

BUILDING INFORMATION MODELING (BIM)

DEFINITION

The Digitalisation of Building

For design, construction and operation of a building or structure all parties and trades involved must work together efficiently. The foundation for an effective teamwork is the correct and quickly accessible information. Still in most projects, information is still exchanged directly between the parties by two-dimensional drawings, lists and plans, which then create the basis for cost calculation, resource deployment and project progress. This form of information exchange is vulnerable for misinterpretation, delayed information delivery and transferal errors.

Building Information Modeling (BIM), follows a centralized approach from the very beginning and describes a method of constructing buildings on the basis of a consistent and digital information model over their entire life cycle with all relevant data. In this way, BIM supports integrated planning and allows construction projects to be made more economical, resource-efficient and sustainable.

Intelligent Constructing of Today

With BIM, all parties involved exchange their data on a common data environment. The focus is on a building information model - in other words, the virtual representation of the real building, which is modelled with numerous 3D-elements and for each individual component data such as geometry, materials, manufacturers, dependencies, parameters, costs and other attributes are defined. Using this model for estimation and simulation it is possible to e.g. plan how many components are needed at what time and when the trades must provide their services. Workload and use of material can be planned and used according to the requirements. Costs of errors, design adjustments, waiting times and storage can be saved. Assuming this working method is used consistently, the total costs and duration can be kept or even reduced.



"Building Information Modeling (BIM) is a digital representation of physical and functional characteristics of a facility. A BIM is a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition."

(US National BIM Standards Committee)



Construction sequence of a MF/RO treatment plant in Escondido, California, US.



3D Model of a PFAS Facility in Ayer, Massachusetts, US.

Controlling Changes

But BIM can do more than that. The virtual building model helps the customer to get a vivid picture of the project and to understand how design changes affect aspects of the project. The customer can therefore run through several simulations on the screen in advance - always showing how the different variants affect the project duration and project costs.

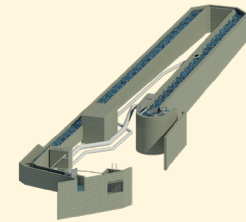
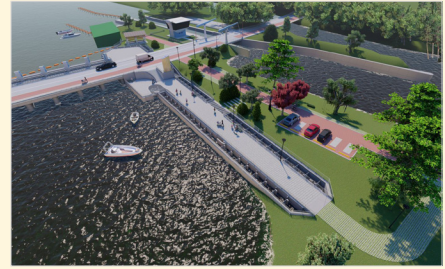
Furthermore, there are fewer misunderstandings and coordination issues between the specialist planners and trades, because everyone involved is working on a common digital 3D model that digitally modulates, combines and records all the relevant building data. This model is updated and filled with information by all project participants throughout the entire planning process.

In this way, the specialist areas benefit from the information already entered by the other project partners. Duplicate entries and manual transmission errors are reduced and cost errors or collisions are identified before construction.

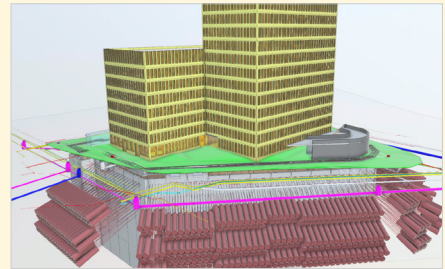
Our Services

We advise, conceptualise and create BIM building models for integrated project work. In this way we take the first step in the BIM process and create the basis of all further processes up to the commissioning of the structure. Our services include:

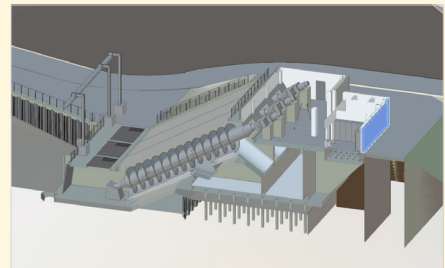
- Consulting before the start of the project regarding the possibilities, advantages and requirements for the use of BIM
- BIM management in the project: definition, monitoring and testing of processes and guidelines for a consistent implementation of the project; updating and testing of the overall model
- Creating specification-compliant interdisciplinary 3D technical models
- Linking the model with deadlines (4D) and costs (5D)
- Simulations, visualizations



Doesburg (GER) fish ladder: BIM-supported planning of the construction in 3D.



Design of a police H. Q. in Ludwigshafen (GER): BIM-based planning and structural design.



BIM modelling of a pumping station in Sonderheim (GER).