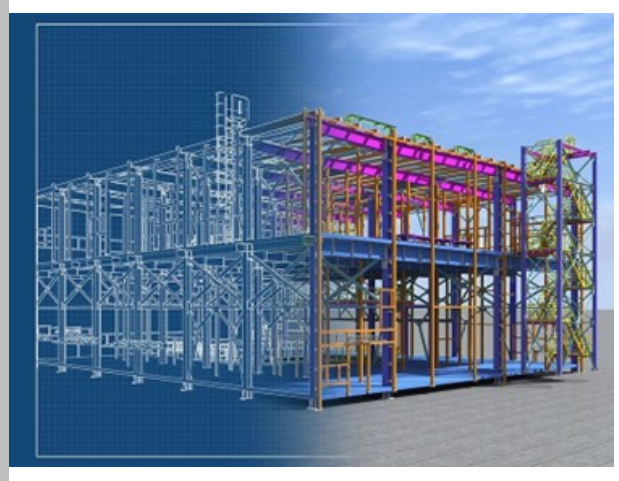
Utilizing BIM Or CAD In Your Piping Systems?

In considering building design and construction as related to piping systems, some of the terms that are most often confused are Building Information Modeling (BIM) and Computer-Aided Design (CAD). These two terms are closely related, yet quite different.

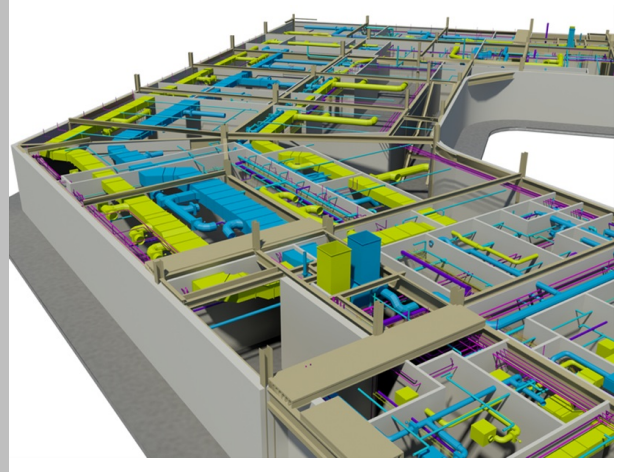
Let’s start with CAD. Computer-Aided Design is the process of using computers to create higher-quality drawings more quickly. CAD replaces traditional hand drafting with an automated process.



Conversely, BIM is defined as “a process for creating and managing information on a construction project across the project lifecycle.” This means that Building Information Modeling basically applies typical CAD concepts to designing buildings in a way which includes both the physical and intrinsic building properties.

CAD is traditionally been used to create two-dimensional designs, especially those that require multiple components to fit together into a more substantial assembly, such as plant rooms. But the collaboration between CAD and BIM saves designers time because they don’t need to draw anything twice. Architectural drawings are generated from the BIM model, so designers don’t have to transfer a drawing from paper to a computer.

As part of BIM, CAD software helps designers create 2D or 3D representations to facilitate the visualization of the construction. It enables the development, modifications, and optimization of the design process. It also contains all of the pertinent information for each of the elements in each system including materials, dimensions, weight, spatial relationships and allowances, environmental relationships and allowances, etc.



The BIM toolset helps automate clash detection of elements, such as piping or electrical conduit or ductwork that runs into a beam. By modeling all of these things first, clashes are discovered early, and costly on-site clashes can be reduced. The model also ensures a perfect fit of elements that are manufactured off-site, allowing these components to be easily bolted into place rather than created on-site.

BIM offers real-time visualization and model-analysis

that is better suited to the construction industry. BIM allows architects, engineers and contractors to work together throughout the project using the same database and building model. This goes beyond CAD systems, as it shows critical facilities management systems such as electrical systems and mechanical cooling and piping systems, as well as roofs and windows. BIM captures information that allows everyone involved in the project to closely analyze the building and its systems at each step, even before actual construction has started.

In the future, CAD and BIM will continue to run alongside each other, with more developments happening as the world of construction becomes more advanced and specialized. But BIM will continue to grow and develop the more it is used to the point where CAD designers will no longer need to draft the building. Instead, they will just input the optimal footprint and the load capacity required, and the system will do the rest. This will make the design process much shorter, meaning that more time can be spent on the actual build.

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