

3rd Successful Run in Asia!

4 PILLARS OF TRANSFORMER CONDITION MONITORING

8 – 10 DECEMBER 2014, KUALA LUMPUR, MALAYSIA



Expert Course Faculty Leader
Max Philipp

TOPICS COVERED



**Hands On
Feature - 2 Days
Training in KL
South Training
Substation!!!**



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About This Training Course

Power transformers are vital components of the power supply infrastructure. Their reliability, availability, life cycle cost and residual life expectancy depend to a significant extent on how they are designed, built, operated and maintained. One of the major problems facing the power system managers is the ability to determine the expected life of the power transformer. Due to the complexity of the power transformer design, operational and maintenance policies, it is impossible to accurately predict the expected life of a transformer. Consequently, power system operators have to depend on various condition monitoring and condition assessment techniques available to determine plant condition and remnant life.

This course covers the fundamentals of transformer condition monitoring and asset management procedures. It emphasises on the technical background on which decisions are based. This course will give the participants valuable knowledge which will support their directives and decisions in their daily challenges, instead of an over reliance on technologies such on-line condition monitoring systems to interpret data.

Course Objectives

- Gain an overview on asset management procedures and techniques for transformers.
- Acquire an understanding of the 4 pillars of condition monitoring: DGA, Record keeping, Visual inspection and Routine off line tests (Bushing, OLTC)
- Interpret test results and understand interrelationship of various tests conducted

Who Should Attend

This course is designed for middle to senior asset engineers, asset managers and engineers dealing with the specification, operation, maintenance and protection of power transformers. This course is intended for professionals in large industrial companies and energy production & distribution companies.

Unique Features with **powerEDGE** Training

- Emphasizes case studies and practical exercises, not just theoretical concepts
- Whole of lifecycle approach to management of transformer investments
- Designed to be highly interactive and informal
- Specific program emphasis tweaked to meet participant specific needs as reflected in Pre Course Questionnaires

Hands On Feature - 2 Days Training in KL South Training Substation

Inclusive full usage of training facilities, Transformer, Training rooms, Control room Crane rental, tools and safety helmets. Participants should be aware that the second day will be held outdoors and they should be dressed appropriately (Long pants, full shoes, short sleeve shirt).

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Day 1– CLASSROOM BASED

Transformers and Components

- History
- Power Transformer Development
- Transformer Principle
- OLTC, Bushings, Cooling, etc.

Maintenance

- Why and How Principles
- Maintenance strategies
 - ✓ Risk / event based
 - ✓ Time / preventive
 - ✓ Condition based
 - ✓ “Maintenance free equipment”

Asset Management

- 4 pillars of Condition Monitoring
 - ✓ Historical data & record keeping
 - ✓ Physical observation
 - ✓ DGA
 - ✓ How to read the results
 - ✓ Trend analysis
 - ✓ Periodic maintenance (Off line)
 - ✓ On-Load Tap Changer and Bushings

Your Expert Faculty

Max Philipp has over 25 years’ experience in the field of Transformers, Substations and Management. With a record of directing business strategy, managing start up situations and negotiating favourable business agreements. Extensive experience gained in international operations, strategic management and marketing and a technical expertise in the field of High Voltage Regulation, Transformers and Substations. From Hands on to managing teams in the Asset Management of Substations and especially Power Transformers give him the right background to pass on his wealth of experience. His customer base includes Power Utilities, High & Medium Voltage Substations, Transformer Manufacturers and Industrial customers in the Asia Pacific region. As a Consultant and Trainer, his technical expertise includes:

- Voltage regulation
- Commissioning of On-Load Tap Changer
- Selection Criteria’s for Power Transformers
- Technical Understanding and Evaluation of Product
- Fault Prevention and Damage Investigation

In his previous engagements Max Philipp has worked for Maschinenfabrik Reinhausen GmbH of Germany. In his career he has founded and run 2 subsidiaries from scratch. The first one is in Australia and his last engagement was as Managing Director to set up Reinhausen Asia Pacific in Kuala Lumpur. Due to his previous engagement’s he has established deep contacts all over Asia Pacific Power Industry.

Max Philipp is a CIGRE member and sits on the committee of the MNC CIGRE.

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Day 2

Hands on experience

The training will be conducted at a substation of the Malaysian Utility. The substation consists of a 2 bus bar switching yard with 2 x 30 MVA, 132 KV Power Transformers, Complete control room. The substation is fully functional but not connected to the grid.

During the second day, the participants will work hands on an actual Transformer and OLTC. During the day we will dismantle, re-assemble and install the OLTC. After which, operational tests and alignment procedures will performed to ensure that it is properly installed.

