ALLPLAN
A NEMETSCHEK COMPANY

Project: ristav CUBE,
Karlsruhe area, Germany

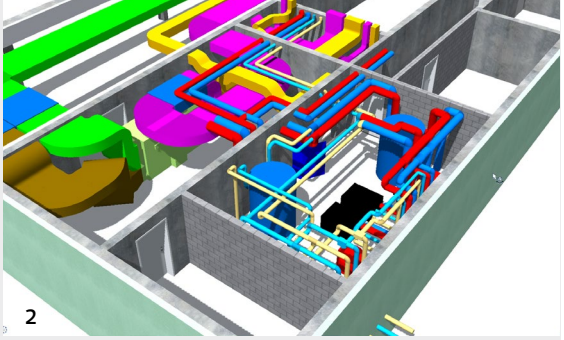
Allplan in practice

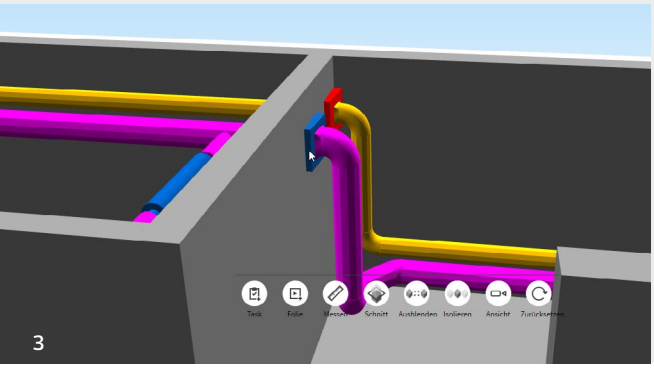
BESPOKE AND INNOVATIVE BUILDING

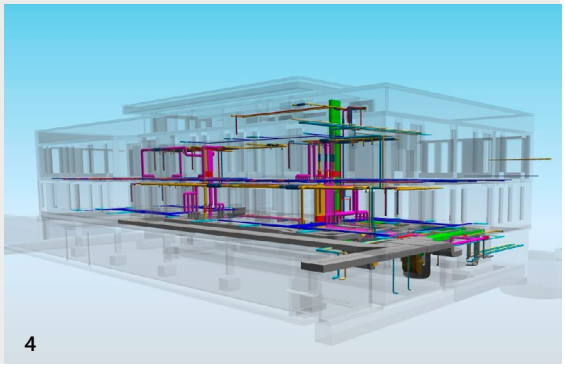
In 2018, the Vollack Group built a custom-designed office and residential building, the "ristav CUBE," for the customer ristav GmbH using the BIM working method.

The design, planning, and execution of industrial and office buildings using a progressive working method is a core competence for the Vollack Group. The desired goal is to offer their clients tailor-made solutions with unique features using these methods. They are to support the customer and also work with a view to securing repeat work for future developments. The construction project "ristav CUBE" is a classic example of a project with customer-specific features. Construction began in 2017 and the planned completion date is summer 2018. ristav GmbH is a medium-sized company from the Karlsruhe area, which has a plot in the newly developed Karlsruhe industrial park, Kirchfeld-Nord. They were planning the new office and residential building here and commissioned the Vollack Group to design it. The building was designed to be a hybrid structure made of timber with reinforced concrete, and in addition to office space, is also to house an underground parking garage, a residential unit, and an archive area for files. The handling of files is a large part of everyday work in the company. This is why the archive is a key area for the client. To meet their requirements, the archive was included in the design process.

