

SUSTAINABLE DESIGN AND CONSTRUCTION

WITH BIM

Global demands are requiring the construction industry to be more focused on sustainable outcomes than ever before. To meet the needs of the future, innovative methods and the use of digital solutions are required. The EDGE East Side project in Berlin already shows what buildings of the future can look like. The high-rise office tower was planned with the aim of becoming one of the most sustainable building projects in Germany – from design to construction to operations.

Local, Berlin-based architectural firm Aukett + Heese used Autodesk Revit and Autodesk BIM Collaborate Pro deliver the project smoothly and meet the high demands. In addition, the experienced architects were able to demonstrate the enormous potential of BIM for taking sustainability aspects into account during planning. Aukett + Heese has been established in Berlin as an architectural firm and general planner for 30 years. Its more than 130 employees realize complex projects of all sizes, relying on state-of-the-art BIM technologies, and the EDGE East Side One is one of the firm's largest contracts.

The office tower, which is being built on Warschauer Strasse in Berlin-Friedrichshain, is 140 meters high and 35 stories high. A special feature of the construction project is not just the sheer size of a total of 80,500 square meters of floor space, but the focus on the health and well-being of the users and the sustainability of the building in all relevant areas of planning and operation. By employing leading sustainability principles, such as the use of circular economy products, materials that are free of volatile organic compounds, and world-class energy management, the EDGE East Side sets a new standard for urban planning of the future. The goal is to achieve platinum pre-certification from the German Sustainable Building Council (DGNB). For its focus on health and well-being, it is also aiming to achieve WELL v2 Core & Shell Gold certification from the International WELL Building Institute.



The EDGE East Side will be designed, built and operated with the principles of sustainability fully in mind. © BloomImages

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Connecting different parts of the city

Another unique feature of the project is its location between two different areas of Berlin-Friedrichshain: the business district at the Mercedes-Benz Arena, and the area around the Warschauer Brücke. An integrative concept of privately used, semi-public, and public spaces make the EDGE East Side a valuable connection between the two areas.



The planned office tower is 140 meters high and 35 stories high. © BloomImages

The building was designed by the Danish architectural firm BIG with Aukett + Heese involved in the planning and implementation of the mammoth project as a local partner. "We did the preliminary, draft and approval planning and are now responsible for the execution planning during construction with Züblin," explained Sebastian Nau of Aukett + Heese, who is the lead project architect coordinating the design and execution planning.

Project Collaboration

From the start of the project, the Aukett + Heese team relied on Autodesk Revit and Autodesk BIM Collaborate Pro because the software and cloud-based platform made it possible to use a central model across disciplines and all planning phases. "Even in the preliminary planning phase, we edited the 3D models in Revit and shared them with BIG's architects via BIM Collaborate Pro. This made collaboration in the early planning phases more efficient," said Nau. This allowed the two architectural firms to work on the model simultaneously from their locations in Berlin and London. Subsequently, other specialist planners such as structural engineers and building services planners were integrated into the BIM process so they could also work with the centrally coordinated model. "All the specialist models were brought together in the cloud and those involved thus had access to the current processing status at any time and from anywhere," says Sebastian Nau.

Custom Automation

With the help of the software, it was also possible to reduce manual work. For example, the experts from Aukett + Heese use a Dynamo Script for Revit, which was developed specifically for the project, to automate the coordination of slot and breakthrough planning and reduce manual work.



With the help of BIM, Aukett + Heese was able to smoothly complete the challenging project. © Aukett + Heese

"Through the script, when modeling breakthroughs, the location are automatically entered into the floor plans. Details of the penetrations that then appear in the 2D plans are automatically generated from the script," explained the senior project architect.



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Simulations for efficient operation

The BIM processes and the use of the corresponding software were an essential part of realizing the sustainability aspect of the project to the full extent. "The specialist planners were able to use the central model to carry out individual studies for their subarea. This included CFD (computational fluid dynamics) simulations, which can simulate ventilation systems and flows. Specifically, this was used to look at whether areas were experiencing a drop in cold air. But BIM was also used to simulate and optimize pressure conditions, daylighting simulations, thermal protection and even acoustics. This integrated process and the central model make it possible for all specialist planners to work in parallel and design their area more sustainably," notes Sebastian Nau.

Innovative smart tech solutions were also planned for efficient operation. Using sensor technology, for example, the building automatically detects when a room is not being used and turns off the lights and reduces the air supply.

Trusting cooperation

In the area of consulting and software, Aukett + Heese has been supported by auxalia GmbH since 2010. Among other things, the consulting and software company took over the implementation of Revit and BIM Collaborate Pro, and is a permanent contact when it comes to consulting, questions, challenges and solutions in the field of BIM and Autodesk software.

A great success for Aukett + Heese

The EDGE East Side is currently under construction with ompletion is scheduled for 2023. For Aukett + Heese, it is already a success. "BIM was an important factor in optimizing construction processes and making the best possible use of the possibilities, also in terms of efficiency and sustainability, right from the start," says Nau. "For us as a company, it's a great success because we were able to show that we can realize a project of this magnitude in Revit and with BIM without any problems."

Autodesk products used: Autodesk Revit, Autodesk BIM Collaborate Pro





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