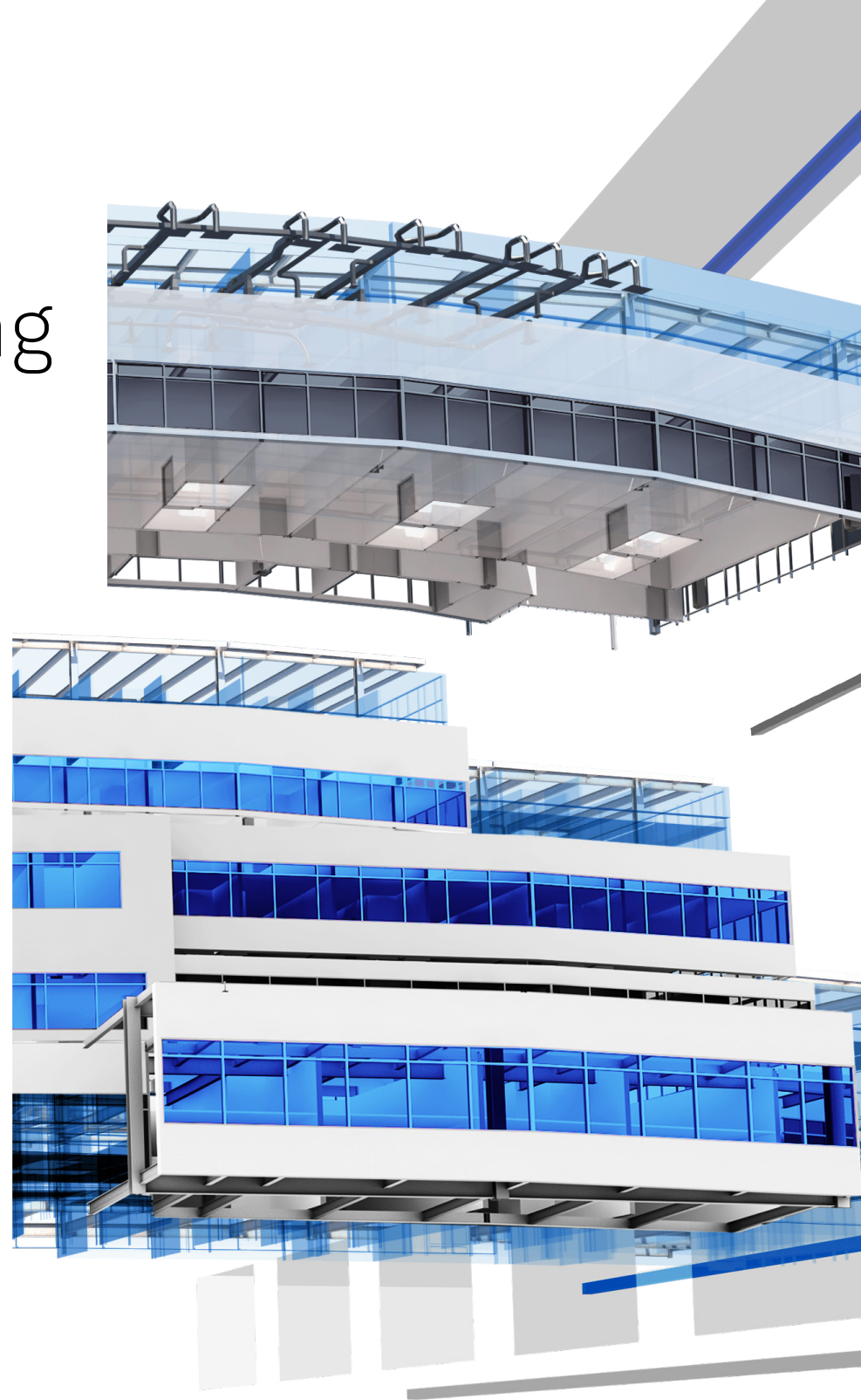


MEP DESIGN AND DETAILING

Your Guide to Achieving the Extraordinary with BIM

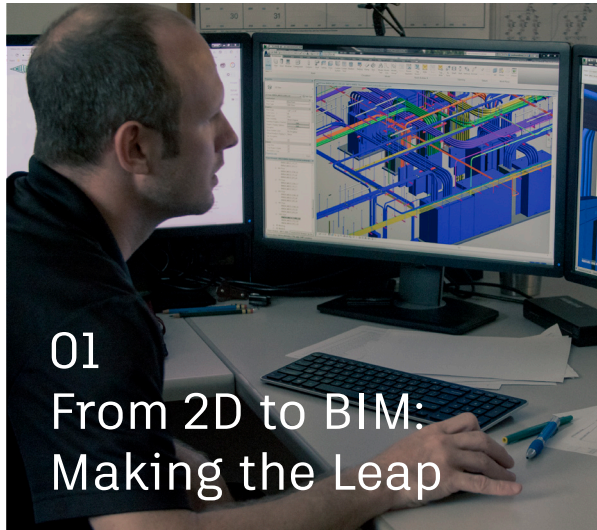
In your quest to stand out from the competition and win and retain business, BIM (building information modeling) processes can help. BIM tools facilitate data continuity and accuracy, help designers discover