

PERI builds the first 3D-printed apartment building in Germany

- Building consisting of 5 apartments across 3 floors with approx. 380 square metres of living space constructed using a 3D construction printer
- The largest printed apartment building in Europe is proof that 3D construction printing is also suitable for the construction of large dwelling units

Weissenhorn / Wallenhausen. 17 November 2020. PERI GmbH has set about printing another residential building using a 3D construction printer, this time in Wallenhausen, Bavaria.

At the end of September 2020, the family-owned company announced that work had begun on Germany's first printed residential house in Beckum, North Rhine-Westphalia. Only two months later, work has begun on the next residential building to make use of 3D construction printing technology. Upon completion, the 5-in-a-block apartment building with around 380 square metres of living space will be the largest printed residential building in Europe. On this project, the printing process is expected to take six weeks.

"With the project in Wallenhausen, we are seeing the PERI 3D construction printing team take the next important step. At the same time, PERI is consolidating its position as a leading company in the field of 3D construction printing," says Thomas Imbacher, Managing Director Marketing & Innovation at PERI Group. "By printing the first apartment building in Germany, we are demonstrating that this new construction technology can also be used to print large-scale dwelling units. In terms of 3D construction printing, we are opening up additional areas of application on an entirely new level."

The client on this apartment building project is Michael Rupp Bauunternehmung GmbH, which will specialise in the 3D sector from 2021 onwards through its newly founded subsidiary Rupp Gebäudedruck. "Our family-owned company has enjoyed 25 years of success in the industry and has an array of satisfied customers in the region. This means that we have the edge in terms of knowledge and can draw on a wealth of experience as we enter the 3D construction printing market," says Fabian Rupp, future Managing Director of Rupp Gebäudedruck. His brother Sebastian, also future managing director at the family-owned company, adds: "At the same time, we believe that this new technology has

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enormous potential for the future, and we want to help shape that future. Despite the traditional nature of our craft, we are also innovative and do not shy away from new challenges – quite the opposite in fact.”

The planning architect is the architectural firm Mühlich, Fink & Partner BDA from Ulm. The materials used to produce the printable concrete are being sourced from HeidelbergCement. The mixing technology used has been sourced from m-tec mathis technik gmbh. The engineering office Schießl Gehlen Sodeikat assisted with the preparation work for the warrant. The Technical University of Munich planned and carried out the relevant approval tests.

The residential building in Wallenhausen has a full-length basement and, upon completion, will consist of five apartments across three floors with around 380 square metres of living space. This is not a research or demonstration project. Once construction is complete, the apartments will be rented out in the usual manner. Only one of the apartments will be used as a show apartment.

PERI is using the gantry printer BOD2 for this construction printing project in Wallenhausen. The system has a print head that moves about 3 axes on a securely installed metallic frame. The benefit here is that the printer can move along its frame to any position within the construction and only needs to be calibrated once. This saves time and cuts costs.

During the printing process, the printer takes into account the pipes and connections for water, electricity, etc. that are to be laid at a later time. The BOD2 has been certified in such a way that it is possible to carry out work within the printing area while printing is in progress. This means that manual work, such as the installation of empty pipes and connections, can be easily integrated into the printing process.

The “i.tech 3D” material that is being used to print the building in Wallenhausen was developed by HeidelbergCement specifically for 3D printing. “The properties of i.tech 3D are tailored to the specific requirements of 3D construction printing using concrete,” says Dr. Jennifer Scheydt, Head of Engineering & Innovation at HeidelbergCement. “Our material has excellent pumping and extruding characteristics and works perfectly with the BOD2 printer.”

Two operators are required to run the printer. The print head and the print results are monitored by a camera. With a speed of 1 m/s, the BOD2 is currently the

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fastest 3D construction printer available on the market. The BOD2 only takes around five minutes to complete 1m² of a double-skin wall.

About PERI:

With sales of € 1,685 million in 2019, PERI is one of the leading manufacturers and suppliers of formwork and scaffold systems in the world. The family-owned company, with its headquarters in Weissenhorn (Germany), a workforce of more than 9,500 employees, more than 60 subsidiaries and well over 160 warehouse locations, provides its clients with innovative system equipment and comprehensive services relating to all aspects of formwork and scaffolding technology.

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