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بروجاكس للتدريب والتطوير  
Projacs Training and Development

# Electrical Power Stations Repair Systems and Protection

المحطات الكهربائية أعطالها وحمايتها

05 – 09 April 2020

Dubai / United Arab Emirates

A Member of:



PROJACS ACADEMY



[ProjacsAcademy.com](http://ProjacsAcademy.com)



## Introduction

It is essential to know the effects of electrical power station faults that the electrical system may be facing and will carry under different fault conditions and at different points in the system. Consequently, the correct repair procedure may applied. The faults may be in the control systems or in the power systems such as single line to ground, double line to ground, three line fault or line to line fault. Selection of circuit breakers, protective devices are mainly required information about the short circuit current. Moreover power system repairs is essential in order to have safety operation of the power systems. It is important for engineers and technicians to be aware by fault causes, fault detection, fault protection and fault repair. In addition, this course also gives the participants a wide knowledge about Electrical Power station Protection. The presented techniques would ensure reliable operation of the power station. This course is designed to provide the participants with complete knowledge about fault repairs, fault detection and protective relays used for power systems and networks. This include the overcurrent, impedance, voltage, directional, differential relays. Generators, motors and transformer faults and protection are also included. External fault causes such as lightning, pollution, switching, harmonic and transients are also outlined. Some study cases will presented using computer application.

Extensive practical examples will be provided throughout the course.

## Who Should Attend?

The course is designed to electrical engineers and highly qualified technicians who are working in Electrical Power Stations, repair, operation and protection.

## Course Outline

### Power System Sources and Configurations

- Electrical engineering basic concepts,
- Voltage levels,
- One line and three line diagram,
- Generation system layout,
- Transmission layout,
- Distribution layout,
- Substation layout,
- Case study

### Faults Analysis in Electrical Power System

#### Electrical Faults

- Type of faults
- Generator faults
- Motor faults
- Transformer faults

#### External Faults Analysis

- Lightning
- Pollution
- Switching
- Transients
- Harmonics

### Power station Repairs

- Generator
- Transformer
- Control System
- Switch Gear

### Repair Maintenance Techniques

- Power station preventive maintenance
- Reliability-Centered Maintenance

- Optimization of Preventive Maintenance
- Overview of Repair and Test Methods
  - Resistance measurements
  - Polarity and phase-relation
  - No-load loss
  - Dielectric
  - Short-circuit

#### **Protective Equipment and Relaying Principles**

- Fuses,
- Auto-reclosers,
- Automatic sectionalizer,
- Breakers,
- Isolators,
- Load switches,
- Relays,
- Thermal relays,
- Electromagnetic relays,
- Static relays,
- Digital relays
- Case studies

### Training Method

- Pre-assessment
- Live group instruction
- Use of real-world examples, case studies and exercises
- Interactive participation and discussion
- Power point presentation, LCD and flip chart
- Group activities and tests
- Each participant receives a binder containing a copy of the presentation
- slides and handouts
- Post-assessment

### Program Support

This program is supported by interactive discussions, role-play, and case studies and highlight the techniques available to the participants.

### Schedule

**The course agenda will be as follows:**

- |                     |                  |
|---------------------|------------------|
| • Technical Session | 08.30-10.00 am   |
| • Coffee Break      | 10.00-10.15 am   |
| • Technical Session | 10.15-12.15 noon |
| • Coffee Break      | 12.15-12.45 pm   |
| • Technical Session | 12.45-02.30 pm   |
| • Course Ends       | 02.30 pm         |

### Course Fees\*

- **2,950USD**  
*\*VAT is Excluded If Applicable*