A 2-Day Professional Development Seminar on

Gas Insulated Switchgear (GIS) and GIS Substation Essentials

by Dr. Jose Lopez-Roldan

MELBOURNE
2-3 March 2020
Rendezvous Hotel Melbourne
9.00 am - 5.00 pm
Overview

There is a continuous increase in the application of Gas Insulated Switchgear (GIS) into Electric Power Transmission and Distribution substations. Gas Insulated Switchgear is the most modern form of High Voltage Switchgear. The superior dielectric and arc quenching properties of the SF₆ gas allow a substantial reduction in the size of the switchgear. GIS substations can therefore be smaller than conventional air-insulated substations. In a GIS, the active parts are metal enclosed and this increases the safety and reliability of the substation. Since the development of the first gas insulated switchgear in the late sixties, GIS technology has been used in both MV and HV switchgear.

This seminar aims to provide an overview of the most technical issues regarding GIS from both a manufacturer and user perspective. It is intended to assist engineers involved in the design, specification, installation, testing and maintenance of Gas Insulated Switchgear and substations. It covers many of the relevant topics in Gas Insulated Switchgear technology such as the understanding of the design and operation of the switchgear elements e.g. the Circuit Breaker, Disconnectors and Earth-Switches. The course also addresses GIS substation topics such as installation, substation design, insulation coordination, grounding, testing and condition monitoring.

Course Leader’s Profile

Dr Jose Lopez-Roldan received his M.Sc. and Ph.D. degrees in electrical engineering from the University of Barcelona in 1993 and 1997 respectively. During his Ph.D. studies, he was a visiting-researcher at the R&D centers of Ontario-Hydro (Toronto), Schneider Electric (Grenoble) and EDF (Paris).

He worked at VA TECH-Reyrolle in the UK from 1996 to 2000 as a senior engineer engaged in the development of Gas Insulated Switchgear. He joined Pauwels in Belgium in 2000 as R&D Project Manager in the Transformer Division and from 2002 to 2006 was the engineering manager of the Substations Division. From 2006 to 2016 he worked as Principal Consultant in Gas Insulated Switchgear for Powerlink Queensland in Australia. From 2016 to 2017 he was Research Manager of G&W Electric in the USA doing R&D in high voltage switchgear. Since 2018 he works as high voltage switchgear specialist in the Substation Standards department in Energy Queensland in Australia.

Jose has co-authored more than 50 papers on HV switchgear, substations and electrical insulation. He is a Fellow of the Institute of Engineers of Australia, senior member of the IEEE and member of several international working groups of CIGRE. He was from 2011 to 2018 Adjunct Professor of the Queensland University of Technology where he lectures in High Voltage Switchgear and Condition Monitoring of HV plant.

Who Should Attend?

Technical personnel who are involved in the design, installation, operation and maintenance of Gas Insulated Switchgear (GIS) and GIS Substations, such as

◊ Power System Planners
◊ Electrical Engineers
◊ Power System Managers and Technical Officers
◊ Construction and Project Managers
◊ Power System O&M Engineers
◊ Power System Consultants

REGISTER NOW!  Email your registration form to register@cpdint.com.au
1. **Switchgear Fundamentals**  
- Current Interruption  
- Electrical Insulation  
- Electro-Magnetic Forces  
- Thermal Behaviour  

2. **Element of Gas Insulated Switchgear (GIS)**  
- Description of GIS: Main Components  
- Switching Components: Functions and Applications  
- Technical Evolution  
- Gas Circuit Breakers  
- Disconnectors and Earth-Switches  
- Structural Components: Bus-bars and Support Insulators  

3. **High Voltage GIS Substations**  
- Air Insulated Switchgear (AIS) versus GIS substations  
- Basic GIS Substation Lay-outs  
- Indoor and Outdoor GIS  
- Hybrid Switchgear as An Alternative to GIS Substations  
- Special GIS Substations: Mobile and Temporary Substations  

4. **Applications of GIS in Medium Voltage Substations**  

5. **The SF6 Gas**  
- Why SF6?: Analysis of Fundamental Properties and Comparison with Air and Other Gases  
- Reaction with Electric Arc and Decomposition Products  
- Humidity and Acidity  
- Factors Affecting the Performance of SF6  
- Environmental Aspects  

6. **Insulation Coordination in GIS Substations**  
- Basics of Insulation Coordination  
- Surge Propagation in GIS Substations  
- Lightning Surges  
- Specific Switching Transients in GIS: Very Fast Transient Overvoltages  

7. **Grounding of GIS Substations and EMC**  
- Particularities of Earthing in GIS  
- Low Frequency Earthing  
- High Frequency Earthing: Transient Ground Potential Rise (TGPR)  
- Electromagnetic Compatibility of Substation: Sources of Interferences, their Influence on Secondary Equipment and Decoupling Methods  

8. **Testing of GIS**  
- Type Tests and Routine Tests  
- International Standards  
- Temperature-Rise Tests  
- Mechanical Endurance and Climatic Test  
- High Voltage Testing  
- Short-Circuit Testing  
- Internal Arc-Fault and Pressure Rise  

9. **Condition Monitoring**  
- Reliability Centered Maintenance (RCM)  
- GIS Condition Monitoring  
- GIS Insulation Monitoring by partial discharge diagnostics  

10. **Trends in GIS Technology**  

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**CPD Recognition**  
This technical seminar is designed to meet the Continuing Professional Development (CPD) needs of participants. A Certificate of Attendance will be awarded at the end of the program. This serves as evidence of your personal and professional commitment to your career.
**REGISTRATION FORM**

Please register the following delegates for the event -

“GAS INSULATED SWITCHGEAR (GIS) AND GIS SUBSTATION ESSENTIALS” Seminar

□ MELBOURNE, 2-3 March 2020, Rendezvous Hotel Melbourne

(Please tick √ the above relevant box to indicate your choice of dates and venue, and print clearly in black pen for proper transmission)

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**COURSE FEES & DETAILS**

Course Registration Fee :

Register before 31 January 2020 :
AUD1,280.00 + AUD128.00 (GST) = AUD1,408.00 per delegate

Register after 31 January 2020 :
AUD1,380.00 + AUD138.00 (GST) = AUD1,518.00 per delegate

Register 3 or more delegates at the same time for this course:
AUD1,242.00 + AUD124.20 (GST) = AUD1,366.20 per delegate

Payment Terms : Payment is required before the event. Delegates may be refused admission if payment is not received prior to the event. Registration Fee includes lunch, refreshments and training documentation/notes.

Cancellation : A substitute or replacement is welcome at no additional charge. However, any cancellation of registration must be made in writing. If you cancel at 14 or more calendar days before the commencement of the event, you will receive a full refund, minus a non-refundable $250 administration fee. If you have not paid for the event, you will still be invoiced for the $250 administration fee. If you cancel within 14 calendar days of the commencement of the event, you will be charged the full fee, even if you have not paid yet.

Accommodation : Arrangements for accommodation are the responsibility of participants and costs are not included in the course fee. Accommodation is available at the venue/ close by and information can be made available to interested registrants.

Note : The organiser reserves the right to make changes to the event schedule, contents and venue. The views expressed in the event are not necessarily those of CPD International Pty Ltd.

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