

Construction Project Controls and Progress Monitoring with Power BI

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Overview

Power BI for Construction Project Controls and Performance Dashboards is a one-week practical training course designed for project control engineers, planning engineers, construction professionals, and project reporting specialists who need to develop professional dashboards for construction and industrial projects.

The course focuses on transforming project schedules, progress measurements, manpower records, equipment utilization, and cost data into interactive Power BI dashboards that support project monitoring and management decisions.

Participants learn to integrate project data from Excel, CSV files, and exports from scheduling software, including Primavera P6 and Microsoft Project. They develop planned versus actual progress comparisons, S-curves, manpower and equipment histograms, project KPIs, cost variance analysis, and earned value performance indicators.

Through hands-on exercises using realistic construction and industrial project datasets, participants build an integrated Project Controls Dashboard covering schedule, progress, resources, costs, and overall project performance.

Who Should Attend

- Project Control Engineers responsible for project monitoring and performance reporting.
- Planning and Scheduling Engineers managing construction and industrial project schedules.
- Project Managers and Project Engineers requiring reliable project performance dashboards.
- Cost Control Engineers responsible for budgets, expenditure tracking, and earned value reporting.
- Construction and Industrial Project Professionals monitoring progress, manpower, equipment, and productivity.
- PMO and Project Reporting Specialists developing dashboards for management and project stakeholders.

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Departments and Industries

- Construction Project Management and Project Controls Departments.
- Engineering, Procurement, and Construction EPC Projects.
- Industrial Facilities, Manufacturing Plants, and Infrastructure Development.
- Logistics Facilities, Warehousing, and Industrial Construction Projects.
- Planning, Scheduling, Cost Control, and Project Reporting Departments.
- Oil and Gas, Energy, Utilities, and Industrial Maintenance Projects.

Learning Objectives

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

- Prepare and integrate project schedules, progress records, cost data, and resource information into Power BI.
- Develop professional dashboards for planned versus actual project progress monitoring.
- Create S-curves showing baseline, actual, and forecast project performance.
- Build manpower and equipment histograms to monitor resource allocation and utilization.
- Calculate and visualize construction project KPIs, cost variances, and earned value indicators.
- Develop interactive project performance reports using Power Query, DAX, and Power BI visualizations.
- Build a complete construction project controls dashboard using realistic project-related datasets.

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Course Agenda

Day 1: Project Controls Data Integration and Power BI Foundations

- Construction Project Data Requirements and Dashboard Planning
- Importing Project Schedules, WBS, Activities, and Progress Records
- Preparing Excel, CSV, Primavera P6, and MS Project Export Data
- Power Query Data Cleaning, Transformation, and Validation
- Project Data Modeling, Relationships, and KPI Structure

Day 2: Project Progress Monitoring and S-Curve Dashboards

- Project Baselines, Reporting Dates, and Progress Measurement Methods
- Planned Versus Actual Progress Calculation and Comparison
- Cumulative Progress S-Curve Development in Power BI
- Schedule Variance, Delayed Activities, and Progress Deviation Analysis
- Interactive Progress Dashboards with Project, Area, and WBS Filters

Day 3: Manpower, Equipment, and Resource Performance Dashboards

- Construction Manpower Planning and Resource Data Structures
- Planned Versus Actual Manpower Histogram Development
- Equipment Allocation, Utilization, and Availability Monitoring
- Productivity Indicators, Resource Variances, and Trend Analysis
- Integrated Manpower and Equipment Dashboard Development

Day 4: Project Cost Monitoring and Earned Value Dashboards

- Project Budget, Cost Breakdown Structure, and Actual Cost Integration
- Budget Versus Actual Cost Monitoring and Variance Analysis
- Earned Value Management: PV, EV, and AC Calculations
- Cost Performance Index CPI and Schedule Performance Index SPI
- Cost Forecasting, Estimate at Completion, and Performance Dashboards

Day 5: Integrated Project Controls Dashboard Development

- Exercise: Import and Validate Construction Project Datasets
- Exercise: Build Planned Versus Actual Progress and S-Curve Dashboards
- Exercise: Develop Manpower, Equipment, and Resource Histograms
- Exercise: Create Project Cost, Earned Value, and KPI Reporting Views
- Capstone Exercise: Develop a Complete Interactive Project Controls Dashboard

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Practical Exercises

The course includes structured hands-on exercises using realistic construction and industrial project datasets prepared in Excel and CSV formats.

- **Project Progress Dashboard:** Import activity schedules and progress measurements to calculate planned versus actual completion, monitor delayed activities, and develop interactive progress reports.
- **S-Curve Development:** Build baseline and actual cumulative progress curves, calculate schedule deviations, and visualize project progress trends.
- **Manpower and Equipment Histograms:** Create workforce and equipment charts showing planned requirements, actual deployment, utilization, and resource variances.
- **Project Cost Dashboard:** Integrate project budgets and cost records to monitor expenditure, cost variances, earned value, CPI, SPI, and completion forecasts.
- **Integrated Dashboard Exercise:** Combine project progress, cost, resources, and performance indicators into a professional Power BI report with interactive filters and management-ready visualizations.

FAQs

Is this course suitable for Project Control Engineers?

Yes. The course is specifically designed for project control engineers, planning engineers, and cost control professionals who need to develop dashboards for construction and industrial project monitoring.

Does the course cover planned versus actual progress and S-curves?

Yes. Participants learn to calculate planned and actual progress, develop cumulative S-curves, identify project delays, and create interactive progress monitoring dashboards.

Will participants learn to create manpower and equipment histograms?

Yes. The course includes practical exercises covering manpower histograms, equipment deployment, resource utilization, productivity indicators, and resource performance reporting.

Does the training include project cost monitoring and earned value management?

Yes. Participants develop dashboards for project budgets, actual costs, cost variances, earned value, CPI, SPI, and project cost forecasts.

Does the course include hands-on Power BI dashboard development?

Yes. Participants use realistic project datasets to create progress dashboards, S-curves, resource histograms, cost dashboards, and integrated project performance reports.

Are paid software licenses required for practical training?

No paid software licenses are required for the standard practical exercises. Power BI Desktop is free, and the exercises can use trainer-prepared Excel/CSV datasets. Additional licenses may be needed for optional cloud publishing or specialized software activities.

Conclusion

Participants complete the course with a practical Project Controls Dashboard developed in Power BI, combining project progress tracking, planned versus actual comparisons, S-curves, manpower and equipment histograms, cost monitoring, and project KPIs.

The course enables project control engineers and construction professionals to replace disconnected spreadsheets and manual reports with structured, interactive dashboards that improve project visibility, performance monitoring, and management reporting.

The emphasis is on developing practical Power BI skills that can be applied to construction, industrial, infrastructure, and engineering projects.

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- Facilities and Real Estate Training Courses
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