

# NEST

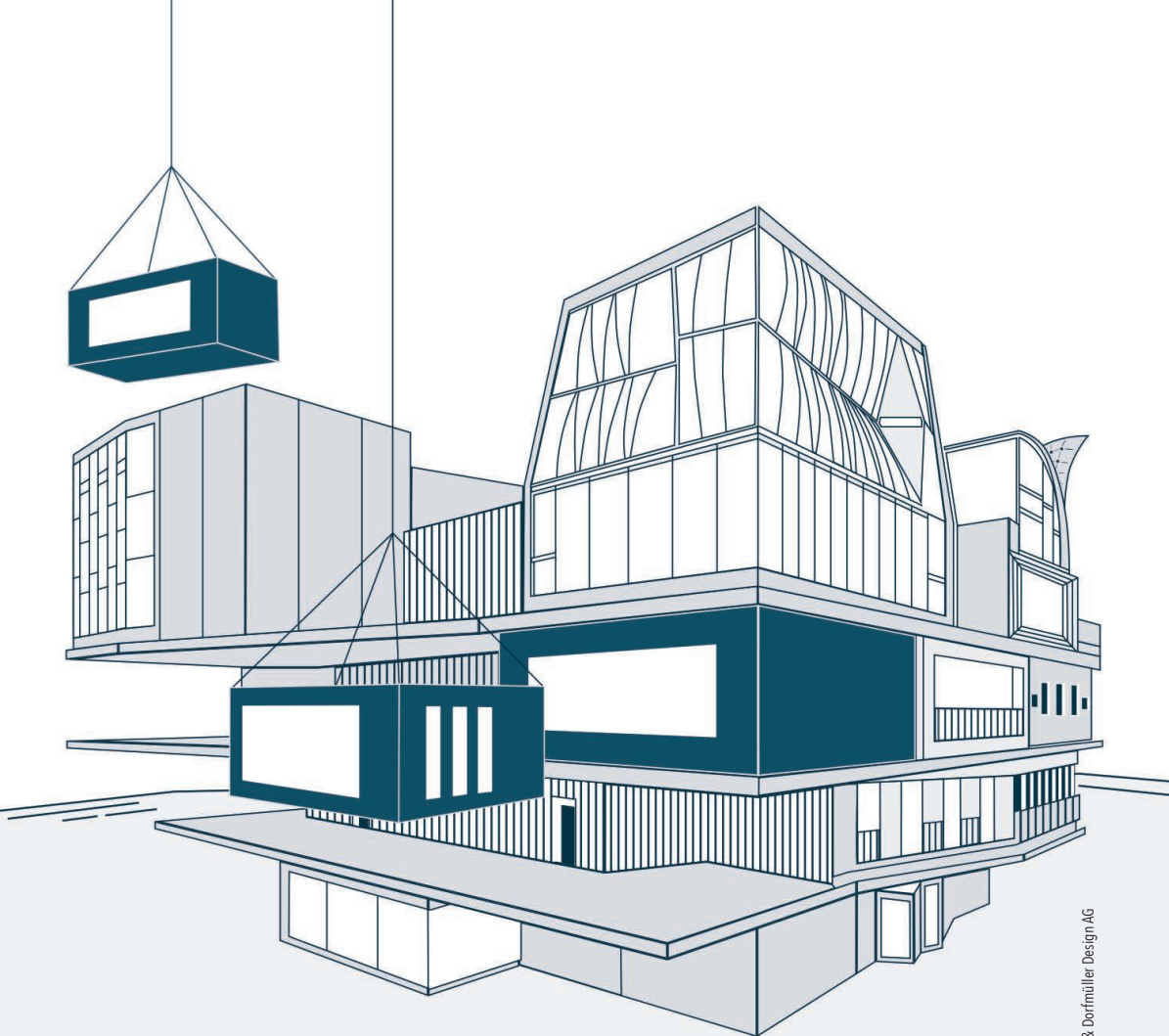
EXPLORING  
THE FUTURE OF  
BUILDINGS

## SPEEDING UP INNOVATION

It's a far cry from a brilliant idea to a marketable innovation – especially in the construction industry: There is a huge gap between technologies that work on a lab scale, and the market that asks for mature and reliable products. NEST is bridging this gap and thus is accelerating the innovation process in the building sector.



Photo: Zoëy Baum, Stuttgart



Graphic: Hug & Dorfmueller Design AG

## WHERE IDEAS ARE TURNED INTO INNOVATIONS

Opened in 2016, NEST is the modular research and innovation building of two Swiss research institutes, Empa and Eawag, located on the Empa campus in Dübendorf. At NEST, more than 150 partners from research, industry and the public sector work closely together.

### RESEARCH AND DEVELOPMENT – LIVE

At NEST, new technologies and construction concepts are tested, refined and demonstrated under re-

al-world conditions. NEST consists of a central backbone with three open platforms, on which temporary building modules ("units") that each address a different set of questions can be installed via Plug-&-Play.

