ALLPLAN
A NEMETSCHEK COMPANY

Project: Harfa Design Residence in the Prague district Libeň

Allplan in practice

BIM PROJECT AT THE PRAGUE HARFA

The project „Harfa Design Residence“ in the Prague district Libeň offers a total of 249 apartments or studios, equipped with high-quality materials and technologies.

There are also additional rooms on the ground floor that are used commercially. According to the current direction, the project including structural analysis and reinforcement was designed using the BIM working method. The triangular ground plan of the multifunctional building is based on the shape of the plot of land, which is dictated by the adjacent streets. The ground plan dimensions correspond to the side lengths of the triangle: 86.9 x 71.8 x 54.8 meters. The building has a total of 13 storeys, three of which are underground. The motif of yellow rectangular metal frames underlines the combined façade. The yellow cladding of aluminum cassettes further emphasizes the main entrance. In the interior, this element continues along the walls of the reception area. Not only because of the optical effect, but also in connection with the location at a highly frequented intersection, it was decided to use aluminum sliding windows with insulating triple glazing. An economical system for controlled ventilation with air recovery will be installed in all apartments.

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Left: Harfa Design Residence, Visualization © Central Group

Right: Harfa Design Residence, Location © STATIKON Solutions

THE CONSTRUCTION

The peripheral supporting structures of the first above-ground floor in the southern part of the building, which is used for commercial purposes, form internal circular columns that give way to the boundary wall of the underground floors. The ground plan and peripheral structures of the other above-ground floors were designed in a similar way, forming terraces and highlighting the corners of the building.

The foundations of the building were designed by the engineers on the foundation plate with local reinforcement under the columns. The construction system in the basement floors consists of circumferential load-bearing walls in combination with the skeleton construction of the columns. On the first floor there is a combined construction system. The southern part is a column system without headboards, while in the remaining part a wall system was used, which is also found in the other above-ground floors.

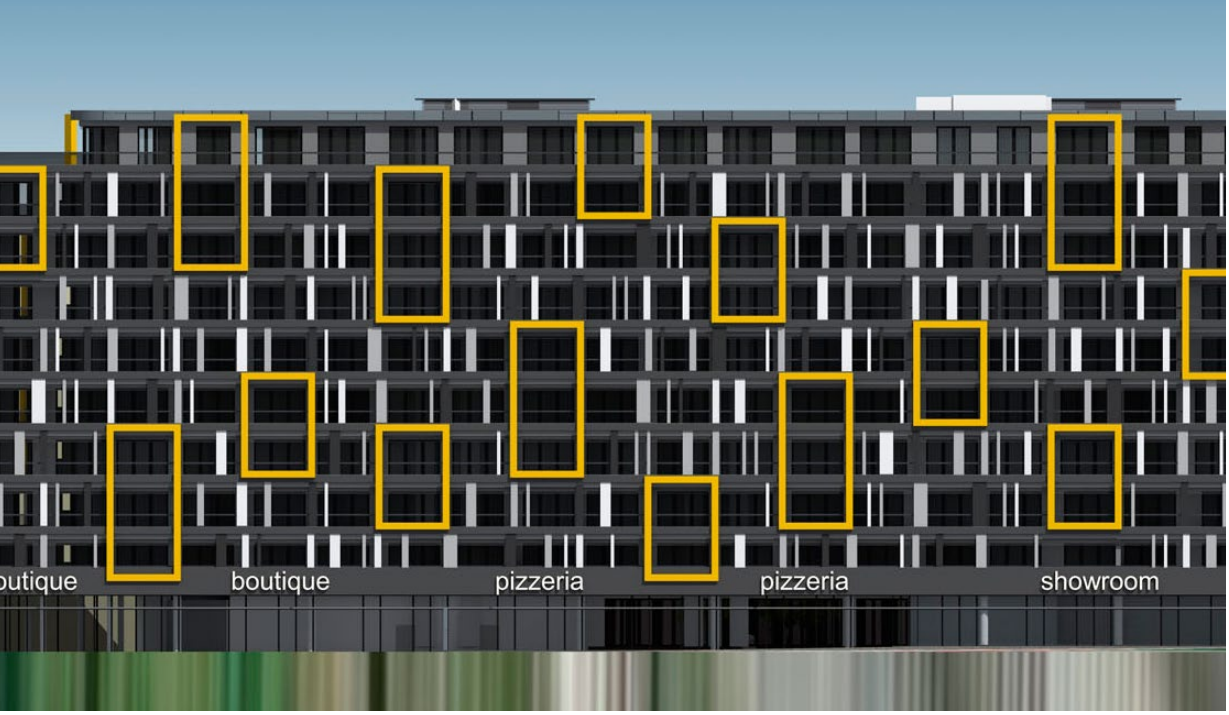
The monolithic outer walls of the basement are made of waterproof reinforced concrete. The external walls of the above-ground floors were also designed by the engineers in reinforced concrete.

The top floor was clad with ceramic panels. The ceiling construction consists of monolithic reinforced concrete slabs.

