Bentley OpenUtilities Substation Design & Documentation

Target Audience

This course is designed for electrical engineers, substation designers, CAD/BIM professionals, and drafting specialists involved in the design, modeling, and documentation of electrical substations. It is suitable for professionals working in power generation, transmission, distribution, EPC, and utility sectors who want to develop expertise in Bentley Substation. The training is also beneficial for project engineers, design consultants, and engineering graduates seeking practical knowledge of intelligent substation design workflows. Participants will gain hands-on experience in creating 3D substation models, electrical schematics, construction drawings, and project deliverables using industry-standard methodologies.

Course Objectives

- Provide a comprehensive understanding of Bentley Substation software and its application in electrical substation design and documentation.
- Develop the skills required to create and manage intelligent substation projects, including 3D layouts, schematics, grounding systems, and panel designs.
- Enable participants to generate accurate construction drawings, reports, schedules, and bills of materials using automated workflows.
- Teach industry best practices for electrical design, data management, clash detection, and project documentation.
- Prepare learners to efficiently deliver complete substation engineering projects from concept design through final documentation and publishing.

Course Outcomes

Upon successful completion of this course, participants will be able to:

- Create and manage Bentley Substation projects, drawings, and design databases effectively.
- Develop intelligent 3D substation layouts, equipment arrangements, cable routing, and bus configurations.
- Design electrical schematics, single-line diagrams, relay and control drawings, grounding grids, and conduit systems.
- Generate construction-ready documentation, panel layouts, schedules, bills of materials, and engineering reports.
- Perform design validation, clash detection, project publishing, and produce final deliverables including PDF and 3D PDF outputs in accordance with industry standards.

Course Outline

The course comprises **40**-hours of theory and labs and is divided into **12** different Modules. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.

Table of Contents: -

Module 5: Electrical 3D Layout Modeling

- Electrical 3D Model Creation
- Substation Layout Development
- Bus Configuration Standards
- Saved Views Management
- Section and Detail Callout Generation

Module 6: 3D Equipment and Bus Modeling

- Substation Equipment Placement
- Cable and Bus Modeling
- Rigid Bus Design Techniques
- Cable Routing Methods
- Connector and Equipment Integration

Module 7: Construction Drawing Development

- General Arrangement Drawings
- Plan View Creation
- Section and Detail Drawings
- View Clipping Techniques
- Rendering and Visualization

Module 8: Grounding and Conduit System Design

- Grounding Grid Modeling
- Ground Connector Placement
- Grounding Data Extraction
- Conduit Layout Design
- Underground Utility Coordination

Module 9: Electrical Schematic Design

- Single Line Diagram Development
- Metering and Relay Diagrams
- Station Service Diagrams

- Schematic Creation from Standards
- Contact Development Tables

Module 10: Advanced Electrical Documentation

- Wire Tag Generation
- Wire Link Management
- Cable and Circuit Numbering
- SCADA Drawing Development
- Electrical Design Validation

Module 11: Panel Design and Material Management

- Panel Layout Design
- Part Number Assignment
- Device Data Management
- Bill of Materials Generation
- Nameplate and Target Plate Reports

Module 12: Reporting, Scheduling and Project Deliverables

- Circuit and Conduit Schedules
- Trench and Junction Box Schedules
- Drawing List Generation
- Clash Detection and Design Review
- Plotting, Publishing and 3D PDF Creation
- Final Project Documentation and Deliverables