

Little robots passing carbon fiber threads suggest new directions in building structures

4 August 2016, by Nancy Owano



Credit: Dezeen

(Tech Xplore)—Robots in construction—how much of a role will they play in the future? Maria Yablonina and team offer much to think about. They show how wall-climbing robots can build new structures from carbon fiber.

Dezeen reported that Yablonina, a graduate from the University of Stuttgart, together with the university's Institute for Computational Design and the Institute for Building Structures and Structural Design devised this approach toward construction.

Yes, the wall-climbing little robots work together.

The video shows two robots interacting, passing the bobbin of thread from one wall to another, and

the passing mechanism is enabling a pair of electromagnets on each [robot](#).

Note-taking features: It's a cheap, fast approach and can make structures that would otherwise not be possible to build, said the *Dezeen* report on Tuesday.

Working with many [small robots](#) "allows us to tap into the unique possibilities of filament structures," said architect and ICD director Achim Menges, in *Dezeen*.

Possible results would be "more intricate, differentiated and larger architectural systems," said Menges.

This is carbon-fiber fabrication, said *Dezeen*, where robots have an edge over larger robots on mobility. They can reach areas and create structures that large industrial robots cannot.

TechCrunch had an interesting description of these spiderbots "weaving you a strange and mathematical [hammock](#)."

Dezeen said, "These look like Roomba vacuums and could fit inside a single [suitcase](#)."

The project is dubbed Mobile Robotic Fabrication System for Filament Structures. The robots use sensors and suction to travel across horizontal or vertical surfaces. Currently the robots must be connected to an external power source by a cable, which, said *Dezeen*, limits their application.

Devin Coldewey in *TechCrunch* said, "The plan now is to increase the number of robots and allow them to maneuver and attach the fibers to other surfaces, like ceilings or curved walls."

Carbon fiber, meanwhile, is architecture's biggest untapped resource, Menges had said, in an earlier interview with *Dezeen*. Simply put, *Inhabitat* in May wrote about the ushering in of a fourth industrial revolution, according to Menges.

Revolution was his chosen word, not evolution, because it is about an outright shift in how things are made. *Inhabitat* commented: "Combining technology with this unique building material could revolutionize construction of the future, according to Menges. He believes we have not yet explored all that [carbon fiber](#) could [accomplish](#) in architecture, but that using robotics to explore the material could take us one step further."

TechCrunch noted that Menges is inspired by nature's ingenuity. "His team has based buildings on insect and lobster shells, and the bots described here clearly are influenced by arachnids and other silk-weaving animals."

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