Press release
The province of
Antwerp

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World first: Kamp C is the first to print a complete house in one piece

Kamp C, the Westerlo-based provincial Centre for Sustainability and Innovation in construction, printed a house using the largest 3D concrete printer in Europe. The 90-square metre dwelling was printed in one piece with a fixed printer. This is a world first.

You can find Flanders' first 3D-printed model home on the premises of Kamp C in Westerlo (Belgium). The two-storey house is eight metres tall and has a floor area of 90 square metres, the average size of a terraced house in this region.

"What makes this house so unique, is that we printed it with a fixed 3D concrete printer", says Emiel Ascione, the project manager at Kamp C. "Other houses that were printed around the world only have one floor. In many cases, the components were printed in a factory and were assembled on-site. We, however, printed the entire building envelope in one piece on-site."

Project partners C3PO printed the house at Kamp C © Kamp C

The house was printed as part of the European C3PO with financing from ERDF (the European Regional Development Fund). With this feat, the project partners hope to raise interest in the building industry about the use of 3D concrete printing as a building technique.

Kathleen Helsen, the Provincial Deputy for Housing and the President of Kamp *C* said: *"The building industry has expressed plenty of interest. 3D printing in construction is experiencing an uptick around the world. Several possibilities, including the printing of provisional housing and even complete apartments, are already being implemented, but this technology is still very novel in Flanders. At the same time, the construction industry is facing unprecedented challenges: we must reduce our consumption of materials and energy, reduce CO2 emissions and the waste stream, the demand for high-quality and affordable housing is on the rise, and so on. At Kamp C, we believe that new technologies, such as 3D concrete printing, can help provide a response. That is why we created this unique location on our site, where construction companies can experiment with 3D printing, together with research and education institutions."*

Three times sturdier

The printed house is three times sturdier than a house built with quick build bricks. "The material's compressive strength is three times greater than that of the conventional quick build brick", Marijke Aerts, the project manager at Kamp C, explains. This first house is a test. The researchers will now check whether solidity is retained over time.

Besides the fibres in the concrete, the amount of wire-mesh reinforcement used is extremely limited. As a result of the printing technology used, formwork was redundant,

saving an estimated sixty percent on material, time, and budget. In the future, an entire house could be printed in just under two days. If you add up all the days, it took just three weeks to print the house at Kamp C.

Model home
The model home was designed to showcase the technology and the potential of 3D printing. "We printed an overhang, it has heavily curved walls, different types of walls… We also incorporated solutions to the traditional thermal bridge, eliminating cold bridges altogether", says Ascione. "We developed a low-energy house, with all the mod cons, including floor and ceiling heating, special façade solar panels and a heat pump, and we will also be adding a green roof."

"When we started to build it, we had no idea which use the building would have. Our aim was to print the floor area, height, and shape of an average contemporary home, in the form of a model home with multipurpose options. This is a principle of circular building. The building can be used as a house, a meeting space, an office, or an exhibition space. People can visit the house from September after making an appointment", says Piet Wielemans, who is an architect at Kamp C.

Project
The house is part of the European C3PO project, which aims to accelerate the transition to this innovative technology in Flanders. Eight partners, from the business community and the scientific community, have joined forces for the project. They are Beneens, ETIB/CONCRETE HOUSE, Groep Van Roey, Thomas More, Trias architecten, Ghent University and Vicré. Saint-Gobain Weber is also contributing to the project.

This article is part of the C3PO project. The partners received € 668,320 in European grants through C3PO, an ERDF project ('Co-creation: 3D-printing with companies). The project is also a part of GTI Kempen (GTI stands for Gerichte Territoriale Investering *in Dutch, or an integrated territorial investment strategy for a specific region, combining various European funds and programmes).*

PRACTICAL INFORMATION

More information and to watch the press conference again:
https://www.kampc.be/c3po_eng

Visuals: photos and video https://www.kampc.be/innovatie/projecten/3d-printen-in-de-bouw/presentaties-fotos
https://we.tl/t-ZpoygO6BFS
https://youtu.be/pxrVEfxrwUw

PRESS INFORMATION & INTERVIEWS

Contact details Kamp C:
Diana Grasso, Kamp C
T +32 14 27 96 65, M +32 479 39 62 86
E diana.grasso@kampc.be

Managing Director Kamp C:

Peter-Paul van den Berg, Managing Director
T + 32 493 51 42 78
E Peter-Paul.VANDENBERG@kampc.be

Policy manager:
Kathleen Helsen, CD&V, deputy for Housing and chairman of Kamp C
Press Contact: Johny Geerinckx
T +32 485 99 72 97
E Johny.GEERINCKX@provincieantwerpen.be

#KampC: Kamp C is the provincial Centre for Sustainability and Innovation in construction. Kamp C wants to inspire and activate local authorities, construction companies, and citizens to make the transition to a more sustainable society. Kamp C does this by giving neutral and independent advice in terms of sustainability and innovation, and by involving local government and the construction industry in innovative projects.

Provincie Antwerpen

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