

3D printing takes on metal at Amsterdam lab (w/ video)

February 22 2014, by Nancy Owano



(Phys.org) —To say that the Joris Laarman Lab is an innovative type of group is putting it mildly. The Amsterdam place is described as "an experimental playground set up to study and shape the future. It tinkers with craftsmen, scientists and engineers on the many new possibilities of upcoming technology." One such possibility that has captured their attention has been coming up with a technique for large-scale 3D printing without the need for support material. They have been exploring

ways to allow the creation of 3D objects on any work surface, and not requiring additional support structures. "By using innovative extrusion technology," they said, "we are now able to neutralize the effect of gravity during the course of the printing process." Welcome to the MX3D-Metal 3D printing initiative from the Lab, creating metal structures in mid-air.

As reported in *Dezeen*, the method combines a robotic arm typically used in car manufacturing with a welding machine to melt and deposit metal, to create lines that can be printed horizontally, vertically, or in curves, without the need for support structures. Adding small amounts of molten metal at a time, lines are printed in mid-air. The team vision is an affordable, multiaxis MX3D tool for workshops around the world.

"Introducing supportless multiaxis metal printing" says the group's promotional video. After developing a MX3D-resin printer last year, this time around the focus is on a printer with advanced welding machine, able to print with metals, such as steel, stainless steel, aluminum, bronze or copper, without the need for support-structures. (They are developing different kinds of print heads for different kinds of metals.) The Labs group said that the method makes it possible to create 3D objects on any given working surface independently of its inclination and smoothness in almost any size and shape. Their work has been in collaboration with Acotech and supported by software company Autodesk.

A gathering point site for industrial designers, *Core77*, recently featured the Lab too, turning to Laarman for comments on the printer. The basic [idea](#) is simple: an advanced welding torch on a robot arm that communicates and is controlled by smart software.

They have also been working on strategies for the different kinds of 3D-printable lines. Vertical, horizontal or spirals call for different settings: pulse time, pause-time, layer height or tool orientation. This information

will ultimately be incorporated in the software.

More information: www.core77.com/blog/digital_fabric_thin_air_26474.asp
www.jorislaarman.com/mx3d-metal.html

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