



E.ON Administration Building, Germany

MUCKINGENIEURE

Advantage Through Innovation

The engineering firm from Ingolstadt, Germany, has made innovation its guiding principle. Even the name “MUCKINGENIEURE – Innovative Structural Design” embodies the engineers’ central philosophy. To ensure that the firm follows this principle far into the future, Walter Muck, founder and sole owner, is always on the lookout for the latest software technologies. It is new technology that enable the firm to meet the challenges it faces, and to optimize its construction planning and costing processes. That’s why MUCKINGENIEURE have put their trust in Allplan Engineering from Nemetschek for 12 years now, and more recently, in Allplan IBD Engineering.

Founded in 1996, the 25-person engineering firm specializes in developing cost-optimized support structures for buildings and has expertise in all aspects of structural design. Be it solid, timber or steel construction, building physics or site supervision – the planners at MUCKINGENIEURE provide everything from a single source. Its portfolio includes residential facilities, production plants and public buildings such as hospitals, banks and schools. The engineering firm also has a department with a dedicated staff of eight, which creates a variety of connections and fabrication drawings for steel construction projects. As if that weren’t enough, MUCKINGENIEURE is also involved in the implementation of innovative steel construction projects, such as the creation of the standard roof section of the BMW World center in Munich, Germany.

Cost-Effective Construction Starts with Planning

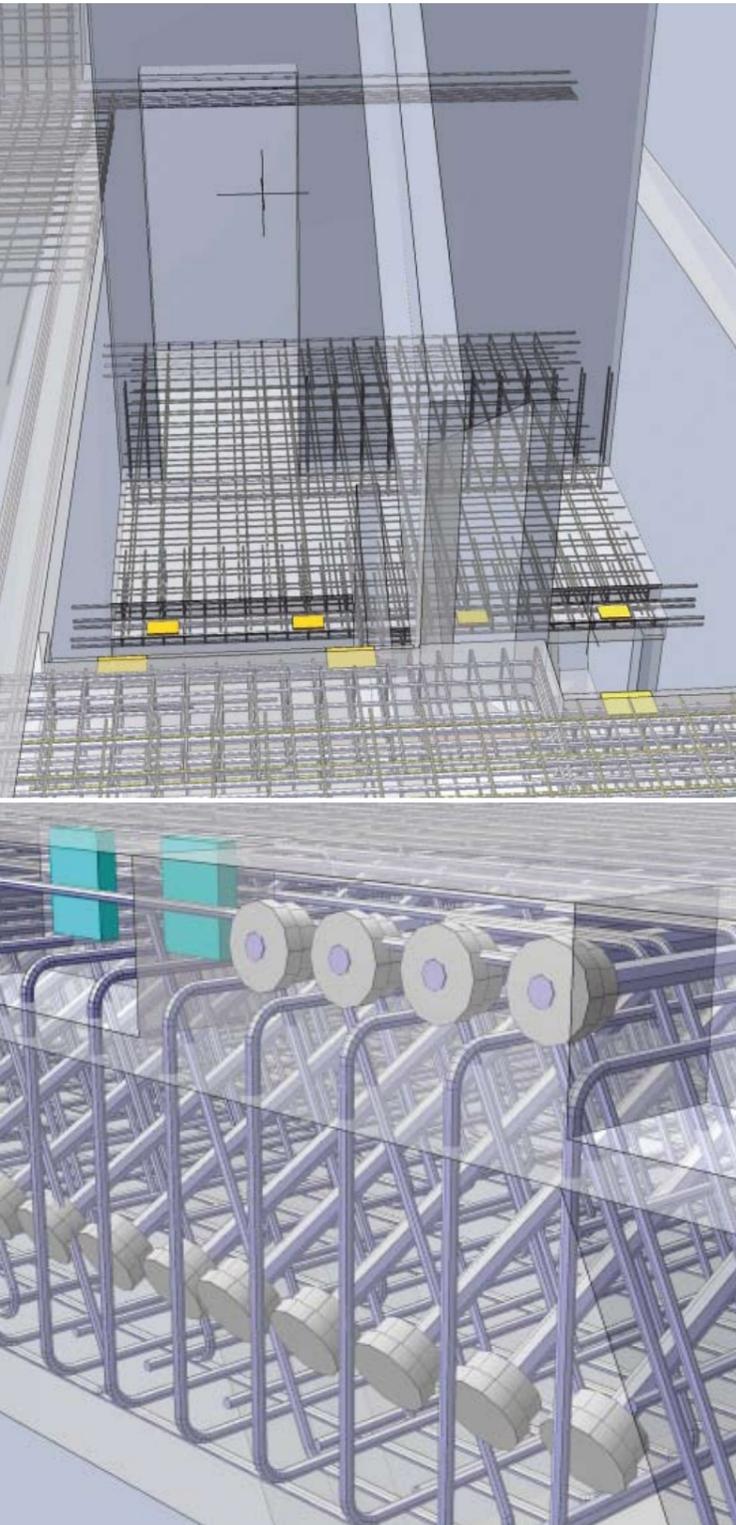
Unrelenting cost pressures are forcing more and more planning companies to take rationalization measures in order to survive in the highly competitive construction industry. “Cost-effective construction is on everyone’s mind. Today, building clients and customers expect us to include detailed costing in our planning at an early stage.” says Walter Muck.

