



# HIGH VOLTAGE [ HV ] SUBSTATION DESIGN

Join our BII World global industry expert & instructor:  
**Vukan Polimac** and transform your learning experience.



20 Hours Virtual Learning Experience

06 - 09 October 2025

09:00 - 14:00 | Atlantic Standard Time (AST)  
08:00 - 13:00 | Jamaica Time  
09:00 - 14:00 | Trinidad & Tobago Time  
10:00 - 15:00 | Suriname Time

[www.biiworld.com](http://www.biiworld.com)

## COURSE OVERVIEW:

HV Substations play an important role in the electric power systems. A properly planned and designed substation is essential for the reliable operation of a power system network. A new substation would need to be built to meet the requirements of growing loads and operation under changing competitive markets. Upgrading of existing substations would require a comprehensive knowledge of the substation as well as the power system(s).

This 4 - Day Online Course covers all aspects of medium and high voltage substation design including regulatory requirements and general design considerations from feasibility through technical specification and tendering to the detail design. A practical understanding of planning, design, technical specification application and a step-by-step approach of the substation design process is explained as well as design documentation for each design stage. Health & safety and environmental issues relevant for the design are covered in this comprehensive course.

## LEARNING OBJECTIVES:

1. Learn the latest criteria and practical techniques for the design of HV substations
2. Understand a step-by-step approach of the substation design process from initial site survey, substation concept, technical specification to the detail design of equipment
3. Gain knowledge of the technical requirements, configuration philosophies
4. Obtain information of design practices and work processes
5. Learn how to specify equipment for a new substation
6. Comprehend how to manage substation design
7. Have a comprehensive understanding of substation components
8. Acquire intelligence of substation layout and busbar design
9. Help engineers and technicians to work with confidence to ensure continuous supply with complete reliability by minimizing interruptions
10. Acknowledge the safety considerations of substations
11. Understand the environmental aspects of substation design and critical factors involved
12. Get awareness of reliability considerations and maintenance considerations in the design stage
13. Understand the technical aspects involved in the selection of major equipment in substations
14. Familiarization of substation earthing design
15. Recognise design documentation from general arrangement to schematic diagrams
16. Ascertain how to manage the design



## WHO SHOULD ATTEND:

This course is intended for:

- Design Engineers/Technicians
- Industrial and Utility Engineers/Technicians
- Managers of design engineering departments
- Electrical Engineers/Technicians
- Commissioning Engineers/Technicians
- Consulting Engineers/Technicians
- Planners of Power Systems
- Project Engineers
- Safety Professionals

Others who want a knowledge of a substation design.





# VUKAN POLIMAC

... your **EXPERT TRAINER** for this Course.

Vukan Polimac is a Fellow of IET, well established British technical expert and manager, recognized leader in power industry in UK and worldwide for over 30 years. His technical expertise, management and business development skills includes all aspects of transmission and distribution power systems planning and integration of railway systems, asset management and connections to power networks where he provides solutions to technical problems and manages support to other field experts in complex assignments.

A senior executive and consultant managing technical side of the business in major organizations developing business and managing a group to undertake design, construction, and commissioning of T&D projects as well as railway systems on multimillion projects such as Great Western Railways Electrification Project and London Underground. Vukan has recently evaluated connection options of Moorside nuclear plan to the 400kV National Grid system.

An Expert Training Facilitator currently providing a series of practical training sessions on Power Systems for technical and non-technical professionals (engineers, economists, lawyers, bankers, investors), Load Forecasting, Transmission and Distribution Planning with Economic aspects, Relay Protection, Energy Efficiency and Substation and OHL Design, Power Quality Concepts of Traction systems, in the Far East, Middle East, Europe, APAC and Africa.

The range of courses are tailored to clients needs and requirements. He has applied integrated solutions in project management, asset management, carried out feasibility analysis on energy management solutions including cost vs. benefit analysis accounting for the Whole Life Cost in Power System. Leader in implementation of modern design, asset, and construction management (presenting work in conferences in London and oversees on Building Information Modeling BIM, Whole Life Cost concepts, Energy Strategy for major utilities and companies etc.)

He applies innovations in sustainable and renewable energy. Leading in latest technology equipment design and specifications for energy storage (Fly wheels, invertors in power exchange between the power systems, large energy storage such as pumps reversible hydro plants), due diligence studies and environmental assessment, regulatory aspects in setting company's budget and tariffs.