# BRIDGING THE GAP BETWEEN LAB AND CONSTRUCTION SITE

## REALITY AS A TEST BED

At NEST, researchers embark on real construction projects to put their work into practice. Solutions that stand the test of a real-world setting are being created thanks to a close cooperation with partners from industry.

### **DEMONSTRATING FEASIBILITY**

At NEST, one can experience research at first hand. Based on the everyday experiences of the NEST users and residents, new concepts can be further developed to marketability.



# PRODUCT DEVELOPMENT IN A REAL-WORLD ENVIRONMENT — WITHOUT RISK

## A NETWORK OF ADVANTAGES

At NEST, our corporate partners get to test and validate new product ideas in a real building with users and residents. Thus, on the way to market, they receive valuable feedback about their prototypes. What's more, joining NEST offers access to a broad network of partners from both research and industry.

### CUTTING-EDGE

At NEST, our corporate partners are capable of demonstrating brand-new solutions to potential customers in a one-of-its-kind innovative environment, thereby strengthening their brand.



# INSPIRATION FOR BUILDING PROFESSIONALS

## EXPERIENCING NEW THINGS AT FIRST HAND

In order for a good idea to become a successful innovation, it must, of course, enter the market. NEST offers architects, planners, builders and construction experts inspiration for future projects as well as insights into new construction concepts and technologies.

Regular guided tours provide an overview of the latest trends at NEST, while workshops and symposia deepen individual topics.



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Tours and events at NEST: [nest.empa.ch/tours](https://www.nest.empa.ch/tours)





Photo: Roman Keller

## DIGITAL FABRICATION AND DIGITAL LIVING

The three-story DFAB HOUSE is the world's first residential building that was not only planned digitally, but also – with robots and 3D printers – built mostly digitally.

### MORE SUSTAINABLE AND MORE DIVERSE

For DFAB HOUSE, researchers at ETH Zurich, together with industry partners, have transferred several novel, digital construction technologies from the lab into real-world applications for the very first time. The aim is to make construction more sustainable and efficient with the use of digital technologies. Moreover, a number of novel smart home solutions are being tested at DFAB HOUSE.

### FACTS & FIGURES

**Use:** apartment for 4 people

**Opening:** February 2019

**More info:** [nest.empa.ch/dfabhouse](http://nest.empa.ch/dfabhouse)

**Partners:** NCCR Digital Fabrication, ETH Zurich, ERNE AG Holzbau, Holcim (Schweiz) AG, Laufen & arwa, Schenker Storen AG, V-ZUG AG, ABB, AGITEC AG, Bürgin Creations, digitalSTROM AG, Duscholux AG, Möbel Pfister AG, R. Nussbaum AG, Schibli Gruppe, Securiton AG, Sika AG, ENGIE Services AG, Frutiger AG, Joulia SA, Lehni AG, Meyer AG, 3Eflow, Carl Meier Sohn AG, Innotech Arbeitsschutz, Swisspor AG, VMZINC



Photo: Roman Kehler

## HARVESTING SUNLIGHT

SolAce reconciles two needs: maximum energy generation at the façade and optimum comfort for residents inside the unit. The aim is to achieve a positive energy balance throughout the year – without a rooftop providing energy gains.

### A POWER PLANT HIDDEN WITHIN THE FAÇADE

Solar cells and solar thermal collectors with colored glazing are built into the façade. An innovative micro-structured glazing of the windows and an intelligent building automation system provide for an optimal distribution of daylight and solar warming in the unit during winter. During summer, however, the very same technology prevents the unit from overheating.

### FACTS & FIGURES

**Use:** combined working and living environment

**Opening:** September 2018

**More info:** [nest.empa.ch/solace](http://nest.empa.ch/solace)

**Partners:** EPFL, Geberit AG, V-ZUG AG, ABB, BASF, Duscholux AG, Griesser AG, Lutz Architects, Regent Lighting, Solstis SA, SwissINSO, TZ menuiserie SA



## CIRCULAR CONSTRUCTION

The Urban Mining & Recycling unit has one prime goal: All resources required for the construction of a building must be completely reusable, recyclable or compostable.

### USING INSTEAD OF CONSUMING

The idea of closed cycles plays a central role in this unit: The construction materials are not consumed and later on disposed of; rather, they are temporarily withdrawn from their technical or natural cycle and returned when they are not needed anymore.

### FACTS & FIGURES

**Use:** apartment for 2 people

**Opening:** February 2018

**More info:** [nest.empa.ch/umar](http://nest.empa.ch/umar)

**Partners:** Werner Sobek Group, Karlsruhe Institute of Technology, Flumroc AG, Laufen & arwa, Schenker Storen AG, V-ZUG AG, alphaEOS, Kaufmann Zimmerei & Tischlerei, Möbel Pfister AG, Nimbus Group, Lindner Group, Flextron AG, Magna Glaskeramik



Photo: Zoëy Baum, Stuttgart

## SUSTAINABLE WELLNESS

Fitness and wellness constitute a growing demand in our society – normally at the expense of energy and the environment. The Solar Fitness & Wellness unit demonstrates that there is indeed another way.