The engineers in charge of the static solution also had to loosen the anchoring of the projecting steel facade. The details of the anchoring in the reinforced concrete structure were designed to support the façade structure in the required places and at the same time to prevent unwanted load transfer from the reinforced concrete to the façade.

COMPREHENSIVE 3D MODEL

The STATIKON Solutions project team used all the design possibilities based on a 3D model in Allplan Engineering. The reason for creating a very detailed spatial model was the need to prepare detailed documentation for the building. The designers used Allplan Engineering to model the building in 3D throughout, including all gradients, slopes, curved surfaces, etc. This in-depth approach brought many advantages during the course of the project and still offers countless positive aspects during the design phase.

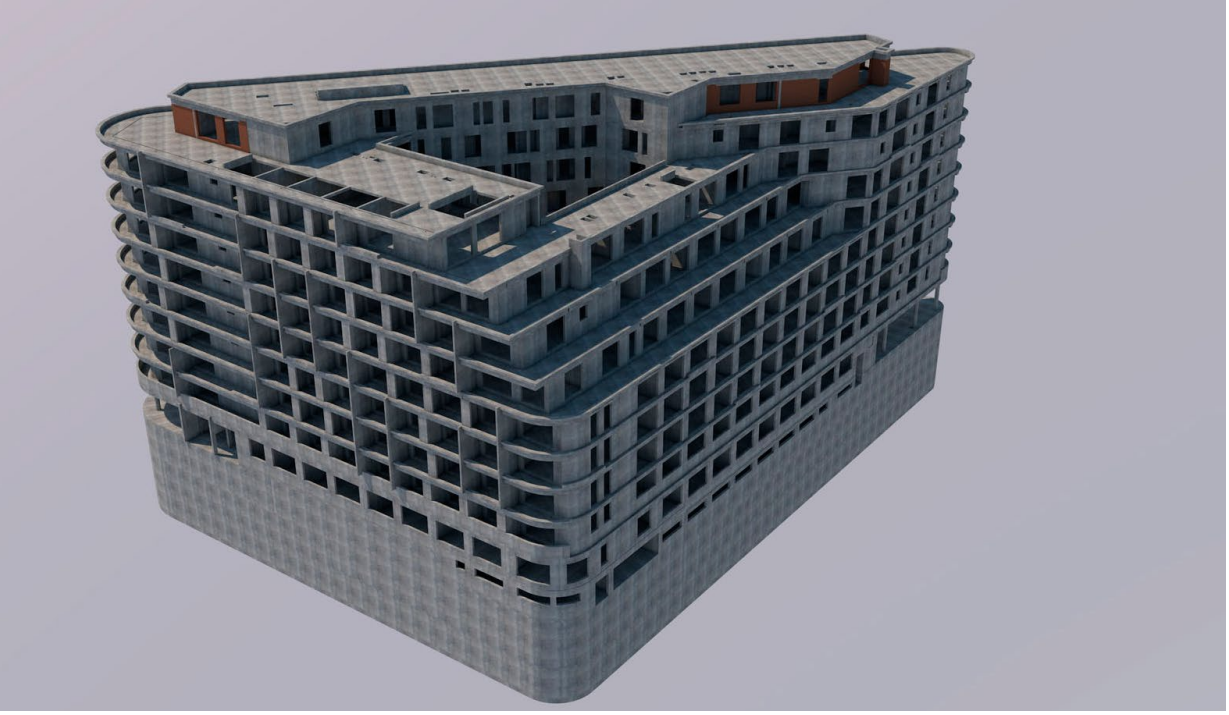


Harfa Design Residence, View
© STATIKON Solutions

Engineers consider one of the fundamental advantages of 3D modeling to be the good, continuous overview of the geometry and all correlations, which leads to early detection and elimination of potential errors and thus to a better end result. Another advantage for the project team was the possibility to create views, especially of vertical structures, which could be enhanced in 2D in this project. It also proved to be very useful to be able to export the model in IFC format to allow the designers of the architectural section to compare the model, as they had also worked in 3D. STATIKON Solutions' engineers consider model comparison to be a major benefit of 3D planning.

PROJECT INFORMATIONS AT A GLANCE

- **Main focus:** Engineering
- **Software:** Allplan Engineering
- **Responsible Design Engineer:** Central Group
- **Location:** Prague, Czech Republic
- **Start of Planning:** 2017
- **Implementation:** 2018
- **Built-up area:** 2335 m^2
- **Site area:** 2356 m^2



Harfa Design Residence,
results from Allplan
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THE CUSTOMER

STATIKON Solutions s.r.o. has been operating on the Czech market since 2010 and has been dealing exclusively with the design of building constructions from the very beginning. The company's credo is to design the statics qualitatively and economically in such a way that the customers like to come back. The aim is to propose the most efficient and cost-effective solutions, taking into account the general conditions, in order to achieve or even exceed the result desired by the client. STATIKON's customers are mainly architecture and design offices, construction companies and developers.

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.

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