ALLPLAN BIMPLUS BY ALLPLAN







1. TGA model in Allplan Bimplus,
2. Detail of TGA model,
3. Collision check in Allplan Bimplus,
4. TG Allplan model in BIM Viewer

CHALLENGE

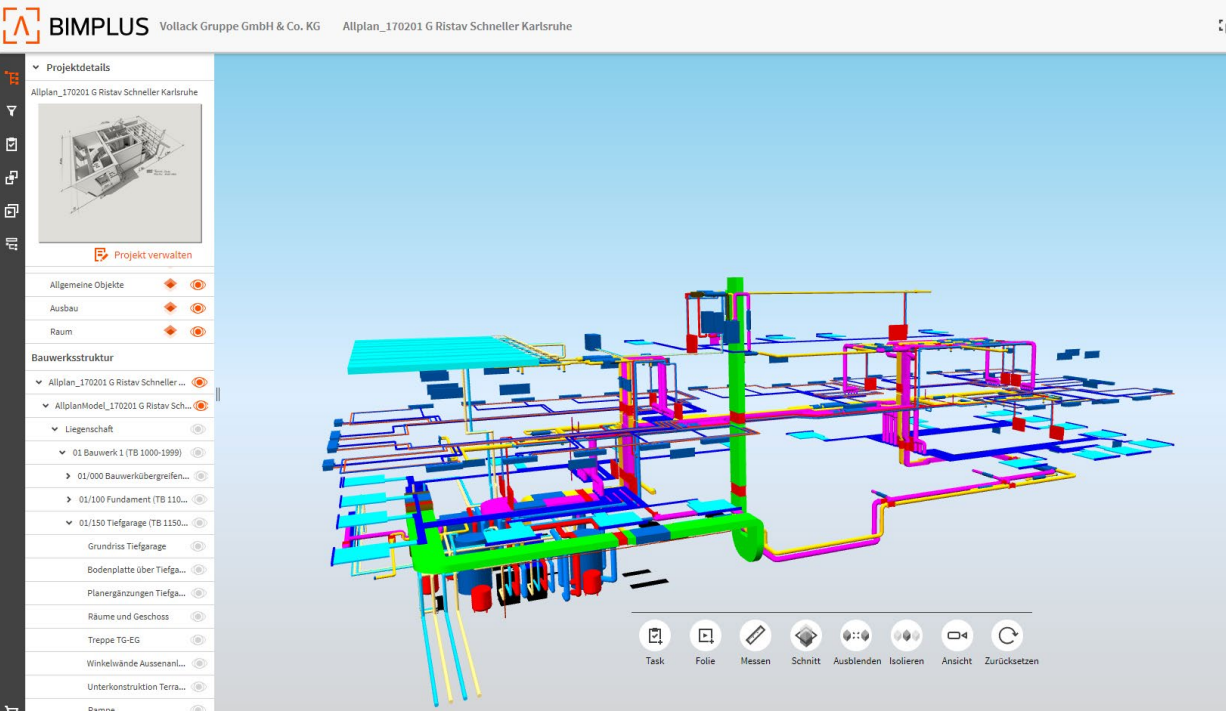
The first challenge was to create space for the files as well as sufficient office space. Secondly, the focus of the development process was about optimizing the working environment, by linking work processes and creating short travel distances within the building. In addition, the project's energy goals and the pre-defined working method Building Information Modeling (BIM) played a major role for Vollack. The goal was to create a highly energy-efficient office building by using only the BIM working method. Since Vollack already had extensive experience in the field of BIM and in building energy-efficient buildings, they were an ideal fit for the ambitious construction project.

The Vollack Group has been using ALLPLAN software products for many years for its design work. They use Allplan Architecture and Allplan Engineering to create three-dimensional building models. These later serve as the basis for the quantity and cost calculations. The collision check within the models was undertaken using the open BIM platform Allplan Bimplus, and the Vollack Group created tender documents using NEVARIS bidding software.

APPROACH AND SOLUTION

The design of the "ristav Cube" uses a sustainable timber construction with solid wood walls and ceilings, combined with a reinforced concrete core as thermal storage. The building has a gross floor area of 2,660 square meters spread across four levels: Basement with underground parking, a ground floor, a first floor with office use, as well as a penthouse on the top floor. The latter has a residential unit and the surrounding roof areas have a terrace and a photovoltaic system. In addition, it is planned to place solar collectors on the roof areas of the first floor.