Added to that is the fact that planning and response times for construction engineers are getting shorter. This means that larger and more complex projects, in particular, are possible only with powerful support from IT,” explains Walter Muck. At the beginning of 2006, MUCKINGENIEURE received the commission from E.ON Facility Management GmbH to implement the structural design of an administration building at the Zolling power station, near Munich. “It soon became apparent that the geometry of the building was highly complex. We quickly realized that we would need extra-powerful software, especially when it came to 3D planning. Allplan IBD proved to be the ideal enhancement to the Allplan Engineering CAD system,” says Walter Muck.

Allplan IBD consists of a comprehensive collection of CAD planning data that makes working with Allplan Engineering even more intuitive. More than 20 wizards provide a range of ready-to-use components, lines and symbols for virtually all uses. The user simply uses the wizard to select the element he or she requires and clicks the mouse to automatically insert it in the correct layer. The correct shape attributes, such as pen thickness, linetype and color, are set automatically, with the result that the user no longer has to laboriously enter the various parameters in the dialog boxes.

Intuitive Work with Allplan IBD

Close collaboration between the planners from MUCKINGENIEURE and the architects from the architecture firm Boesel Benkert Hohberg was required to construct the complex structure of the E.ON administration building. The sloped contour of the complex posed a particular challenge: the walls are angled at 26 degrees, and so the building tilts to the south rather than pointing vertically upwards. Also, the individual floors or stories are arranged in a graduated pattern rather than being at consistent heights with one directly above the other. “The key to the success of this project was a virtual 3D model that enabled us to represent the geometry of the building clearly and consistently. The fact that all the important spatial details of the reinforcement could be represented in a clear and graphic way made the structural design work much easier. With conventional 2D planning, on the other hand, it would have taken an enormous amount of planning work to implement the complex support structures – not to mention the effects of any planning errors,” clarifies Walter Muck.



The engineers also benefited from working consistently in a central 3D model. Previously, three separate plans had to be created (formwork, reinforcement and execution plans), each of which had to be modified separately when changes were made. Now, engineers can switch between the various drawing types in a single 3D model. They modify the visibility and the display according to their needs, and the plan changes are then automatically imported into all the plans.

Unified Office Standard for Collaborative Planning

Another point in favor of interdisciplinary planning is the transferability of the IBD standard to the architects' design model. "Before we started using Allplan, we had a unified project standard. While this worked well within our firm, it quickly reached its limits when cooperation with external planning partners was required. For example, there were often data exchange problems. With Allplan IBD, cooperation with external partners became much easier," summarizes the construction engineer.

After cost-optimized planning, Walter Muck regards teamwork as the second-most important success factors of his engineering firm. "Since we are now able to exchange information with all project partners, we are able to bundle our know-how and create valuable synergies. Exchanging unified planning data using Allplan IBD is a prerequisite for quick, thorough and cost-efficient planning in complex projects such as the E.ON building. Because intelligent construction data helps us to meet our own standards in cost-efficient planning in an optimal way, Allplan IBD will be an essential element of all our future projects."



You have been working with Allplan Engineering for 12 years, and are now also using Allplan IBD Engineering. Why do you need this additional software?

E.ON Facility Management GmbH commissioned us to carry out the structural planning for its administrative building at the Zolling power station, near Munich. Because the geometry of the building is highly complex, we decided to extend our software, primarily for the purposes of 3D planning. For us, Allplan IBD Engineering is the ideal add-on to our existing Allplan Engineering CAD system.

The building is at quite an angle; is this a challenge for planning, not to mention execution?

Yes, the complex tilts to the south at 26 degrees and the floors are arranged in a graduated pattern. The key to the success of the project was a virtual 3D model that enabled us to represent the geometry of the building in a consistent way. The fact that all the important reinforcement details could be spatially represented considerably simplified structural planning and execution on site. With conventional 2D planning, it would have taken an enormous amount of planning work to implement these structures.

Did data exchange work smoothly?

Before we started using Allplan IBD Engineering, we had a unified project standard. However, this standard reached its limits when we worked with the external planning partner, and we did experience data exchange problems. Allplan IBD helped us resolve this situation. We were then able to exchange complex virtual geometrical data with the architects right from the beginning, and were also able to display the reinforcement plans in 3D. It would have been more difficult for us if we had had to use a separate model for each planning area.

So Allplan IBD Engineering and teamwork are your success factors?

Definitely! Object-oriented work with 3D models provides us with a clearly defined structure for all project partners, and avoids redundancies. In addition, the drawing types enable us to work more efficiently, as we can derive shell and reinforcement drawings directly from the model. Before IBD, we used approximately 40% to 50% of the functionality of Allplan, but now with IBD, we are using between 80% and 90%. Because we are now able to exchange data with all project partners, we are able to bundle our know-how and create valuable synergies. For me, being able to exchange unified planning data using Allplan IBD is essential for quick, thorough and cost-efficient planning in complex projects.