optimal designs and unlock new levels of creativity and innovation.

This guide to BIM technologies and workflows can help you use BIM to automate the ordinary and achieve the extraordinary.

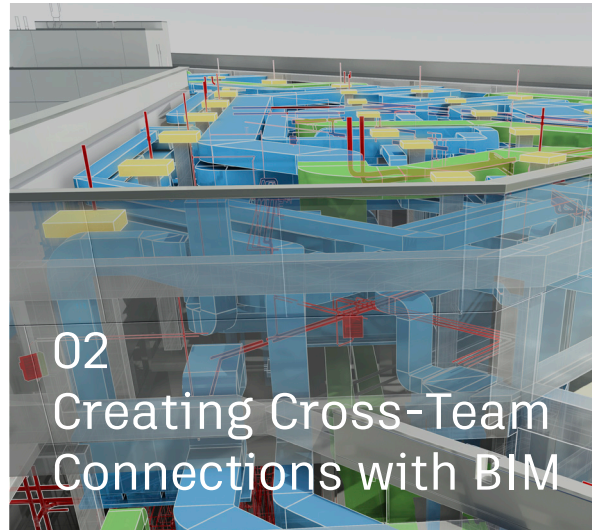


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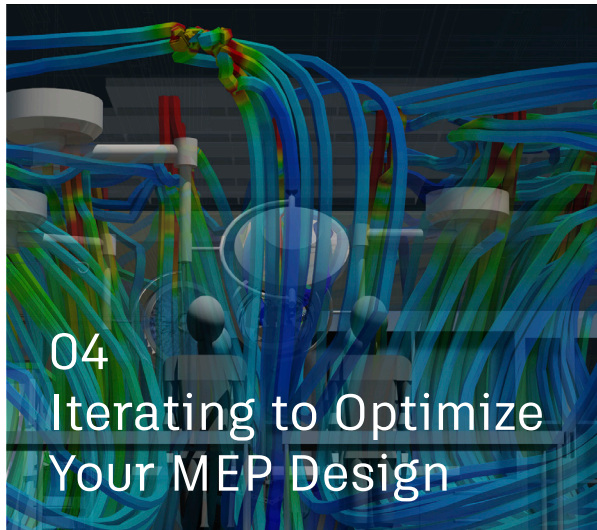
01
From 2D to BIM:
Making the Leap