These systems are part of a building services concept which was developed using Allplan Add-ins AX 3000. Thanks to this method, the building is largely energy independent and achieves the energy standard KfW-55. In addition to the solar collectors and a photovoltaic system, there is an ice latent heat storage system for heating in the winter and cooling in the summer. This modern technology allows for maximum use of the regenerative energy produced in advance. In order to keep the energy consumption low, the structure is also equipped with energy-saving LED lighting.



TGA model in
Allplan Bimplus

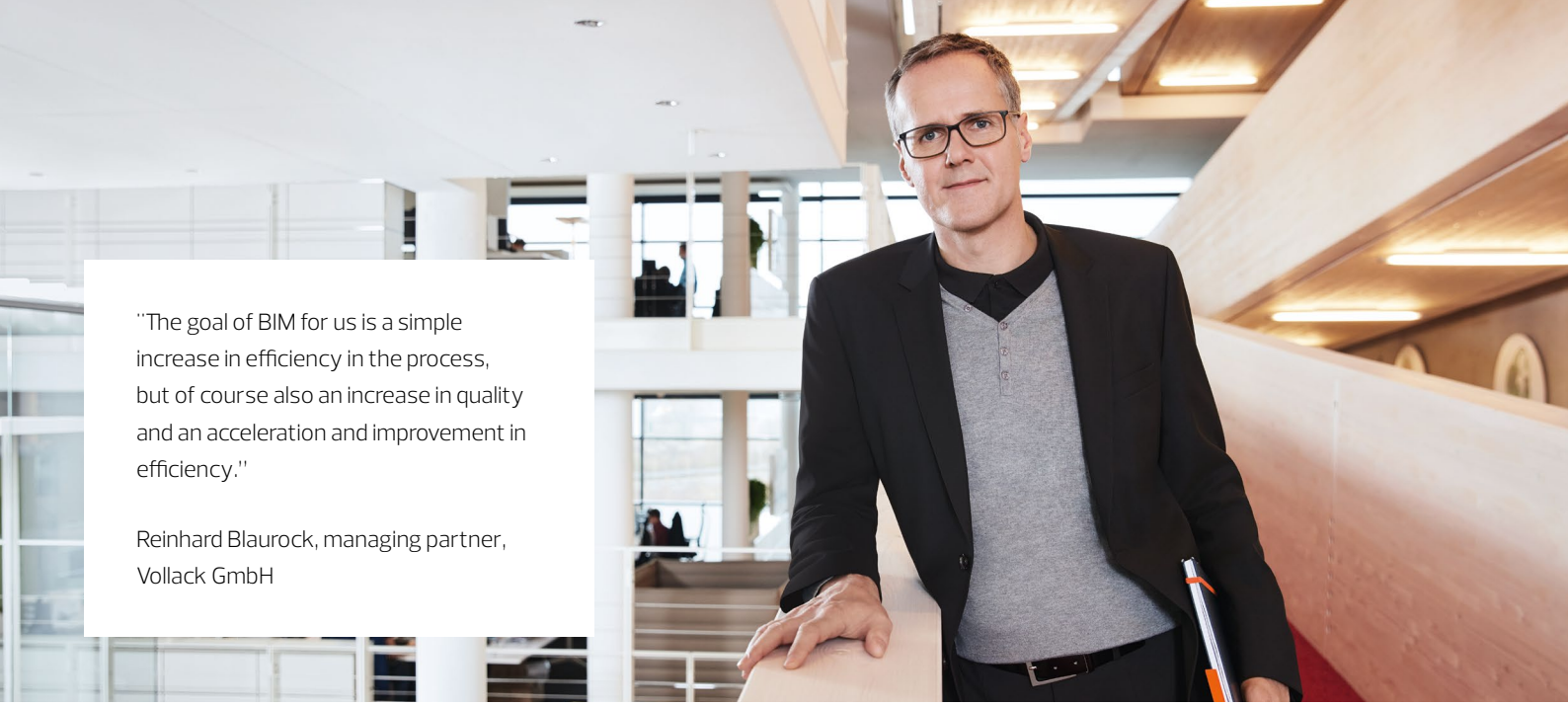
The exterior is a traditional WDVS facade with mineral insulation. The southern exterior facade of the building design was inspired by the topic of files and takes on the form of vertical metal slats. In terms of design, these correspond to the folder backs of the files and act as permanently installed shading elements. The layout within the building was designed according to thermal and lighting aspects. Access is via the south side and continues inside via a spacious ramp staircase. The inner access is via the open staircase, or alternatively, is accessible via an elevator. The archive and the associated storage rooms, as well as the supply core, form the center of the building over two stories. The supply core contains technical systems and utility lines, but also kitchenettes, sanitary and changing rooms, as well as storage and copy rooms. The office space and the accesses are arranged around this center. No office spaces were created on the southern side of the building in order to avoid high thermal gains and unfavorable light exposure, especially in the summer.

