

3Dprint CASE “Fish hotels in the Amsterdam canals”

More and more often, additive manufacturing (3D-printed) manufactured products are finding an application. This production method saves material, offers freedom of form in the design and reduces the need to maintain stock. For example, the municipality of Amsterdam recently installed 3D-printed concrete fish hotels in the canals.

Two years ago, FME member BouwLab R&Do started a spin-off called Neolithic. With an industrial robot on a rail, the company is able to produce concrete objects of 2x6x2 meters via 3D printing. "This gives us enormous freedom of form, uses much less material, and our customers can receive complexly designed objects very quickly," says Jeroen Veger, co-founder of Neolithic. "You can think of very elegantly designed objects, such as street furniture. But often there is a lot to be gained in less conspicuous places." River Thunderpad

One of these applications concerns a project by Dura Vermeer in collaboration with the municipality of Amsterdam to improve the ecology in the canals. The quay walls of canals are bare and smooth and are sometimes even metal plates these days. "Life under water is deteriorating. Fish hardly have any natural shelters in the canals anymore. To improve the ecology, they came to us. Together with an ecologist from Dura Vermeer, we designed various fish hotels with cavities and holes that can provide shelter for specific fish species and should improve the ecology in the canals," says Jeroen. "These fish hotels can be attached to quay walls underwater or placed on the bottom of the canal."

Very specifically, this concerns the River Thunderpad (a fish). Jeroen: "However, we are immediately looking further at the greater potential of our technology. We design almost all products parametrically, which means that with just a few clicks of a button, in this case, we can produce various redesigns for other (fish) species." Wells and embankment steps

Neolithic previously applied the same configuration software for specific products to wells, for which they received the RIONED Innovation Award 2024. Contractors can also contact the company for 3D printing of embankment steps. "Sewer wells and steps must be made specifically for certain locations, with different depths and different branches. Or embankment steps with variable slopes and step sizes. When building such structures, a lot of material is usually lost when pouring concrete, and it is very labor-intensive. We can optimize that." In addition to concrete, Jeroen and his team are also looking at other materials to print: "A next step is to do this with biocircular materials as well. Instead of emitting CO₂ during the production of concrete, you store CO₂ in the products themselves or even print with circular waste flows such as cellulose. It is fascinating to work on these kinds of projects. With the freedom of form that 3D printing offers, we can quickly adapt to the wishes of the customer. Or the fish in this case."