Emphasis is put on the participation of the trainees.



1.) Safety briefing (The participants have access to the top of the transformer (About 3.5 m high))



2.) Orientation around the transformer and it's components and preliminaries for OLTC inspection

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3.) Adjustment position of Motor Drive Unit (MDU) and OLTC before opening the transformer



4.) Opening the OLTC head cover to remove the diverter switch



5.) Inspecting diverter switch by dismantling the support bars, energy accumulator and actuating system before removing the diverter switch contact shells to gain access to the moveable contact system

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- 6.) Inspecting diverter switch contacts (Maximum and minimum wear checks), lever system springs and studying the operational sequence of the diverter contact system before re-assembly and reinstallation of the diverter switch.



- 7.) Adjustment work of OLTC and MDU after installation. Very important part of the service.



- 8.) RTCC panel explanation of the functions (Local/ Remote, Master / Follower, Alarms, Out of Step, Tap position, Automatic Voltage Regulator (AVR) functions)

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By the end of Day 2, Participants will:

- Understand the basics of transformer asset management.
- Understand transformer life cycle and maintenance planning
- Learn DGA in transformer oil
- Learn how to maintain transformer components
- Understand transformer operation, aging and failure
- Understand transformer on-line monitoring techniques
- Understand the various tests performed before during and after OLTC maintenance

Day 3 (optional ½-day)

Site visit to Malaysia Transformer Manufacturing Sdn Bhd

The participants will have the opportunity to join a half day factory visit to Malaysia Transformer Manufacturing Sdn Bhd (MTM) www.mtmsb.com. This is a guided factory tour to experience first-hand the on how a Power transformer is build. From winding the coils and core stacking to the test field, a complete tour will be made with experts to answer your questions.

Past Testimonials

“Overall response and coordination of training staff was appreciated” **DY General Manager, NTPC – Sail Power Company Pvt Ltd**

“Great to have real hand on experience at off line real substation. Very experience instructor. Very warm reception and great foods”

Senior Manager, ABB Malaysia S/B

“This program is good for fresh engineers who involve in technical and investigation which is part of Suruhanjaya Tenaga Task” **Head of Unit, Suruhanjaya Tenaga**

“The course was fine, duration might be longer to explore deeper details of each pillar e.g. DGA. Hands on part was excellent & was good experience” **Electrical Engineer, Sarawak Energy Berhad**

“Good hands on experience “ **Engineer, Sabah Electricity Sdn Bhd**

“Overall training programme was very well coordinated and organised. Hospitality was also very nice. The trainer as well as the staff were very nice. The outdoor training gave very good overall understanding of the subject. Thank you very much for the training and everything. It was nice attending this training. Thank you very much” **Thermal Power Plant Operation, NSPCL India**

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Courses Available

[4 Pillars of Transformer Condition](#)
[Advanced Project Finance for Power](#)
[Advanced Technical Report Writing & Presentation Skills](#)
[Advanced Turnaround Shutdown & Outage Management](#)
[Ancillary Services in Competitive Electricity](#)
[Asset Management for the Power Industry](#)
[Best Practice Renewable Energy Capital & Project Management](#)
[Biomass Power Generation](#)
[CFB Combustion for Boiler Operations](#)
[Clean Development Mechanism and Carbon Markets](#)
[Coal Contracts](#)
[Combined Cycle Power Plants Operation](#)
[Combined Heat & Power \(CHP\) and Co-Generation Plant Operations](#)
[Competency Management System for the Power Industry](#)
[Design & Operations of Circulating Fluidized Bed Boiler](#)
[Developing & Structuring Public-Private Partnership \(PPP\) for Infrastructure](#)
[Effective Tender Process Management for Power & Utilities](#)
[Electrical Hazop \(eHazop\) Studies for the Power Industry](#)
[Electricity Demand-Side Management](#)
[Electricity Industry Design](#)
[Electricity Network Planning](#)
[Electricity Retail Contracts](#)
[Electricity Theft](#)
[Electricity Trading Essentials](#)
[Energy Efficiency](#)
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[Essentials of Coal Markets and Trading](#)
[Essentials of Power Trading](#)
[Excitation Systems](#)
[Feed-In Tariffs for PV Systems](#)
[Finance for Non-Finance Professionals in Power & Utilities](#)
[Financial Modelling for Project Finance in Power & Utilities](#)
[Fitness-For-Service AP1 579 & High Energy Piping Life Management](#)
[Fundamentals of Geothermal Energy](#)
[Fundamentals of Power Generation](#)
[Gas & LNG Contract Negotiation](#)
[Gas Turbine Generator Selection, Operation & Maintenance](#)
[Gas Turbine Hot Gas Paths, Rotors & Failure Analysis](#)
[Gas Turbine Major Inspection & Overhaul](#)
[GE Gas Turbine Operations Simulation Based](#)
[HRSG Design, Operations & Understanding, Controlling of HRSG Damage Mechanisms](#)
[HV Substation Design & Construction](#)
[IEC for Utilities](#)
[Integration of Distributed Generation](#)
[Introduction to Carbon Capture & Storage](#)
[Introduction to Clean Coal Technology](#)
[Introduction to Power Systems](#)
[Keeping Electrical Switchgear Safe](#)
[Leadership & Team Dynamics for Power & Utilities](#)
[LNG Fundamentals](#)
[LNG Markets & SPOT Trading](#)
[Maintenance Planning & Scheduling](#)

