

17th **Successful Run** in Asia!

INTRODUCTION TO **POWER SYSTEMS**

For non-technical persons needing to increase their understanding of the power system, system operations and the power market

Qualified for 30
PDUs by PEB

12 – 16 NOVEMBER 2018, SINGAPORE

Testimonials from Past Participants

"The course was very beneficial to me. Recommended for new comers who never had any "Power" background"
- SENIOR EXECUTIVE, SARAWAK ENERGY BERHAD

"Good knowledge for non-technical professionals to understand various aspects of the power & utility industry & business" - SENIOR FINANCIAL ANALYST, SARAWAK ENERGY BERHAD

"Engineering made easy for Non-Engineers" - Energy Market Authority Singapore

"The good thing about the course is that the whole power industry was presented in a concise manner giving us better picture"
- Geologist, Petroenergy Resources Corporation

Expert Course Faculty Leader

In his 30 years working experience the trainer provided highest quality services in system planning and analysis to major transmission and distribution and transportation companies. He is very experienced in design, procurement, commissioning, erection and refurbishment of major projects in transmission and distribution substations up to 420 kV and hydro and thermal power plants.

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About This Training Course

A comprehensive & interactive course on Power Systems, incorporating issues on supply, generation, transmission, distribution, supply reliability, economics, demand management and renewable energy in the grid & “Smart Grids”.

Non-technical professionals, support professionals or new engineering entrants into the Power industry must grasp the language and technology of Power systems in order to proactively understand its key business activities. A confident understanding of the technical jargon used and a visual understanding of the various aspects of technology, facilities and equipment provides an overall appreciation of the “big picture” of the Power industry. This serves as an excellent foundation for smooth communication and increased efficiency in inter-department project team efforts and related engagements with the Power industry.

Learning Outcomes

This training course will be valuable to participants who either work in the power industry or deal with it externally. Those who need a fundamental understanding of the Power systems, or how it operates will find this course applicable. Beginning with the basic terms and concepts, the instructor will lead participants through lectures and multimedia presentations of the power generation technologies and power delivery systems. Participants will learn about issues such as reliability, performance and potential bottlenecks or limits on the system that can impact trading. They will gain an understanding of key power marketing fundamentals such as pricing and scheduling.

- Basic design, operation and components of electrical supply systems
- The integrated electrical grid – generation, transmission and distribution
- Constraints and limitations of Power supply – voltage regulation, supply quality, reliability and efficiency and economics
- The environment, renewable energy and the electrical regulatory regimes
- The smart grid: What does it mean? How will it improve electrical supply?

Who Should Attend

This course is targeted for non-technical persons needing to increase their understanding of the power system, system operations and the power market, including:

- Financiers • Power traders • Power project developers • Support professionals in non-technical functions • Professionals in other energy industries. • Electric utility personnel who are new or have new job responsibilities.

This training course has a limited attendance for up to 20 participants only.

Sessions commence at 9am on all days, with short intervals at 10.30am and 3.30pm respectively.

Refreshments will be provided in the short intervals.

Lunch will be provided at 12:30pm for 1 hour. Sessions will end at 5pm on all days.

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5 Day Course Outline

Energy Outlook Overview

Power Fundamentals

- Basic terminology and concepts.
- Types of current.
- Energy and power.

Generation Fundamentals

- Basic elements of a power system.
- What is a power plant?
- Heat rate and efficiency.
- Gas turbines.
- Steam turbines.
- Generators.
- Hydro generation.
- Power plant subsystems.
- Power plant economics.

Power Delivery Fundamentals

- Transmission problems/limits/losses.
- HVDC transmission.
- Power delivery components.
- Delivery issues.
- Reliability and performance.
- Regulatory drivers.
- The consumer.

Integrated System Operations

- Operation of the transmission grid.
- Interconnection economics.
- Congestion management.

Power Market Fundamentals

- Energy and capacity.
- Ancillary services.
- Transmission.
- Regulatory overview.

Power System development and operation

- Demand forecast
- Generation planning
- T&D network planning
- Power System design criteria
- PQ requirements and equipment

PS modelling and analysis

- Software for PS analysis
- Model input/output data
- Planning Criteria
- Technical Analysis
- Least Cost Development Analysis

Substation Design

- Power primary equipment
- Control and Protection
- Distributed Control System
- Earthing
- SCADA
- Standards and Code of practise

Reliability & Asset Management

- Reliability Indices
- Reliability Analysis
- Reliability Models
- Life expectance, performance and reliability

Power Economics

- Cost of energy and pricing
- Losses of energy due inefficiency
- Optimisation of design, models/programmes

Renewable energy generation and Dispersed Generation

- RG and DG definition and issues
- Embedded generation
- Islanded operation
- Reactive power control

Smart Grid Technology

- Smart Grid drivers
- Reliability and Quality of Supply
- Carbon Footprint reduction
- Productivity Improvement
- SG approach to System Operation and Management

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About Our Expert Course Trainer

In his 30 years working experience the trainer provided highest quality services in system planning and analysis to major transmission and distribution and transportation companies including London Underground, National Grid Company (UK), MTRC Metro in Hong Kong, West Coast Main Line connection to NG, Scottish Power, ESB-Ireland, ESKOM-South Africa, Mauritius CEB, Balkan countries - grids of Romania and former Yugoslavia, HV network ISA-Colombia, Western Power Distribution-UK, etc.

