

AI for MEP Professionals: Practical Applications, AI Tools & Industry Use Cases

Target Audience

Beginner to Intermediate professionals from the Mechanical, Electrical, Plumbing (MEP), and Fire Protection domains including Engineers, BIM Coordinators, Designers, Project Managers, Estimators, QA/QC Engineers, and Consultants.

Learning Objectives

- Understand AI fundamentals and Generative AI concepts.
- Explore AI tools that improve productivity in MEP workflows.
- Learn practical AI use cases across Mechanical, Electrical, Plumbing, and Fire disciplines.
- Apply AI for documentation, design assistance, calculations, reporting, and project management.
- Understand AI limitations, security, and best practices.

During this Workshop Participants Will Learn to Generate

- HVAC Design Concepts
- Electrical BOQs
- Plumbing Material Schedules
- Fire Inspection Checklists
- RFIs
- Method Statements
- Technical Reports
- Meeting Minutes
- Client Presentations
- Engineering Specifications

Duration: 8 Hours (Including Demos, Hands-on Activities & Q&A)

Detailed Table of Contents

Module 1 – Introduction to AI for MEP

- What is Artificial Intelligence?
 - Machine Learning vs Generative AI
 - Evolution of AI in Engineering
 - AI opportunities in MEP projects
 - Benefits and limitations
 - Real-world AI success stories in AEC/MEP
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Module 2 – Essential AI Tools for MEP Engineers

Prompt Engineering for Engineers

- Anatomy of an Engineering Prompt
- Role + Context + Task + Output
- Writing prompts for HVAC, Electrical, Plumbing & Fire
- Improving AI responses

General AI Tools

- ChatGPT
- Microsoft Copilot
- Google Gemini
- Claude AI
- Perplexity AI
- NotebookLM

Productivity Applications

- AI for emails
- Meeting summaries
- Technical report writing
- Proposal generation
- Presentation creation

Engineering Applications

- AI-assisted calculations
- Standards lookup
- Code interpretation
- Technical documentation
- Engineering knowledge management

Live Demonstration

- Writing engineering reports
 - Creating BOQs
 - Preparing project documentation
 - Generating presentations in minutes
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Module 3 – AI Applications Across MEP Disciplines

Mechanical

- HVAC design assistance
- Load calculation support
- Equipment selection
- Duct routing recommendations
- Energy optimization

Electrical

- Cable sizing assistance
- Panel schedule preparation
- Lighting calculations
- Electrical documentation

Plumbing

- Pipe sizing concepts
- Fixture calculations
- Water demand estimation
- Pump selection guidance
- Plumbing specifications

Fire Protection

- Fire code reference assistance
 - Fire protection documentation
 - Equipment schedules
 - Inspection checklists
 - Compliance reporting
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Module 4 – AI for BIM & Design Automation

- Introduction to AI in BIM
- AI-assisted Revit Workflows
- AI-assisted family creation
- Clash detection concepts
- Quantity take-off automation
- Model documentation
- AI-enhanced BIM coordination
- Digital Twins overview

Demo

- AI-assisted Revit workflows
 - AI document generation from BIM models
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Module 5 – Hands-on AI Lab for MEP Engineers

Participants work through practical MEP scenarios using AI.

Exercise 1

Generate an HVAC design concept.

Exercise 2

Create an electrical BOQ.

Exercise 3

Develop a plumbing material schedule.

Exercise 4

Generate inspection checklists.

Exercise 5

Prepare RFIs using AI.

Exercise 6

Generate project reports.

Exercise 7

Create client presentations.

Module 6 – AI for Engineering Documentation & Project Delivery

- AI in estimation
- Cost forecasting
- Risk identification
- Schedule planning
- Procurement assistance
- Vendor comparison
- Contract document preparation
- Site reporting
- Daily progress reports
- Meeting minutes automation
- Dashboard generation

Case Study

Complete project documentation using AI.

Module 7 – Future of AI in MEP Industry

- Emerging AI trends
- AI Agents for engineering
- Autonomous design assistants
- Digital engineering transformation
- AI ethics

- Data privacy
- Security considerations
- AI adoption roadmap for organizations
- Open discussion
- Q&A session

End-to-End MEP Project Using AI

Participants will use AI to:

- Review project requirements
 - Generate engineering documentation
 - Prepare BOQ
 - Create RFIs
 - Produce technical reports
 - Build a client presentation
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Practical Demonstrations

- Prompt engineering for MEP professionals
- AI-assisted HVAC calculations
- Electrical design documentation
- Plumbing design support
- Fire safety documentation
- AI-generated BOQs
- AI-generated RFIs
- AI-generated method statements
- AI-generated technical reports
- AI-powered PowerPoint creation
- AI-assisted Excel analysis
- AI meeting summarization
- AI-based specification writing
- AI-assisted BIM workflows