02
Creating Cross-Team
Connections with BIM



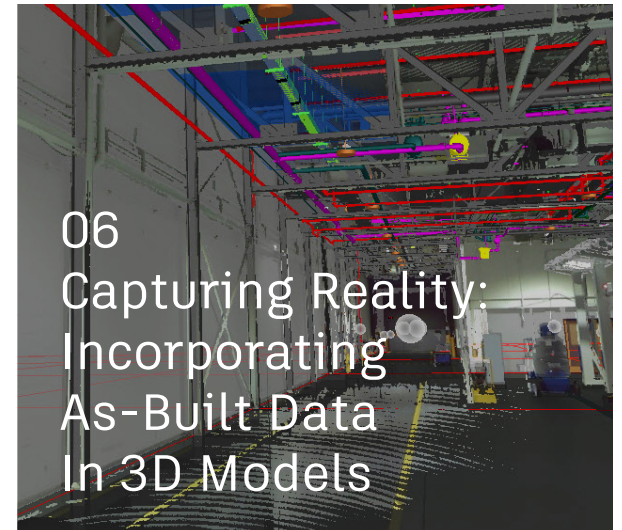
03
Connecting MEP
Design to Fabrication



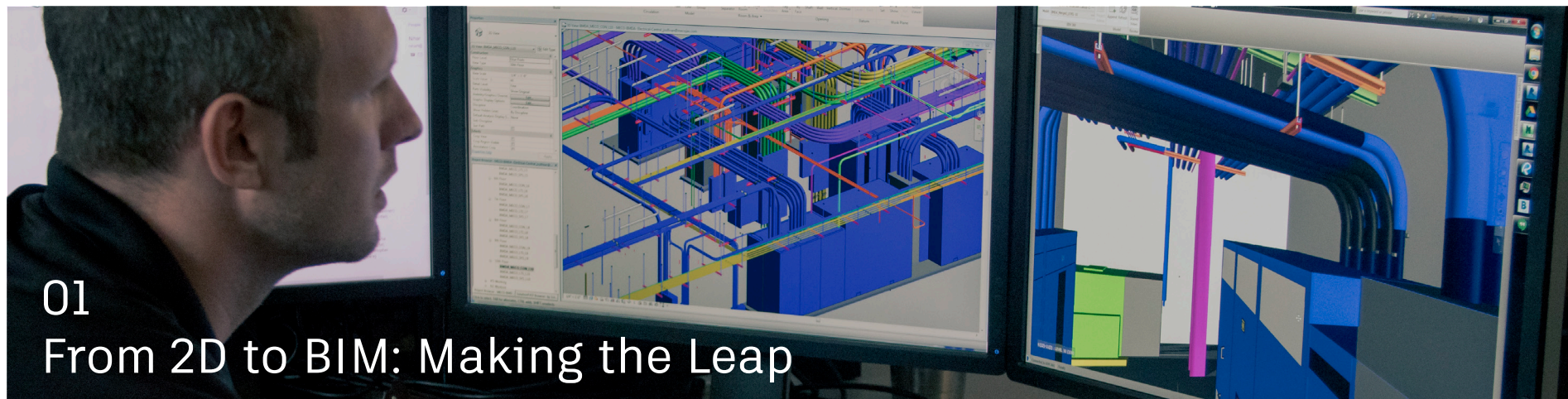
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Understanding:
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01 From 2D to BIM: Making the Leap

An increasing number of architects and structural engineers are designing and detailing in three dimensions. To continue to win work and keep up with other project stakeholders, MEP designers and detailers must consider a move to BIM.

With BIM capabilities, MEP professionals can work more efficiently with all project teams, engage more effectively in design workflows, avoid duplications of effort, and eliminate unnecessary re-work. This improved level of efficiency helps firms meet challenging deadlines and maximize their profit margin. The added value can lead to more satisfied clients and repeat business. For example, MEP designers and detailers using BIM solutions often receive more accurate design models earlier in the process, allowing them to ensure that building systems will fit within the architect's design.

Learn more about how BIM capabilities can make MEP firms more efficient and competitive.

