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بروجاكس للتدريب والتطوير  
Projacs Training and Development

# Electrical Protection Tools in Transport-Distribution Lines and Conversion Centers

أدوات الحماية الكهربائية في  
خطوط النقل ومراكز التحويل والتوزيع

13 – 17 July 2020

Istanbul / Turkey

A Member of:



PROJACS ACADEMY



ProjacsAcademy.com



## Introduction

This Electrical Protection Tools in Transport-Distribution Lines and Conversion Centers training course will provide the Engineers and Senior Management detailed techniques and tools for the protection of transmission lines and distribution lines. This is not intended to be a theoretical document; but it will provide applicable techniques and methodologies. Real application examples are provided to comprehend the protection of the electrical networks grid.

During the course, an intensive investigation of the above-explained subjects will be conducted to the trainees through the presentation of simulated real systems. The trainee will have the opportunity to check the effect of changing various system parameters on the performance of the system.

## Objectives

**By the end of this course practitioners shall learn to:**

- Know more information of power system construction and operation.
- Know more about the Electrical System and networks protection.
- Know the problems / failure of power networks.
- Know the Purpose of the protection.
- Know the Equipment Failure & Equipment to be protected

## Who Should Attend?

Senior and junior engineers concerned with the electrical power system operation and protection. In addition, the course will be valuable to senior management and engineers working in large industrial applications and power distribution networks. The course targets also high qualified field engineers who are involved with the operation, control and protection of electrical networks.

## Course Outline

### **Day One:**

- Introduction
- Types of Power Generation
- Power Transmission & Distribution
- Electrical Networks Types

### **Day Two:**

- What Components (Equipment) Do We Protect?
- Protective Relays
- Current Transformers CT
- Potential Transformers PT
- Generator Protection
- Transformer Protection

### **Day Three:**

- Transmission Line Protection
- Factors Influencing line Protection
- Fault Types
- Overcurrent Protection
- Directional Overcurrent Protection
- Distance Protection
- Line differential

### **Day Four:**

- Bus Protection
- Bus Fault
- Bus Differential
- Capacitor Protection
- Time-Overcurrent Coordination
- Instantaneous Overcurrent Protection
- Time-Stepped Distance Protection
- Communication-Based Protection
- Redundancy Considerations to Enhance Reliability

### **Day Five:**

- Artificial Neural Network:
  - Fault Detection,
  - Fault Classification,
  - Fault Location,
  - Fault Direction Discrimination

### 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*