### SAVING ENERGY WITH NEW TECHNOLOGY

Innovative wellness technology based on a high-temperature heat pump makes it possible to reduce the energy consumption of wellness systems in such a way, that the energy generated directly at and in the unit is sufficient to operate two saunas and one steam bath.

### FACTS & FIGURES

**Use:** Fitness & Wellness

**Opening:** August 2017

**More info:** [nest.empa.ch/sfw](http://nest.empa.ch/sfw)

**Partners:** suissetec, Empa, Lucerne University of Applied Sciences and Arts, NTB Interstaatliche Hochschule für Technik Buchs, Belimo Automation AG, Flumroc AG, Laufen & arwa, Sauter AG, Schenker Storen AG, Technogym, Dransfeld Architekten, Ernst Schweizer AG, Fit & Wellness Concept, Glas Trösch AG, Grundfos Pumpen AG, KIFA AG, KLAFS AG, Küng Sauna + Spa AG, Meyer Burger Technology AG, Migros, Miloni Solar AG, NeoVac, Scheco AG, Swiss Eco Tap, vogt-partner, Gasser Fassadentechnik, Helios Ventilatoren AG, HSSP AG, Mountair AG, OBM Bionik, Serge Ferrari AG, WAGNER VISUELL AG, Wenger Fenster AG



Photo: Reinhard Zimmermann





Photo: Empa

## NEW WORKING ENVIRONMENTS

The research and innovation unit Meet2Create is a laboratory for collaboration and work processes aimed at developing a sustainable work environment. It focuses on the interplay between humans, space and technology, which is tested and optimized within the scope of various research projects.

### FROM WORKPLACE TO TASKSPACE

The guiding principle of Meet2Create is "from workplace to taskspace". In future, a single workplace will no longer need to be a one-size-fits-all; rather, zones with specific qualities will be available (and used) for different tasks.

### FACTS & FIGURES

**Use:** working environment with different zones

**Opening:** May 2016

**More info:** [nest.empa.ch/meet2create](http://nest.empa.ch/meet2create)

**Partners:** Lucerne University of Applied Sciences and Arts – Engineering and Architecture, Belimo Automation AG, Flumroc AG, Knauf AG, Lista Office LO, Sauter AG, Schenker Storen AG, Swisscom AG, Trilux AG, Vitra AG, Bauwerk Parkett AG, Bene, Creaplant AG, Creation Baumann AG, Dim3nsions, Feller AG, HAG, ionair AG, Lauber Iwisa AG, Lenzlinger Söhne AG, Plantronics, SageGlass, Samsung, Solprag, Tuchschnid AG, Zapco

## WOOD – A JACK OF ALL TRADES

The Vision Wood unit stands for a visionary approach to the natural and renewable resource of wood in the building industry. Here, the latest developments in wood research are combined with the know-how of contemporary timber construction.

### OLD MATERIAL WITH NEW FACETS

With the aim of considerably broadening the range of applications for wood, researchers at Empa and ETH Zurich have equipped this well-known material with completely new characteristics and improved the properties of wood-based materials.

### FACTS & FIGURES

**Use:** apartment for 3 people

**Opening:** May 2016

**More info:** [nest.empa.ch/visionwood](http://nest.empa.ch/visionwood)

**Partners:** Empa, ETH Zurich, Renggli AG, Federal Office for the Environment FOEN, EgoKiefer AG, Fagus Suisse SA, Glaeser Wogg AG, Henkel, Ruum Architekten, Sauter AG, Taconova Group AG, Wesco AG



Photo: Roman Keller



# BUILDING THE FUTURE TOGETHER

## A STRONG NETWORK

NEST is an open platform with well over 150 partners from research, industry and the public sector.

### MAIN PARTNERS



All partners: [nest.empa.ch/partner-overview](http://nest.empa.ch/partner-overview)

# THINKING OUTSIDE THE BOX

## THE INNOVATION DISTRICT ON THE EMPA CAMPUS

Several research and technology transfer platforms have been established on the Empa campus in Dübendorf in recent years. Together they form an interconnected district, in which innovative and comprehensive solutions in the energy, building and mobility sectors can be developed and demonstrated in a real-world environment.

### NEST

Exploring the future of buildings  
[nest.empa.ch](http://nest.empa.ch)

### move – Future Mobility

Mobility without fossil fuels  
[move.empa.ch](http://move.empa.ch)

### ehub – Energy Hub

Energy research on district level  
[ehub.empa.ch](http://ehub.empa.ch)

### dhub – Digital Hub

Digital solutions for buildings,  
mobility and energy  
[dhub.empa.ch](http://dhub.empa.ch)

### Water Hub

Wastewater as a resource  
[eawag.ch/waterhub](http://eawag.ch/waterhub)

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