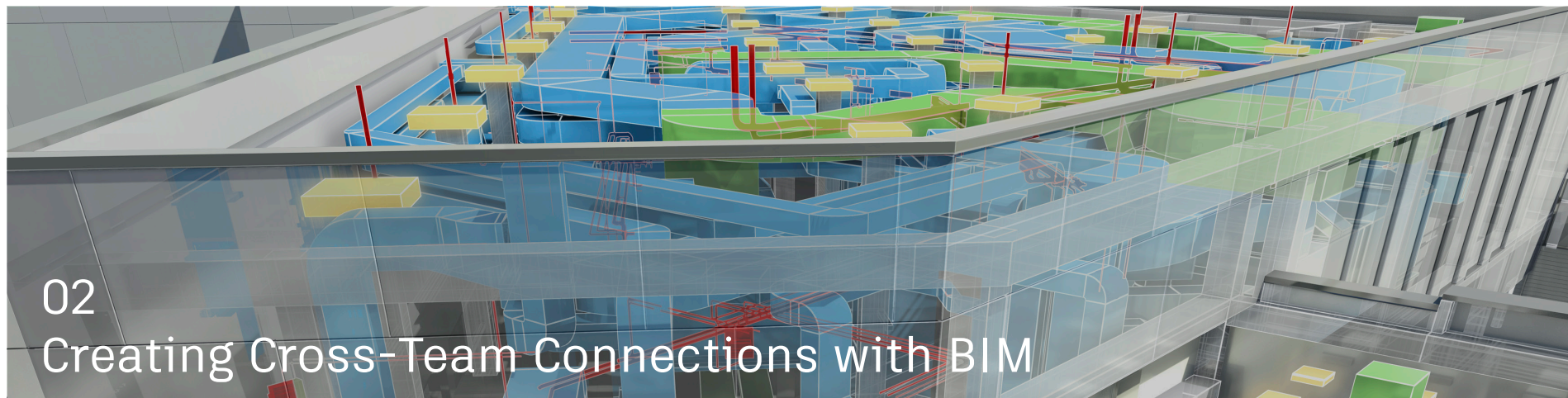
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CUSTOMER SPOTLIGHT



We have a 100% success rate on all of our units that were delivered to the jobsite and the only way that we're able to have that success rate is by having the information delivered by Autodesk and BIM through Schneider Electric.

Alan Creel
Vice President
Miller Electric Company



02

Creating Cross-Team Connections with BIM

The coordination of services with the building structure is crucial for MEP professionals to ensure sufficient space can be secured early in design, and then later for the routing of real-world components for installation. This requires close collaboration with other disciplines.

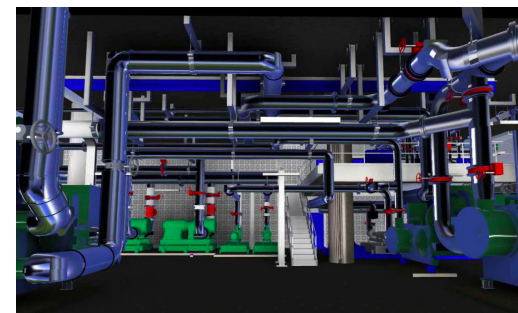
BIM facilitates collaboration by aggregating all design components in a common data model. This ensures that MEP designers and detailers always have reliable, up-to-date information from the architectural and structural disciplines – enabling them to make immediate changes to their own plans.

Using 2D processes, many MEP firms are forced to rely on multiple documents (including sections, plans, and details), and lengthy meetings to hammer out details with project teams. Despite these efforts, they still face extensive rework in the field. With BIM, the team can collaboratively address issues before fabrication and construction begin.

Discover how BIM facilitates seamless collaboration between MEP designers and detailers and other project teams.

[View Workflows >](#)

CUSTOMER SPOTLIGHT



By working from the models provided by the consultants, we saved considerable time on the project construction documentation phase, enabling a wide range of lean construction strategies to be leveraged. In addition, it provided more time to identify and present the best options for improving client value.

Warwick Stannus
Group Engineering Manager
A.G. Coombs



03

Connecting MEP Design to Fabrication

Design engineers have historically been separated from the design process, using disparate tools to perform various calculations. Today, they can leverage the architectural model to quickly perform early stage load calculations to aid with downstream equipment sizing and systems network calculations.

