Projacs
an egis company

بروجاكس للتدريب والتطوير
Projacs Training and Development

Electrical Installations and Power System Dynamics and Control

التقنيات الحديثة في التركيبات الكهربائية وانظمة توليد الطاقة والمراقبة

15 – 19 July 2018

Dubai / United Arab Emirates

A Member of:
PROJACS ACADEMY

ProjacsAcademy.com

Introduction

This course is designed to improve participants' knowledge concerning power system dynamics. It introduces the principle components power plant fuel handling system, furnaces, boilers, turbines, and generators. Emphasis will be laid on topics relevant construction, ratings installation and modeling of steam turbine and generator. Principles of excitation and voltage control methods will be introduced. The Load Frequency and dynamic Control will be discussed. During the course, an intensive investigation of the above-explained subjects will be conducted to the trainees. Upon completion of the course the engineer/technician will be fulfilled and understand power transformer. The course will be conducted through lectures, presentations, and practical examples through the different sessions.

Who Should Attend?

Junior and senior engineers and high trained technician who work in power generation, distribution and control.

Course Outline

Day One

Installations in Power Plant

- Introduction
- Essentials of Steam Power Plant Equipment
- Power Station Design
- Characteristics of Steam Power Plant
- Coal Handling
- Fuel Burning Furnaces
- Types of Furnaces
- Furnace requirements
- Method of Fuel Firing
- Rate of combustion
- Burners
- Air supply
- Boilers and steam generation

Day Two

Steam Turbine

- Principle of Operation of Steam Turbine
- Classification of Steam Turbine
- Compounding of Impulse Turbine
- Pressure Compounded Impulse Turbine
- Simple Velocity-Compounded Impulse Turbine
- Advantages of Steam Turbine over Steam Engine
- Steam Turbine Capacity
- Capability
- Steam Turbine Governing
- Steam Turbine Performance
- Steam Turbine Testing
- Choice of Steam Turbine
- Steam Turbine Generators
- Steam Turbine Specifications

Day Three

Generators

- Introduction
- Main generator types
- Principles of operation
- No-load operation
- The effect of load
- Damping of transients
- Voltage waveform
- The Automatic Voltage Regulator (AVR)
- Brushless excitation
- Separate exciter
- Capacitor excitation
- Induction generator
- Construction
- Stator
- Rotor
- Cooling Rating and specification
- Rated output
- Reactances
- Main items of specification
- Testing Standards

Day Four

Voltage and Reactive Power Control

- Impedance and Reactive Power
- System Voltage and Reactive Power
- Reactive Power Generation by Synchronous Machines
- Effect of Excitation Control
- Voltage Regulation and Power Transfer
- Exciter and Voltage Regulator
- Static Excitation System
- Dynamic Response of Voltage Regulation Control
- Stability Compensation for Voltage Control
- Voltage Regulators
- Load Compensation
- Static Compensators

Day Five

Load Frequency and dynamic Control

- Speed Governing Mechanism
- Speed Governor
- Steady State Speed Regulation
- Adjustment of Governor Characteristics
- Steam Turbine Model
- Reheat Type Steam Turbine Model
- Single Control Area
- The basics of Load Frequency Control
- Flat Frequency Control
- Real Power Balance for Load Changes
- Transfer Function of a Single Area System
- Dynamic Response of Load Frequency Control Loop
- Control Strategy
- The optimal Control Problem

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, 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*

مقدمة

تم تصـــميم هذه الدورة لتحســـين المعارف لدي المشـــاركين المتعلقةب ديناميات نظام القوي. انه يقدم قوة مكونات محطات الوقود موبدأ التعامل مع الأنظمة والأفران والغلايات والتوربينات والمولدات الكهربائية. وسيتم التشديد على التثبيت بالموضوعات ذات الصلة بالبناء، ونماذج من التوربينات البخارية والمولدات. وسيتم عرض مبادئ وأساليب السيطرة على الجهد. وسوف تناقش تردد التحميل والتحكم الديناميكي. وسيتم إجراء تحقيقات مكثفة من الموضوعات السالف شرحها للمتدربين. وعند الانتهاء من الدورة يتم الوفاء بها المهندس / فني محول الكهرباء. وستجرى الدورة من خلال المحاضرات، والعروض، والأمثلة العملية.

الحضور

المهندسين والفنيين المدربين الذين يعملون في توزيع وتوليد الطاقة، والسيطرة عليها.