His technical expertise includes most aspects of power systems analysis, electrical asset management and railway connections to power networks where he provides solutions to technical problems and supports other field's experts in complex assignments. He has project management skills in technical and environmental projects as well as experience in short and long-strategic term planning, maintenance and asset management, power quality analysis of transmission and generation systems, distribution, transportation and other power networks. Experienced in generation and network integration, electrical component of energy master plans as well as strategic asset replacement, he was also involved in load- forecast analysis and generation dispatching. Published papers on asset management based on projects and experience in working for distribution companies in Africa and Europe.

The trainer is very experienced in design, procurement, commissioning, erection and refurbishment of major projects in transmission and distribution substations up to 420 kV and hydro and thermal power plants. Served as project manager on several major projects as well as head of the Engineering Group, He was responsible for final design, equipment specifications, layouts tender evaluation and commissioning. He has carried out conceptual development of protection and control philosophy for various projects as well as reviewed and approved project drawings and documents. He has applied the latest IEC standards, various codes of practice and engineering recommendations. He has also specific experience in conceptual design of power supply for transportation and traction railway systems, defining the design principles and technical specifications for future design and privatization process. He has analysed quality of power supply for connection of AC and DC unbalanced load to power network and published papers on practical implementation. He carried out feasibility studies on reactive compensation (SVC and MSC) focusing on voltage variation and harmonic distortion issues.

He has performed technical and economic evaluations, cost benefit net present value analysis, of various transmission and distribution schemes and electrical equipment. He carried out a number of asset evaluation analysis on electrical equipment and published papers on asset management, reliability and maintenance. He has performed equipment assessment and residual life prediction as part of strategic asset management analysis for a major underground transportation company in Asia. His duties have also included equipment arrangement optimisation in particular reliability aspect in terms of failure rate and financial consequences as non-supplied energy to the consumers.

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	NORMAL PRICE	2 PARTICIPANTS OR MORE	IN-HOUSE TRAINING
5 Day Programme	SGD 3,474 Per Participant	SGD 3,274 Per Participant	Guaranteed Minimum 40% Off Normal Price
	*SGD 3,717.18 Per Participant (GST Inclusive)	*SGD 3,503.18 Per Participant (GST Inclusive)	

*GST FOR SINGAPORE REGISTERED COMPANIES

ATTENDEE DETAILS

Name Job title

Tel Department Email

Name Job title

Tel Department Email

Name Job title

Tel Department Email

Name Job title

Tel Department Email

Name Job title

Tel Department Email

COMPANY DETAILS

Organisation name Industry.....

Address

Postcode..... Country.....

Tel Fax.....

PAYMENT METHODS

By Cheque/ Bank Draft: Make Payable to PowerEdge Pte Ltd.

By Telegraphic Transfer: Please quote AE1 with the remittance advise

Account Name: PowerEdge Pte. Ltd.

Bank Code: 7339 Branch code: 686 Account Number: 686-253386-001 Swift Code: OCBCSGSG

Bank Address: 65 Chulia Street OCBC Centre, Singapore 049513

All bank charges to be borne by payer. Please ensure that PowerEdge Pte Ltd receive the full invoiced amount.

PAYMENT POLICY

Payment is due in full at the time of registration. Full payment is mandatory for event attendance. I agree to PowerEdge Pte Ltd. payment terms

* GST- Exclusive price is only applicable for overseas corporate customers subject to qualifying conditions.

CANCELLATIONS & SUBSTITUTIONS

You may substitute delegates at any time. POWEREDGE PTE LTD does not provide refunds for cancellations. For cancellations received in writing more than seven (7) days prior to the training course you will receive a 100% credit to be used at another POWEREDGE PTE LTD training course for up to one year from the date of issuance. For cancellations received seven (7) days or less prior to an event (including day 7), no credits will be issued. In the event that POWEREDGE PTE LTD cancels an event, delegate payments at the date of cancellation will be credited to a future POWEREDGE PTE LTD event. This credit will be available for up to one year from the date of issuance. In the event that POWEREDGE PTE LTD postpones an event, delegate payments at the postponement date will be credited towards the rescheduled date. If the delegate is unable to attend the rescheduled event, the delegate will receive a 100% credit

4 ways to Register

-  [Online Web Registration](#)
-  info@poweredgeasia.com
-  (65) 6741 9927
-  (65) 6579 1288

RELATED TRAINING

- [Power Purchase Agreements](#)
- [Fundamentals of Power Generation for Non-Technical Professionals](#)
- [EPC Contract Management for Power & Utilities](#)



ON SITE TRAINING

Can't make it for the Course?
We'll make the course come to you!!

Simply let us know your preferred time and dates and we will meet you at your schedule and venue.

With a host of highly trained experts, we will be happy to customize your programme with your needs 100% fulfilled.

Contact us today at

-  info@poweredgeasia.com
-  (65) 6741 9927