Working in BIM, mechanical designers and detailers can convert a design-intent model into a detailed fabrication model that is ready for shop drawing, procurement, ductwork manufacture, and installation. Reducing the re-work and number of steps between design and fabrication allows MEP firms to manage materials, labor, and costs more efficiently. The design model can also be used by trade contractors for estimating during the bidding phase of a project, and after the project has been awarded. It can also be used for sheet metal manufacture – exporting directly to the coiled lines and plasma cutters.

Additionally, the intuitive nature of 3D modeling helps mechanical designers to quickly detect potential collisions between mechanical, electrical, and plumbing systems and other design elements. This means that necessary re-design of MEP systems can usually be completed before construction ever begins – eliminating the hassle and pressure of reconfiguring systems when a building project is already underway.

Learn more about how BIM workflows can create seamless connections between the design and fabrication processes.

[View Workflows >](#)



04 Iterating to Optimize Your MEP Design

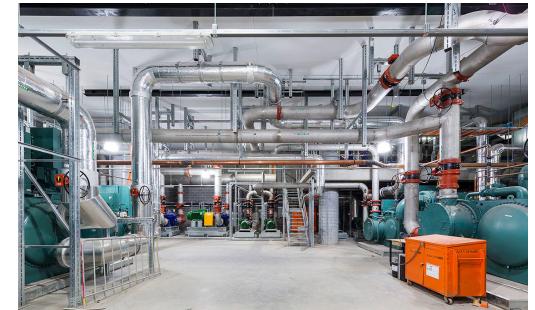
Traditionally, MEP designers and detailers create multiple drawings (plan, sections, details) throughout the design and detailing process as teams work to resolve spatial and functional clashes. With BIM, everyone can see their plans in three dimensions, using a common model authoring platform. Changes made by one stakeholder are instantly available to another, enabling issues to be identified and resolved early in the project life-cycle.

MEP designers and detailers can explore the best constructible design of building systems before settling on a decision. They can also take advantage of design calculations to optimize systems and fabrication content to derive optimal layouts.

Discover how BIM tools can help MEP designers and detailers to arrive at the optimal design.

[View Workflows >](#)

CUSTOMER SPOTLIGHT



During design, the engineering consultants had charge of the models, allowing innovative analysis-based design solutions to be developed in response to the many challenges presented by the project owner's requirements.

Warwick Stannus
Group Engineering Manager
A.G. Coombs



05 Improved Understanding: Communicating Design Intent Through BIM

When architects, structural engineers, and other project stakeholders use 3D modeling tools, this not only creates a mandate for MEP firms to do the same, but it also creates an opportunity for MEP designers and detailers to better understand and visualize a building's design, and to react to changes in the design and structural models.

In the past, when changes were made to architectural designs or structural detailing plans, teams needed to manually add those changes to all project documentation, introducing the possibility of human error. But with BIM, changes are instantly available to all project collaborators – vastly improving inter-team communication and reducing the risk of on-site errors.

Learn more about how BIM processes reduce misunderstandings and help project teams to clearly communicate their plans.

[View Workflows >](#)

CUSTOMER SPOTLIGHT



It's really important that we get construction knowledge integrated with design knowledge early on in the project.

Jim Meacham
Sr Project Manager
Southland Industries



06

Capturing Reality: Incorporating As-Built Data In 3D Models

In renovation and retrofit projects, MEP designers and detailers must work around existing features, and the absence of accurate as-built records can create significant problems. But manual documentation of existing conditions is tedious, time-consuming, and subject to errors.

Using BIM and reality capture tools, MEP firms can work with confidence in the knowledge that they have accurate as-built data. These same tools can even be used to automatically generate installation points based on as-built structural and design data.

Reality capture tools can help MEP firms to create post-installation documentation for owners, giving them a record of how the final build-out of systems differs from initial design plans.

Discover more about the benefits of BIM and reality capture tools.

[View Workflows >](#)



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