

Rock Print Pavilion

A robot builds for people

On Kirchplatz square in front of the
Gewerbemuseum Winterthur / Switzerland

4 October to 4 November 2018



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Media conference: Wednesday, 3 October 2018, 11 a.m.

Opening with presentation: Thursday, 4 October 2018, 6.30 p.m.

As part of the current “Hello, Robot. Design between Human and Machine” exhibition, the Gramazio Kohler Research team from ETH Zurich presents its latest coup to the public: on Kirchplatz square in front of the Gewerbemuseum Winterthur, a robot builds the “Rock Print Pavilion”, demonstrating the transformative power of digital processes and creating a pavilion out of a heap of loose aggregates tied up with twine.

A house made from loose aggregates and twine, built by a mobile robot in the centre of Winterthur. Researchers from Gramazio Kohler Research at ETH Zurich demonstrate the transformative power of digital construction processes by creating a pavilion out of a heap of loose aggregates tied up with twine by a robot.

Right in the historic heart of the city, newly developed robotic processes combine these ordinary items into a highly resilient material system without the use of tools. They thus provide a first look at some of the astonishing designs that rapid developments in digitalisation are making possible in architecture and the environment.

Approximately 120 kilometres of string and 30 tonnes of stones will be used for the construction of the “Rock Print Pavilion”.

About the research project

The project “Design and Robotic Fabrication of Jammed Architectural Structures” investigates and develops methods and techniques for the design and robotic aggregation of low-grade building material into load-bearing architectural structures that are re-usable and re-configurable with high geometrical flexibility and minimal material waste. As such, it focuses on a principle called “jamming”, which refers to aggregate granular materials, such as gravel, that is quite literally crammed together in such a way that it holds its form and shape like a solid. However, in contrast to the prevailing research and applications of “jamming” that usually range from nano- to meso-scale, this project targets the macro-scale and is thus suitable for architectural construction, bringing together computational design and simulation with automated fabrication technology.

The key principles of this project were demonstrated in 2015 at the Chicago Architecture Biennial (“Rock Print”) and the Ars Electronica Festival 2017.

About Gramazio Kohler Research

Since its inception in 2005 the research group at ETH Zurich led by Prof. Matthias Kohler and Prof. Fabio Gramazio has been at the forefront of robotics and digital fabrication in architecture. With their robotic laboratories and work that ranges from prototypes to building elements, they have inspired architects and researchers alike to explore the capacities of the industrial robot as a universal tool of the digital age. More information: www.gramaziokohler.arch.ethz.ch

Project credits

Client: Gewerbemuseum Winterthur

Collaborators: Petrus Aejmelaeus-Lindström and Gergana Rusenova (project lead), Hannes Mayer, Dr. Ammar Mirjan, Esther Lombardini, Jesús Medina Ibáñez

Selected experts: Josef Meyer Stahl und Metall AG, Dr. Lüchinger + Meyer Bauingenieure AG, Zurich, Daniel Meyer, Reto Furrer

Sponsors: Dr. Lüchinger + Meyer Bauingenieure AG, Migros Kulturprozent, Keller Systeme AG, Toggenburger AG, Friends of the Gewerbemuseum Winterthur

Events in the “Rock Print Pavilion”

Opening with presentation

Thursday, 4 October 2018, 6.30 p.m.

«**Digitale Materialität**», introduction by Fabio Gramazio (in German)

«**Jammed Architectural Structures**», presentation by Petrus Aejmelaeus-Lindström and Gergana Rusenova (in English)

Public tours in the “Rock Print Pavilion”

With researchers from Gramazio Kohler Research, ETH Zurich (in German)

Saturday, 6 October 2018, 11 a.m.

Sunday, 14 October 2018, 11 a.m.

Saturday, 20 October 2018, 11 a.m.

Sunday, 4 November 2018, 2 p.m.

Information for media professionals

Media conference “Rock Print Pavilion” on Kirchplatz square

Wednesday, 3 October 2018, 11 a.m.

Introduction by Prof. Fabio Gramazio and Hannes Mayer, Gramazio Kohler Research, ETH Zurich.

Media office

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Media images

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Tue–Sun 10 a.m.–5 p.m. / Thur 10 a.m.–8 p.m. / Mon closed
Holiday opening times: www.gewerbemuseum.ch
CHF 12 / concessions CHF 8, children + young people up to the age of 16 free