

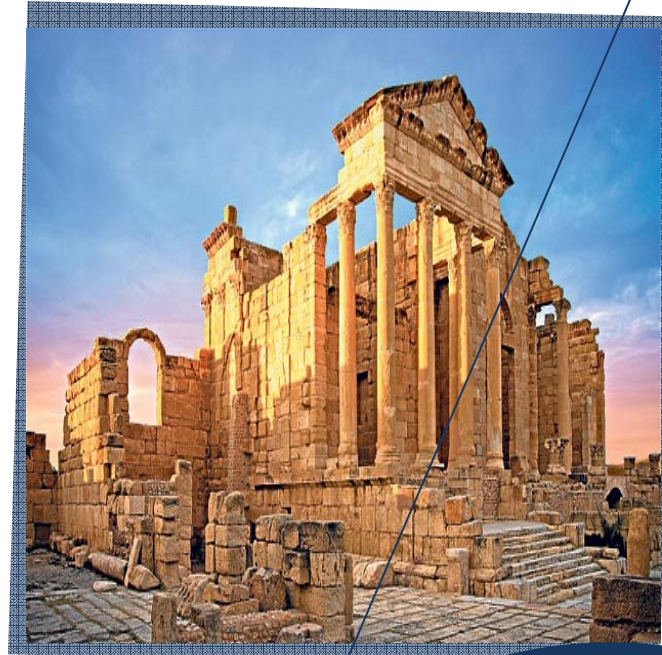


Training Course :
**Design of Electric
Switchboards (LV & MV) only
Design & Engineering Engineers**

One Weeks Training Course In

**Tunisia, Tunis, Le Corail
Suites Hotel**

As Under Details :



Abar Solutions Petroleum Consultancy Invite Your Employees To Participate With Us In Special Training Course As Under Details:

Course Name		Design of Electric Switchboards (LV & MV) only Design & Engineering Engineers				
Code	Period	Language	Start	End	Location	Fees
EL 53	5 Days	Bilingual (Arabic & English)	18/09/2016	22/09/2016	Tunisia, Tunis, Le Corail Suites Hotel	1750 KD (15% For Individual Registration) & (25% For Group Registration)
			16/10/2016	20/10/2016		
			13/11/2016	17/11/2016		
			18/12/2016	22/12/2016		
			15/01/2017	19/01/2017		
			19/02/2017	23/02/2017		
			19/03/2017	23/03/2017		
			16/04/2017	20/04/2017		
			14/05/2017	18/05/2017		
			18/06/2017	22/06/2017		
			16/07/2017	20/07/2017		
			20/08/2017	24/08/2017		
** The Fees Includes : Lecturer, Training Material, Training Room With One Coffee Break Daily, Certificate Of Attendance In Last Day Training Course **						

Course Description

⇒ Switchgear (and circuit breakers) are obviously critical components in electrical distribution systems and their operation significantly affects the overall operation of the system. The two day workshop will discuss application, installation, maintenance and testing issues relating to medium and high voltage switchgear and circuit breakers. There will also be a coverage of low voltage switchgear. You will receive a thorough grounding in switchgear theory and standards. You will gain a solid understanding of the issues associated with the proper application, installation and maintenance of these critical items of equipment with an overriding emphasis on safety. This comprehensive five day

workshop emphasises medium voltage switchgear which represents most of the switchgear installed on electrical distribution systems. The focus here is on air blast, oil, SF6 and vacuum circuit breakers. Case studies covering the main manufacturer's equipment will illustrate the important practical principles. Other power system protection components will be discussed as well to ensure that switchgear is understood in the correct context.

Course Objectives

⇒ **Delegates will learn about the following:**

- Selection of appropriate type and rating of circuit breakers and switchgear.
- Fundamentals of operation of switchgear.
- Switchgear components (CTs, VTs, relays, cable terminations)
- Safe operational policies including safety rules and safety documents.
- Able to discuss different LV for of separations.
- Fully understand how to size and select different type of motor starters.
- Diagnostic tools and test equipment for switchgears.
- Safe maintenance policies including safe working in switch rooms, indoor and outdoor substation

Course Content & Outlines

- ⇒ Introduction to LV & HV Switchgear.
- ⇒ Breaking of AC currents
- ⇒ Transient restrike recovery voltage (TRRV).
- ⇒ Surge arresters.

- ⇒ Metal clad & metal enclosed switchboards.
- ⇒ LV forms of separation.
- ⇒ Load flow studies (rated current).
- ⇒ Calculation of fault currents (simplified methods, PU, MVA & Symmetrical components).
- ⇒ Breaking & Making Capacities.
- ⇒ Different types of LV Circuit breakers/contactors (ratings & tripping units/curves).
- ⇒ Sizing of motor starters (DOL, Star/Delta, Auto transformer & soft starters).
- ⇒ Fuse sizing for distribution transformers & motors.
- ⇒ Type 1 & type 2 co-ordination for motor starters.
- ⇒ Dimensioning of LV switchboards (MCC & power centers).
- ⇒ Different types of HV Circuit breakers (Oil, Vacuum, Gas & Air type)
- ⇒ Merits & demerits of each type of HV breakers.
- ⇒ Different de-rating factors (temperature, altitude, etc ...).
- ⇒ Breaking capacity de-ratings according to IEC/ANSI C37.010.
- ⇒ Bus bar sizing/cross sectional area/current density & skin effect.
- ⇒ Specifications for switchboards.
- ⇒ Overview of protection & measuring units.
- ⇒ Different types electrical diagrams.
- ⇒ Panel scheduling.
- ⇒ Type & routine tests on switchgear
- ⇒ Course Evaluation
- ⇒ Course Summary