To be able to take such aspects into consideration in detail, the architects and engineers at Vollack use the software from ALLPLAN during the design phase, and in certain cases, even adapt it for individual needs. 3D models are created at Vollack with Allplan using their own CAD component library and are enhanced with smart data. In addition to wizards and attributes developed in-house,

› For us, BIM means:
› Increased efficiency during the design process
› Increased quality
› Merging of all individual models into one central model

specially programmed quantity reports are also used. The quantities contained in the 3D model can be easily transferred to NEVARIS for tenders at the push of a button. The necessary thermal simulations are performed with AX3000 and Sefaira. The requirement for Building Information Modeling was actively addressed by Vollack Group from the start with this procedure. Separate CAD standards were defined and a cross-location core BIM team was established within the group of companies. Vollack's long-term goal is to work using the openBIM working method.

The Vollack Group has very pragmatically answered the question of whether Building Information Modeling offers design benefits. Together with the Karlsruhe Institute of Technology (KIT), the company set up a study where the traditional 2D working method was compared with a CAD program such as Allplan Architecture, a table calculation program such as MS Excel, and a tender program for the 3D/BIM working method. Afterwards, the productivity increased by



"The goal of BIM for us is a simple increase in efficiency in the process, but of course also an increase in quality and an acceleration and improvement in efficiency."

Reinhard Blaurock, managing partner, Vollack GmbH

50 percent compared to the traditional 2D working method. Vollack also sees a key challenge for BIM with the question: How do I convince everyone of the benefits? Because for many employees at Vollack, the transition from 2D to 3D was a big challenge at first. The company is aware of this and offers experienced professionals the opportunity to train further at their own academy and combine their long-standing expertise with the new working method.

VOLLACK GRUPPE GMBH & CO. KG

The Vollack Group was founded in 1988 with its head office in Karlsruhe. Today, the company employs around 300 employees at ten locations in Germany. The company's focus is in the area of methodical development, planning, and realization of office and industrial buildings, where their customer base is largely made up of small and medium-sized businesses. Vollack has acquired extensive expertise in passive office building projects through several projects and actively promotes the topic of Building Information Modeling.

ABOUT ALLPLAN

ALLPLAN is a global provider of BIM design software for the AEC industry. True to our "Design to Build" claim, we cover the entire process from the first concept to final detailed design for the construction site and for prefabrication. Allplan users create deliverables of the highest quality and level of detail thanks to lean workflows. ALLPLAN offers powerful integrated cloud technology to support interdisciplinary collaboration on building and civil engineering projects. Around the world over 500 dedicated employees continue to write the ALLPLAN success story. Headquartered in Munich, Germany, ALLPLAN is part of the Nemetschek Group which is a pioneer for digital transformation in the construction sector.

ALLPLAN GmbH
Konrad-Zuse-Platz 1
81829 Munich
Germany
info@allplan.com
allplan.com

ALLPLAN
A NEMETSCHEK COMPANY