[Making IPP & Renewable Energy Projects Contract Frameworks Bankable](#)
[Managing Complex Projects for Power and Utilities Professionals](#)
[Medium Voltage & High Voltage Switchgear Metallurgy for Engineers](#)
[Mechanical Engineering for Non-Mechanical Engineers](#)
[Mini Hydro Project Analysis](#)
[MKV Speedtronic Control System](#)
[MK VI Speedtronic Control System](#)
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[Nuclear Power](#)
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[Waste to Energy Plant Operations](#)
[Water Treatment and Corrosion Control for Steam Generation and Power Production](#)
[Writing Effective Standard Operating Procedures \(SOP\) for Power & Utilities Professionals & Engineers](#)

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Frequently Asked Questions (FAQs)

1. Does PowerEdge have other programmes than those listed?

We have more than 200 programmes that we are capable of running. All we need is for you to contact us and request for the preferred programme and we will be able to develop it.

2. Where is PowerEdge based?

PowerEDGE is headquartered in Singapore but we run our training programmes in different venues around Asia.

3. What does PowerEdge do?

We are a Power & Utilities Training Specialist.

4. Can this course be done in our city?

It absolutely can. Get in touch with us to request for a training programme to be carried out in your city.

5. Can you reduce the price of our preferred course?

While our price has been reduced before it is even launched, we are always happy to help you with further discounts.

6. Can you change the dates of the course?

If you have a special requested date, let us know and we will arrange another session for you.

7. Who are the companies that will be participating?

This varies from a diversity of Power Operators, Regulators, Financiers, to Vendors in the Power & Utilities industry.

8. Where is the venue for the course?

We usually engage a 4 to 5 star hotel meeting room to ensure the comfort of our participants.

9. How many delegates should we expect for each course?

This varies from 15 to 20 participants. Class sizes are kept small to allow trainers to focus better on each participant.

10. What are the different payment modes?

We accept Visa/MasterCard, cheques, bank transfers and cash on site.

11. Is accommodation included when I sign up for a course?

Accommodation is not included in the course fee but we are always happy to advise on available accommodations.

12. Can I get a cheaper accommodation through PowerEdge?

We will be pleased to help you negotiate a better rate with hotels.

13. Is lunch provided during the course?

We provide lunch and 2 tea breaks every day during our training programmes.

14. Are the training materials included once I have signed up for a course?

Yes, training and course materials are included in the course fee.

15. Will there be a certificate for the course?

Yes, there will be a certificate of participation upon completion of a course.

16. Who are PowerEdge trainers?

They are expert consultants and practitioners with many years of experience in the subject matter that they deliver on.

17. Are PowerEdge trainers competent?

We have received numerous favourable feedbacks on our trainers from past participants.

18. Can PowerEdge assist with Visa travel applications?

We can assist in advising you on the relevant procedure(s) and embassies/consulates that provide Visa for travel purposes.

19. Can we purchase training materials without attending a course?

Unfortunately this option is not available as training materials are specially developed for courses.

20. Can course content be tweaked to cater to our needs?

Of course! Just let us know your request and we will get the trainer to assist in carrying it out.

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REGISTRATION FORM

	Early Bird Ends 31 Oct 2014	Normal	Group of 3 or more
2 Days Only	SGD 2599	SGD 2799	SGD 2,339
2 Days + Optional Half Day Site Visit	SGD 2799	SGD 2999	SGD 2,519

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 and payment in Singapore dollars (SGD) 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

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](http://www.poweredgeasia.com)
 ✉ info@poweredgeasia.com
 ☎ (65) 6741 9927
 📠 (65) 67478737

You may also be interested in

- ✓ [Introduction To Clean Coal Technology](#)
- ✓ [Introduction to Power Systems](#)
- ✓ [Renewable Energy Integration](#)
- ✓ [Fundamentals of Power Generation](#)

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

