

Kizuki-au 築き合う Collaborative Constructions

A collaborative program of Aichi Triennale 2022
July 30 to October 10, 2022
At the Tokoname City Pottery Footpath
(Sakae-cho 7-chome, Tokoname-shi, Aichi)

Designed to withstand earthquakes and storms, the towering structure activates its surrounding neighbourhood and landscape, while the wooden terrace or Japanese engawa serves as a meeting point for the community.
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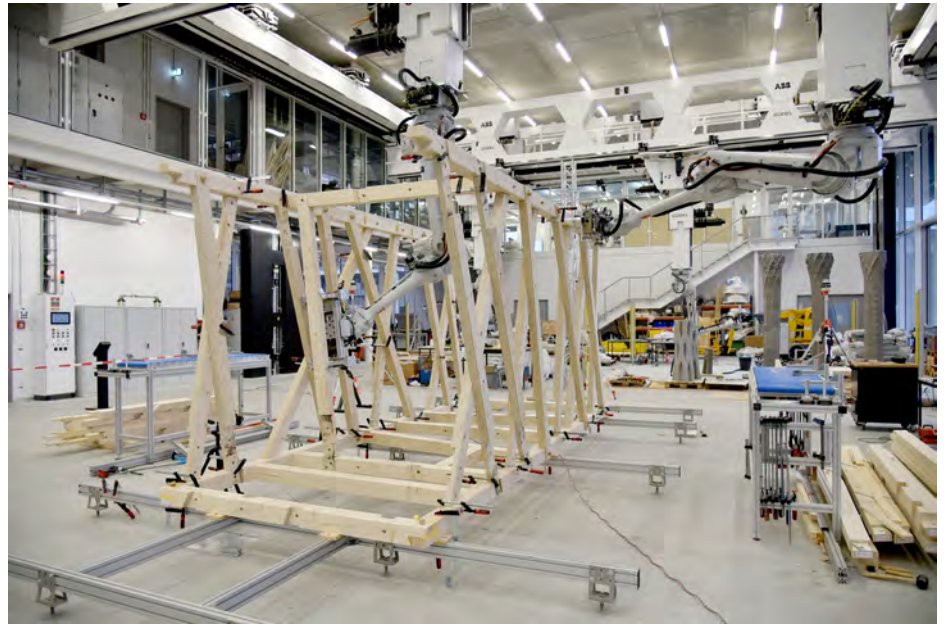


Switzerland and Japan explore the future of architecture at Aichi Triennale 2022! Kizuki-au 築き合う—Collaborative Constructions consists of two installations by Gramazio Kohler Research from ETH Zurich and T_ADS Obuchi Lab from the University of Tokyo. The project sheds light on digital processes in architecture, human-robot interactions and cross-pollination between technology and culture.

Our globalised societies have entered into a new phase. The pandemic has revealed how our communities are intricately linked beyond national borders, in a world that has become more fragile. At the same time, the widespread popularization of online communication demonstrates how technology allows for reconnection in times of forced isolation; we can talk to anyone, anywhere, almost anytime. In this emerging order, we ask how architecture can reimagine its own tradition and role in society.

Collaborative Constructions investigates a new practice of architecture based on the creative, innovative and personal use of technology. The two projects by ETH Zurich and the University of Tokyo engage in a global collaboration looking at architectural strategies to relate nature and humanity through technology; they are results of human-robots collaborations and exemplify how we can engage with the past while looking ahead.

