Advanced MEP BIM Coordination and Clash Detection Training Course



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Sharm El-Sheikh

4100 € (Per Person)

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Course Introduction / Overview:

In the intricate world of modern construction, the integration of Mechanical, Electrical, and Plumbing (MEP) systems is a primary source of project delays and cost overruns. This training course provides a comprehensive A-to-Z framework for mastering BIM-based coordination and clash detection specifically for MEP systems. Moving beyond basic software commands, this program delves into the strategic workflows and collaborative processes essential for preventing on-site conflicts. As pioneering BIM academic Chuck Eastman outlines in the "BIM Handbook," the true value of BIM lies in its ability to facilitate integrated project delivery. This course, offered by BIG BEN Training Center, embodies that principle by equipping participants with the skills to not only identify hard and soft clashes but also to manage, report, and resolve them efficiently. Participants will learn to create a streamlined digital workflow, fostering seamless communication between architects, engineers, and contractors, ultimately ensuring that complex MEP designs are constructible, coordinated, and clash-free before breaking ground. This proactive approach transforms the construction process, saving invaluable time and resources.

Target Audience / This training course is suitable for:

- BIM Managers and Coordinators.
- MEP Engineers (Mechanical, Electrical, and Plumbing).
- VDC Managers and Specialists.
- Construction Project Managers.
- Architectural Technologists.
- Design Engineers and Team Leads.
- Plumbing and HVAC Designers.
- Electrical System Designers.
- BIM Technicians and Modelers.
- Facility Managers involved in new builds.

Target Sectors and Industries:

- Construction and Engineering.
- Architectural Services.
- Real Estate Development.
- MEP Consulting Firms.
- Government and Public Works Agencies.
- Healthcare Facility Construction.
- Industrial and Manufacturing Plant Design.
- Data Center Construction and Management.
- Oil and Gas Facility Engineering.

Target Organizations Departments:

- Engineering and Design Department.
- BIM and VDC Department.
- Project Management Office (PMO).
- Construction Management.
- Operations and Execution.
- Technical Services.
- Quality Assurance and Control.
- Facility Management.

Course Offerings:

By the end of this course, the participants will have able to:

- Master the fundamentals of BIM for MEP systems and interdisciplinary coordination.
- Develop and implement a robust BIM Execution Plan (BEP) for coordination.
- Prepare and federate multiple discipline models for accurate clash analysis.
- Perform advanced clash detection using industry-standard software and techniques.
- Differentiate between hard, soft, and clearance clashes and set appropriate tolerances.
- Generate, manage, and interpret comprehensive clash reports for project teams.
- Lead effective BIM coordination meetings to facilitate clash resolution.
- Implement proactive clash avoidance strategies in the design phase.
- Analyze MEP models for constructability and maintenance access.
- Integrate clash detection results with project scheduling and cost estimation.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be immersive, practical, and highly interactive. This course moves beyond theoretical lectures to provide a hands-on learning experience that simulates real-world project environments. Participants will engage in extensive software workshops, applying learned concepts directly to complex 3D models. The curriculum is built around a series of case studies derived from actual construction projects, allowing participants to grapple with authentic MEP coordination challenges. A significant portion of the training is dedicated to collaborative group exercises where participants will work in teams to federate models, run clash tests, and conduct mock coordination meetings to negotiate resolutions. This team-based approach hones not only technical skills but also the critical communication and problem-solving abilities required in the field. Our expert instructors provide continuous feedback and facilitate discussions, ensuring that participants understand both the "how" of the software and the "why" of the coordination strategy, preparing them to implement these workflows immediately in their own organizations.

Course Agenda (Course Units):

Unit One: Foundations of MEP BIM Coordination

- Introduction to Building Information Modeling (BIM) in the AEC industry.
- The critical role of MEP coordination in the project lifecycle.
- Understanding BIM maturity levels and dimensions (3D, 4D, 5D).
- Key terminology: Clash Detection, Federated Models, and Interoperability.
- Exploring the BIM Execution Plan (BEP) for MEP coordination.
- Defining Levels of Development (LOD) for MEP systems.
- Roles and responsibilities in the BIM coordination process.

Unit Two: Preparing Models for Effective Coordination

- Best practices for authoring MEP models in Revit.
- Setting up coordination views and worksets.
- Understanding and managing shared coordinate systems.
- Exporting models from authoring tools (e.g., Revit to NWC).
- Working with different file formats (IFC, NWC, RVT).
- The process of creating a federated BIM model.
- Auditing and validating models for coordination readiness.

Unit Three: Mastering Clash Detection Techniques

- Introduction to Autodesk Navisworks Manage interface and navigation.
- Appending and merging models from different disciplines.
- Creating and configuring clash detection tests.
- Understanding clash test settings: Types (Hard, Clearance, Duplicates) and Tolerances.
- Running clash tests and analyzing initial results.
- Techniques for grouping and sorting clash results for clarity.
- Using the Sectioning and Viewpoint tools for clash investigation.

Unit Four: Clash Resolution Workflows and Reporting

- Differentiating between critical and non-critical clashes.
- Developing a systematic clash resolution workflow.
- Assigning status, ownership, and comments to clashes.
- Communicating clashes effectively with the design and construction teams.
- Generating professional and customized clash reports (HTML, XML, Text).
- Conducting and leading effective BIM coordination meetings.
- Tracking the clash resolution process over time.

Unit Five: Advanced Coordination and Future Trends

- Integrating 4D sequencing with clash detection for constructability reviews.
- Using search sets and appearance profilers for advanced model analysis.
- Coordinating for prefabrication and modular construction.
- Introduction to automated rule-based clash detection.
- Leveraging point cloud data for as-built vs. design coordination.
- The role of cloud-based BIM platforms (e.g., BIM 360) in coordination.
- Future trends in digital construction and MEP coordination.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

How can proactive clash avoidance strategies, rather than reactive clash detection, fundamentally change the project lifecycle for MEP systems?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by focusing on the strategic process of coordination rather than simply providing a software tutorial. While many courses teach the mechanics of running a clash test, we emphasize developing a "coordinator's mindset." This involves understanding the underlying engineering principles of MEP systems, fostering interdisciplinary communication, and mastering the art of negotiation during coordination meetings. We move beyond the binary "clash" or "no clash" result to explore nuanced issues like constructability, serviceability, and operational access. The curriculum is built on real-world case studies, forcing participants to solve complex, multi-layered problems that mirror the challenges on an active construction site. Instead of just identifying issues, participants learn to prioritize them based on cost, schedule, and safety impacts. The training cultivates a proactive approach, teaching clash avoidance strategies during the design phase, which is a far more valuable skill than simply reporting clashes found later in the process. It is this holistic, process-driven methodology that prepares participants to be true problem-solvers and leaders in digital construction.