Professional Registration Fellow of IET, Institute of Engineering and Technology, UK Chartered Engineer Member of IEEE Ex Member of CIGRE and working group for HV Power Systems Senior Member, South African Institute of Electrical Engineers Professional Engineer, SMEIT Engineers



# PRESENTATIONS:

## Day 1:

**09:00 - Pre-Course Intro – Delegate**

### Expectation Briefing

#### Substations Overview:

- Substations in Power Systems
- Substations Overview
- Substation Types

#### Planning New Substations:

- Planning Overview
- Planning Methodology
- Power System Design

#### S/S Design Overview:

- S/S Design Overview
- S/S Design Structural Diagram

#### S/S Feasibility Design:

- Site Selection
- Feasibility Optimal Design
- Appraisal
- Feasibility Design Example

### Post Session Q & A

**14:00 - End of Day 1**

## Day 2:

**09:00 - Review of Day 1**

#### Technical Specification:

- Specification Concept
- General Requirements
- Specifying Plant
- Specification for Switchgear
- Specification for Transformers
- Specification for HV
- Connections
- Specification for S/S Earthing System

#### Technical Specification:

- Specification for LVAC Supply
- Specification for LVDC Supply
- Specification for Protection
- Specification for Control
- Specification for Civil Works

### Post Session Q & A

**14:00 - End of Day 2**



# PRESENTATIONS:

## Day 3:

09:00 - Review of Day 2

### Tendering Process:

- Inquiry Document
- Tender Criteria
- Tender Review
- Contract Award

### Health & Safety in Projects:

- Methodology for H&S
- Managing Health & Safety in Projects
- Designer Duties
- Health & Safety Plan
- Risk Assessment

Post Session - Q & A

14:00 - End of Day 2

## Day 4:

09:00 - Review of Day 3

### Initial Contract Design:

- Overview
- Single Line Diagrams
- Layouts
- S/S Earthing System
- Selecting HV Switchgear
- Transformers
- Selecting HV Connections
- Selecting Protection
- Selecting Control System
- Selecting Multicore Cables

### Managing Design:

- Detail Design Documentation
- Competency in the Design
- Design Coordination & Approvals

### Detail Design

- Detail Design Overview
- Civil Design
- LVAC System
- LVDC System
- Switchgear
- Transformers
- HV Connections
- Protection
- Control System

Post Session - Q & A (Day 1 - 4)

14:00 - End of Course



**Does BII Online Virtual Training have the same value as traditional classroom training?**

Yes, BII Online Virtual Training offers participants; same training system as in-person, i.e face-to-face engagement with instructors, course material, interactive participation of all delegates, and personal support that they would expect to find in a traditional classroom.

**What are main features of your online courses? Are they on-demand? Is it different content from the in-person offering?**

The content of the virtual training is similar to the in-person sessions and customized presentation makes it a richer online learning experience. As always, we will share presentation materials with attendees for later reference.

The online courses are not on-demand and recordings cannot be purchased. They are set on scheduled dates, live with an instructor and co-host via webinar software. While the day is shorter than an in-person session (4hrs vs 8hrs), timing are adjusted to accommodate attendees in different time zones and allow more time for one-on-one conversations via the Q & A.

**What are the technical requirements for participation in a virtual course?**

All you need to participate in virtual training are:

- Desktop or Laptop or Tablet Computer, and Internet connection
- Webcam
- Headset with built-in microphone

**Can I attend an online training session if I have a Macintosh computer?**

Yes, Our Online training systems does allow Macintosh computers, PCs, and computers running Linux to easily enter any of our online training sessions.

**What type and version of browser will I need for online classes?**

It is recommended that you use the latest version of Firefox, Chrome or Internet Explorer for Windows and Firefox or Safari for Mac. Each of these is available for free download and also suggested you have the PDF Reader

**How do I have access to the trainer for questions?**

As in the classroom, you will see the trainer in front of you and have the opportunity to ask questions at any time - all via audio and video transmission.

**Is there a mute option within an online training session to minimize background noise from my audio connection?**

Yes, the Mute button will display to the right of your name as you hover your mouse over your name shown in the Participants panel on the top, right side of the Web conferencing screen.

**What if I miss few sessions of the online training program?**

The training will be simultaneously recorded which will be provided to you as per request & requirement

**Do I get a Certificate at the end?**

Yes, you will get a PDF version of your certificate of completion



Please complete this form and send it back to  
**zack.miller@biiworld.com**  
**mithun.siddartha@biiworld.com**

**Event Code: OL HS 19**

## Delegate Details

- Name: Mr/Mrs/ Ms .....  
 .....  
 Job Title: .....  
 Email: .....
- Name: Mr/Mrs/ Ms .....  
 .....  
 Job Title: .....  
 Email: .....
- Name: Mr/Mrs/ Ms .....  
 .....  
 Job Title: .....  
 Email: .....