The wooden modular towering structure has been designed and robotically pre-fabricated in Switzerland, at the Robotic Fabrication Laboratory of ETH Zurich.
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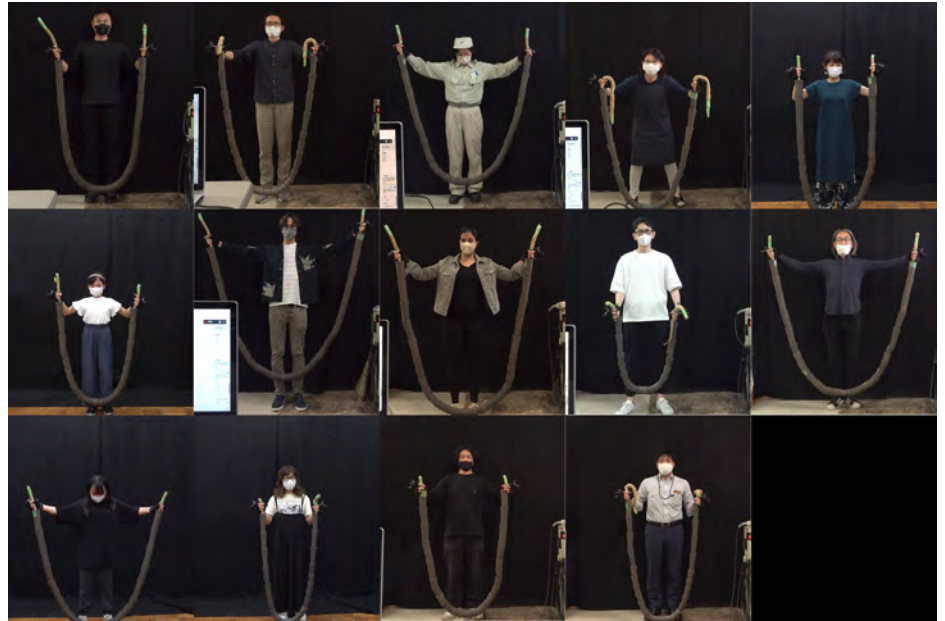


The project by Gramazio Kohler Research from ETH Zurich in Switzerland is a three-storey tall timber-frame structure, which revives the long history of expert timber construction in Japan through Swiss design and technology. It revisits carpentry for the age of robotics, making metal parts, nails, screws or fasteners obsolete. The five constituting timber frame modules consist of more than a thousand bespoke timber elements and were prefabricated in the world-renowned Robotic Fabrication Laboratory at ETH Zurich. Designed to withstand earthquakes and storms, the towering structure activates its surrounding neighbourhood and landscape, while the wooden terrace or Japanese *engawa* serves as a meeting point for the community. Age-old knowledge has been revived through digital technologies, allowing for a highly material efficient and performative approach to building with timber. A new strategy for building multi-storey timber buildings is thus suggested as a sustainable alternative to conventional concrete and steel constructions.

While the pattern appears to be random at first glance, its generation requires an intricate algorithm, an algorithm that brings human and machine together. The pottery chains are created by a series of feedback processes between a person and a robot
© T_ADS Obuchi Lab



The project by T_ADS Obuchi Lab from the University of Tokyo is a gate-like structure made of wooden posts and beams, serving as an entrance to the courtyard surrounded by an old pottery factory. A series of pottery chains hanging from the gate's beams form a large screen and resemble a traditional *noren*. It is a visual sign to welcome the visitors as well as an evaporative cooler, a natural climate control, in which mist dampens the surfaces of the pottery. On a hot day, the evaporative cooling effect of the pottery is expected to cool the gate area by 4 to 5 degrees Celsius.



© T_ADS Obuchi Lab

At the heart of the project is the fabrication of the hanging pottery chains. While the pattern appears to be random at first glance, its generation requires an intricate algorithm, an algorithm that brings human and machine together. The pottery chains are created by a series of feedback processes between a person and a robot. Each person makes a uniquely defined shape of pottery chain by holding it so that it hangs from their arms without touching the ground. The robot then finds a location on the beam for its installation within the given dimension of the beam and structural requirements. The final design of the overall patterns, made of forty-five of the hanging chains, are generated by children and adults with different physiques and strength reflecting their individuality into the whole.



Surrounded by an old pottery factory. View of the site in early July 2022 before construction

Rendering. Visitors are welcomed with mist, lighting and sound effects that create a synergy with the natural environment in Tokoname.
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Faced with the post-industrial legacy of Tokoname, the collaboration between ETH Zurich and the University of Tokyo reimagines the place through an extended notion of empathy: its people, traditions, history, environment and culture are all intertwined and made tangible through digital processes in fabrication and construction. Architecture becomes a form of living knowledge, an expression of being alive.

Collaborative Constructions is an initiative of the Embassy of Switzerland in Japan, ETH Zurich and the University of Tokyo, in collaboration with Shimizu Corporation. The project is part of Vitality.Swiss, Switzerland's program on the road to Expo 2025 Osaka-Kansai.

