

FIRST TIME in Asia!

MODELING AND SIMULATION OF **GENERATION UNITS**

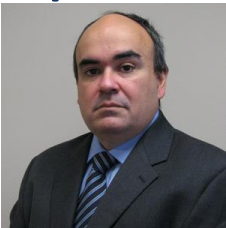
Compliance with Modeling, Data, and Analysis (MOD) Standards

22 – 25 AUGUST 2016, KUALA LUMPUR, MALAYSIA

Hands-on examples include the following:

- Calculation of V-curves for synchronous generators.
- Open circuit and on line step changes in voltage reference for checking performance of excitation systems.
- On line step changes for assessing the performance of power system stabilizers.
- Speed governor response of conventional units and combined-cycle power plants.
- Inter-area oscillations and PSS performance.
- Voltage stability simulation, including aspects of modeling of over-excitation limiters, SVC and load modeling.
- Simulation of plant response of large wind farms.

Expert Course Faculty Leader



Dr Leornado Lima



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About This Training Course

The Modeling and Simulation of Generation Units course is designed to provide engineers from different organizations with the core concepts associated with the modeling and dynamic simulation of utility-scale generation plants and associated control systems. In particular, the course aims to familiarize the engineers with the latest Standards and associated requirements, so they can identify their role in meeting these requirements within their organizations.

Practical Training

The course provides classroom-based instruction and utilizes a comprehensive computer based course manual along with hands-on simulation exercises based on the software PSS/E. The hands-on examples are designed to highlight simulation techniques that might be useful to fulfill the requirements of the Standards, rather than the use of the software or simulation of large interconnected systems.

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- Inter-area oscillations and PSS performance.
- Voltage stability simulation, including aspects of modeling of over-excitation limiters, SVC and load modeling.
- Simulation of plant response of large wind farms.

Your Expert Faculty

Leonardo Lima received his B.S.E.E. in 1986, his M.Sc. in 1991 and his D.Sc. in 1999 from Universidade Federal do Rio de Janeiro in Rio de Janeiro, Brazil. He has more than 20 years of professional experience in power system analysis and simulation, including system studies for transmission planning and operation. He worked in the development of the small-signal stability program PacDyn between 1984 and 1988. In 1992, he joined the Power System Engineering Department of the Universidade Federal Fluminense, in Niterói, Brazil, as an Assistant Professor, lecturing undergraduate and graduate courses in classical control theory, power system analysis, power system stability, power system planning, and electrical machines. He became a full Professor in 1999. He joined the PTI's (currently Siemens PTI) consulting practice in 2002 and became a Principal Consultant in 2009, where he specialized in dynamic modelling and simulation using PSS/E. He joined Kestrel Power Engineering in 2010 as a Senior Engineer. He is a member of the IEEE Power Engineering Society and is currently the Secretary of the Power System Stability Controls Subcommittee of the Power System Dynamic Performance Committee.

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4 Day Course Outline

Module 1: Synchronous Generator Modeling

- Capability curve, protection and limiters – PRC-019.
- V-curve
- Reactive capability – MOD-025.
- Models and parameters – salient pole and round rotor.
- Topics on testing and validation of dynamic models – MOD-032, MOD-026 and MOD-027.

Module 2: Excitation System Performance and Modeling

- Requirements
- Common designs: bus-fed static, rotating DC exciter, rotating AC exciter.
- Automatic voltage regulator.
- Reactive current compensation (droop and line-drop modes).
- Models and parameters, typical response, system requirements.
- Topics on testing and validation of dynamic models – MOD-026.

Module 3: Power System Stability and Stabilizers

- Effect of excitation system on stability.
- Small-signal stability.
- PSS models and parameters, typical response, requirements.
- Topics on testing and validation of dynamic models – MOD-026

Module 4: Prime Movers and Speed Governors

- Common elements of utility prime movers.
- Steam turbine, combustion turbine, combined-cycle plant, hydro turbine, wind turbine.
- Speed governing characteristics of utility-scale plants.
- Permanent droop and deadband.
- Automatic generation control.
- Turbine/Speed Governor models and parameters, typical response, requirements.
- Topics on testing and validation of dynamic models – MOD-027.

Module 5: Wind Turbines and Wind Farms

- Wind turbine models and parameters, typical response, requirements.
- Topics on testing and validation of wind generation dynamic models – MOD-025, MOD-026, MOD-027 as applicable to wind farms.

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OTHER AVAILABLE COURSES

- [4 Pillars of Transformer Condition](#)
- [Advanced Project Finance for Power](#)
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- [Coal Contracts](#)
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- [Electricity Theft](#)
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- [Essentials of Power Trading](#)
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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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	NORMAL PRICE	EARLY BIRD ENDS 30 JUNE 2016	GROUP OF 3 or More
4 Day Programme	SGD 4,800 Per Participant	SGD 4,600 Per Participant	SGD 4,300 Per Participant
	*SGD 5,136 Per Participant (GST Inclusive)	*SGD 4,922 Per Participant (GST Inclusive)	*SGD 4,601 Per Participant (GST Inclusive)

*GST FOR SINGAPORE REGISTERED COMPANIES ONLY

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Name Job title

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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

* 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

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✓ [Excitation Systems](#)

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

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