### PAYMENT METHOD:

CREDIT CARD

The secured payment link will be shared/sent

WIRE TRANSFER OR BANK TRANSFER

### Authorization and Acceptance of Sales Contract & Terms & Conditions

I hereby declare I am authorised to sign this contract and terms & conditions in the name of the company/organisation:

## Company/Organisation Detail

Name: .....  
 Person to Contact:.....  
 Email: .....  
 Address: .....  
 .....  
 City: .....  
 Country: .....  
 Contact No: .....  
 Type of Business: .....  
 Website: .....

Name:.....

Date:.....

Signature:.....

**Delegate Fee**  **USD 1199 per delegate**

20 USD administration charge and any applicable withholding or any other tax or fee will be applied

### TERMS & CONDITIONS:

1. Payment terms: BII World LTD requires the full payment of the invoiced amount within 7 working days from the issue date of the invoice. BII World LTD reserves the right to refuse entry to any client who does not pay the invoice in full and on time. The registration fee includes: Training documentation and admission to all training sessions.

2. Cancellation by client: The client has the right to cancel his/her participation in the event. Cancellation must be received by BII World LTD in writing either by mail or fax. If the client cancels the event, he/she will get two options:

- A. **CREDIT NOTE:** Choose 2-year credit note, BII World LTD will send all the schedule training event details throughout the year. Delegate has the right to choose and attend any of the future training programs of BII World (valid 2 years).
- B. **NOMINATION:** In this option delegate can nominate/refer someone from his/her group/company to attend the particular training program on behalf of the actual delegate.

3. Cancellation by BII World LTD : While every reasonable effort is made to adhere to the advertised program, circumstances can arise which may cause changes in the program, including but not limited to changes in the content, date(s), or special features of the planned event. Such circumstances include but are not limited to acts of terrorism, war, extreme weather conditions, compliance with government requests, orders and legal requirements, failure of third-party suppliers to timely deliver, and failure to register the minimum target number of attendees for a given event. BII World LTD reserves the right to change the content, date(s), and/or special features of an event, to merge the event with another event, or to postpone it or cancel it entirely as appropriate under the circumstances. Client agrees that BII World LTD shall not be liable for any cost, damage or expense which may be incurred by client as a consequence of the event being so changed, merged, postponed or canceled and client agrees to hold BII World LTD harmless and to indemnify BII World LTD in case of liability caused by any such changes, mergers, postponements or cancellations.

4. Cancellation of the event: In case BII World LTD cancels an event, then client can choose any of the below mentioned options:

- (a) BII World LTD will refund full payment to the client within 15 business days.
- (b) Client can choose the credit option for 2 years, for more details please read term no-2 part (a)

5. Postponement of the event : In case BII World Ltd postpones the event to a new date, then client can choose any of the below mentioned options.

- (a) The client can attend the course on the postponed dates.
- (b) Client can choose the credit option for 2 years, for more details please read term no-2 part (a)

6. Client's identification information. By signing of this sales contract and these terms and conditions the client gives full right to BII World LTD to share the client's identification information, i.e. client's name, address, email addresses, phone numbers and names of representatives and website with other clients who participated in the same event. The client has the right to opt out of this clause by written notice to BII World LTD.

7. Governing law: This contract shall be governed by and construed in accordance with the laws of the Province of Alberta, Canada. Any disputes arising under or in connection with this registration form shall be sealed before the competent court in Canada.

8. Indemnification: To the fullest extent permitted by the law, you agree to protect, indemnify, defend and hold harmless BII World LTD, its owners, managers, partners, subsidiaries, affiliates, officers, directors, employees and agents, from and against any and all claims, losses or damages to persons or property, governmental charges or fines, penalize, and costs (including reasonable attorney's fees) (collectively "the Claims"), in any way arising out of or relating to the event that is the subject of this contract, and regardless of negligence, included but not limited to, Claims arising out of the negligence, gross negligence or intentional misconduct of BII World LTD employees, agents, contractors, and attendees; provided, however, that nothing in this indemnification shall require you to indemnify BII World LTD Indemnified parties for that portion of any Claim arising out of the sole negligence, gross negligence or intentional misconduct of the BII World LTD parties.

9. Other currencies. In case that client requests payment in other than official currency (USD), BII World LTD reserves the right to apply 5% currency risk surcharge to the actual exchange rate.

10. Other Conditions: Any terms or conditions contained in the client's acceptance which contradict or are different from the terms and conditions of this registration document shall not become part of the contract unless individually negotiated with BII World LTD and expressly accepted by BII World LTD.