Gramazio Kohler Research

Since 2005, the research group at ETH Zurich led by Prof. Matthias Kohler, Prof. Fabio Gramazio has been at the forefront of robotics and digital fabrication in architecture. With their robotic laboratories and work that ranges from fundamental research to prototypes and buildings, they have inspired architects and researchers alike to explore the capacities of robots as a universal tool of the digital age. Their work has been exhibited at Mori Museum, Centre Pompidou, Palais de Tokyo, Royal Academy London, the Venice Biennale, Storefront gallery New York, V&A Dundee, and the Guggenheim Bilbao.

T_ADS Obuchi Lab

T_ADS Obuchi Lab is the Advanced Design Studio at the University of Tokyo led by Prof. Yusuke Obuchi. Focusing on the relationship between human capacities and technologies, it investigates innovative, integrative and collaborative building methods. The series of resulting pavilions, each developed in collaboration with a construction corporation have been recognized globally for their creative approach to technology. Their projects have been published widely and were exhibited at the Cooper Hewitt Museum in New York, the architecture biennials in Beijing, Rotterdam and Venice, Zurich Design Museum, Tokyo Designers Week, Barcelona Design Museum and the Centre Pompidou.

Kizuki-au 築き合う—Collaborative Constructions

Period July 30 to October 10, 2022
Open time 11:00 – 19:00
Venue 79, 80, 83, 84, Sakae-cho 7-chome, Tokoname-shi, Aichi, Japan
Free of charge
More info www.vitality.swiss

Organizers

Embassy of Switzerland in Japan / [Vitality.Swiss](http://www.vitality.swiss)

[Gramazio Kohler Research](#), ETH Zurich

[T_ADS Yusuke Obuchi Laboratory](#), Department of Architecture, Graduate School of Engineering, The University of Tokyo

Project Collaborator
Shimizu Corporation

Partners

IWC Schaffhausen
BMW Japan
Panasonic Holdings Corporation

LIXIL Corporation
ERNE AG Bauunternehmung
Cypress Sunadaya Co., Ltd.
Vitru Co., Ltd.
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Socio-Cultural Environmental Studies,
Graduate School of Frontier Sciences, The
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Tokoname City
The University of Tokyo, Strategic Partner-
ships Project

State Secretariat for Education, Research
and Innovation SERI
FDFA, Presence Switzerland

Project teams

Gramazio Kohler Research, ETH Zurich: Prof. Fabio Gramazio, Prof. Matthias Kohler,
Hannes Mayer (project lead), Matthias Helmreich (fabrication and computational design
lead), Matteo Pacher.

T_ADS Obuchi Lab, University of Tokyo: Prof. Yusuke Obuchi, Yusuke Komata, Shuta Takagi.

Shimizu Corporation: Tadahiro Nakajima, Kazutomo Ohashi, Mitsuhiro Kuroki.

SJB Kempter Fitze: Franz Tschümperlin, Lukas Ehrle.

ERNE AG: Thomas Wehrle, Steffen Hermann.

Press materials:

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Press viewing – Registration required

Monday August 1st, 16:00–17:00

The design team will be present on the site on August 1st between 16:00 and 17:00 to welcome journalists and offer a press viewing.

In addition, interested journalists can attend our Open House on **August 4th between 19:30–20:30** to meet with project representatives and experience both installations.

Opening event – Registration required

Monday August 1st / Swiss National Day at
18:30 (doors open at 18:15*)

In presence of the Ambassador of Switzerland to Japan, Dr. Andreas Baum, the project leader of ETH Zurich, Hannes Mayer, and Professor Yusuke Obuchi from the University of Tokyo as well as project partners. The program includes a special performance by contemporary dancer Kenta Kojiri (Prix de Lausanne laureate 1999).

Interview request / press contact: Yuko Takahashi, Embassy of Switzerland in Japan

Open House – Registration required

Thursday August 4th, 19:30–20:30

Reserve date in case of rain: August 5th, 19:30–20:30

Joint open house by Panasonic Holdings Corporation, the University of Tokyo and the Embassy of Switzerland in Japan.

Participants:

Yusuke Obuchi (University of Tokyo) and Hannes Mayer (ETH Zurich) and the Embassy of Switzerland will guide you through the venue on August 4th. (On August 5th, Professor Obuchi and a member of the Swiss Embassy will be present).

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