulas
- Turbo charger
- Ambient conditions
- ISO ratings
- Performance and efficiency
- Efficiency enhancements
- Engine speed
- Fuel combustion methods

## FUEL OIL SYSTEMS AND LAYOUTS

- Crude oil
- HSD, LDO and heavy fuels
- Economics of fuel selection
- Pressure and temperature characteristics
- Viscosity
- Specific heat and temperature
- Specific fuel consumption
- Fuel filters and heaters
- Fuel nozzles and igniters
- Emission control
- Storage requirements
- Typical fuel system layouts and components

## LUBE OIL SYSTEMS

- Lube oil specification
- Lube oil consumption in diesel engines
- Typical lube oil system layouts
- Viscosity and temperature
- Lube oil filters and heaters

## GENERATORS

- Principle of operation
- Major components (field coils, commutator DC output, regulator, armature, rotating diodes)
- Generator types
- Low voltage and medium voltage generators
- Typical circuitry
- Load types and generator sizing
- System grounding methods
- Faults and protection
- Performance evaluation and testing

## DG PLANT LAYOUTS

- Industrial applications
- Power generation plant applications
- Single and multiple sets
- Fuel storage requirements
- Air intake system
- Exhaust system
- Auxiliary power requirements
- Typical power schemes

## TESTING AND COMMISSIONING

- Factory tests
- Pre-commissioning checks and tests
- Performance monitoring
- Fuel and lube oil consumption checks

## OPERATION AND MAINTENANCE

- Safety requirements
- Operation monitoring based on applications
- Maintenance techniques
- Spares and inventory management
- Inspection
- Engine overhaul and repair
- Troubleshooting

# Why

## SmartBrains?

SmartBrains is the ultimate choice for all the working & non working engineer's in energy Sector training requirements. Our extensive portfolio of energy training courses are:

- ▶ 100% focused on the Oil and energy industry.
- ▶ Guided by the industry's renowned professionals with unprecedented knowledge of the Oil and energy industry.
- ▶ Highly interactive program with practical and relevant case studies.
- ▶ Training by extensively researched self developed cutting edge techniques.
- ▶ Skill development techniques with comprehensive set of documentation, practical skills and tools used in the Industry.

### Admission

#### Requirements

- ▶ Duly Filled Application Form
- ▶ 2 Photographs
- ▶ Photo State of Qualifying Examination
- ▶ Address Proof
- ▶ I.D. Proof
- ▶ Latest Resume



- ▶ The perfect opportunity to develop network and experiences with knowledge sharing.
- ▶ Internationally acclaimed engineering qualification.
- ▶ Designed for both Fresh engineers and working professionals to attain growth in oil and energy industry.
- ▶ One of the finest international faculty.
- ▶ Interactive, interesting and motivational training sessions.
- ▶ Access to enormous reference books and research materials.

### Declaration

- ▶ This training program is on AUTONOMOUS basis conducted by SmartBrains.
- ▶ SmartBrains has right to expel any student at any time for misbehavior, poor attendance without refunding the fees.
- ▶ Certification will be issued only after completion of course, submission of all assignments and passing all the examinations.
- ▶ SmartBrains has its own rules and regulations about conducting examinations and assessment of examinations

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