

06

Site Visits

NEST at Empa

734

A dynamic, modular research and demonstration platform for innovative building technologies

Campus Tour – ETH Hoenggerberg

736

Three of ETH Zurich's most outstanding campus buildings with regards to construction methods, energy efficiency and building operation

Development of the District 'Hardau'

738

Renewal of a derelict city district with public buildings, sport facilities, a housing development, a park area and art projects

Cooperative 'mehr als wohnen'

740

A new neighbourhood initiated by Zurich cooperatives, aiming for housing affordability, social diversity and employment generation

Swiss Society of Engineers and Architects (SIA)

742

An insight into SIA's area of activity and the Swiss public procurement sector

NEST at Empa

June 16 / 15:30 – 18:30

NEST (Next Evolution in Sustainable Building Technologies) is a dynamic, modular research and demonstration platform for advanced and innovative building technologies on the Empa-Eawag campus in Dübendorf, Switzerland. The project provides a basic building infrastructure and access to an advanced geothermal system. The *backbone* of three open platforms can accept up to fifteen modular buildings – referred to as research and innovation units – thus offering a unique setting for academic groups and innovative companies to implement their research. These units are installed based on a plug-and-play principle by different consortiums of research and industry partners.

The NEST backbone was officially inaugurated in May 2016. It aims to accelerate the innovation process in the building and energy sector by enabling research, industry and the public sector to co-develop sustainable technologies, materials and systems and test them under real-world conditions. NEST offers residential and office space together with an experimental laboratory. Aside from new technologies, the residents and workers themselves are test subjects of the project. It can therefore be called a *living lab* in the truest sense of the word. And due to its modular character, NEST will remain open to future change

NEST can count on a network that meanwhile comprises around 90 partners from research, industry and the public sector such as Empa, Eawag, ETH Zurich, EPF Lausanne, the Canton of Zurich, the Swiss Federal Office of Energy, SwissLife, and Holcim. Numerous other partners are also involved in NEST and individual units. An overview is available online.

See www.empa.ch/web/nest

SBE16 Zurich participants were offered an onsite tour guided by Reto Largo and Enrico Marchesi.



above and right:
NEST_exterior view and atrium
both images © Roman Keller 2016.

Campus Tour – ETH Hoenggerberg

June 16 / 15:30 – 18:00

June 17 / 16:30 – 19:00



Over the years, the Hoenggerberg campus at ETH Zurich has become the playground for ground breaking experiments in building technologies. This campus tour provided an insight into three of its most outstanding building projects with regards to construction methods, energy efficiency and building operation.

The tour started at the recently inaugurated House of Natural Resources (*HoNR*) – a 2D post-tensioned timber structure allowing earthquake resistance and extremely fast construction. Its facade features adaptive photovoltaic panels that showcase soft robotic technology developed at the Chair of Architecture and Building Systems. The campus tour also included a visit to the *Arch_Tec_Lab* – the new home of the Institute of Technology in Architecture that is currently in the final stages of onstruction. Here, a robotically assembled roof has

been designed by Gramazio Kohler Research Group. Finally, the refurbishment of the *HPZ building* was presented as an example of an innovative low exergy heating system. The retrofit approach as well as the ETH campus heating network were explained.

Guides: Arno Schlueter, Matthias Kohler, Chair of Andrea Frangi, Prageeth Jayathissa, Aleksandra Apolinarska



opposite page:

HoNR with Adaptive Solar Facade,
© ETH Zurich, Chair of Architecture and
Building Systems 2015.

above:

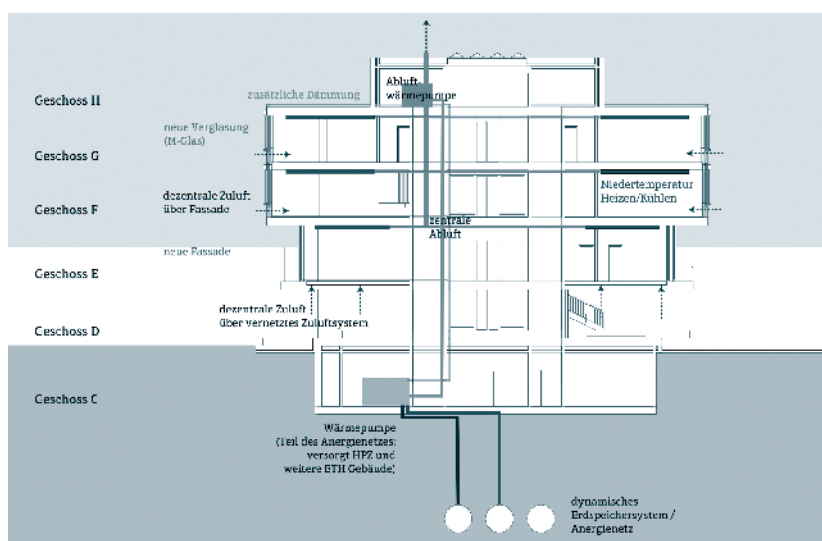
HoNR site visit, © ETH Zurich, Chair of
Sustainable Construction 2016.

center:

Curved roof structure of Arch_Tec_Lab,
© Andrea Diglas 2016.

below:

HPZ building – retrofit concept section,
© ETH Zurich, Chair of Building Systems.



Development of the District 'Hardau'

June 16 / 15:30 – 18:30

A city district of Zurich with former bad reputation has been enhanced with new public buildings, a housing development, a park area and art projects. This site visit featured, amongst others, new buildings with high requirements on sustainability and innovation: a secondary school, a school extension for apprentices, a sports center, a new multifunctional stadium and a residential building realised by a building cooperative.

Guides: Annette Aumann, Annick Lalive d'Epinay, Silvio Brunner

1 | Secondary school Albisrieden

More than just a school: urban design focal point, meeting point, public library. Concept: the school as an open-air facility.

2 | Residential building Badenerstrasse

A building complying with the 2000-Watt principles and the first 7-level timber construction in Zurich.

3 | <Public Space Art>

'Y' (why?) by the artist Sisley Xhafa.

4 | Power house Hardau II

Replaced the former oil/gas heating system with ground water heat pumps. Gas is still used for peak load coverage due to suboptimal building shells.

5 | School extension for apprentices

Designed as a Minergie-Standard building, result of an architecture competition.



6 | Primary school extension

Designed as a Minergie-Standard building, result of an architecture competition.

7 | <Architectural Art>

'Bell*Hardau*Bim*Bam' by artists Claudia & Julia Müller.

8 | Sports Center Hardau

Result of an architecture competition. Designed as a 'floating space' on eight concrete columns.

9 | Hardau high-rises – upgrading measures

Following a social study of the area, different measures such as an integrated public kindergarden and refurbished entrance halls have been realised.

10 | Stadium Letzigrund

Designed as a multifunctional stadium. Due to the prior use of the site as a gravel pit, 40,000m³ of excavated material could be used as 'Letzi gravel' onsite for the new concrete structure and 600,000 km of motorised transport could be avoided.

Cooperative 'mehr als wohnen'

June 16 / 15:30 – 18:00



'mehr als wohnen' ('more than housing') is a Zurich neighbourhood - home to approximately 1,200 residents since 2015. It offers a broad variety of infrastructure, workshops and business spaces like a guesthouse, reception space, restaurants, kindergarten, music rehearsal studios and a bakery.

'mehr als wohnen' was initiated and founded by Zurich cooperatives. It is based on the ecological principles of the '2000Watt society' and aiming for housing affordability, social diversity and employment generation. Sustainable development is at the core of the project. The cooperative relies on the use of low energy technology, produces a significant share of its electrical energy with photovoltaics, and residents commit to renouncing the use of private cars, which is facilitated by car sharing and shared electric bikes.

Dialogue and participation were guiding principles during the planning process. Members of the founding cooperatives, neighbours, and future residents were invited to attend the sessions of the jury during the architectural competition and

to share information in regular plenary sessions in the progress of the project. In these discussions the future principles of cohabitation were established and different neighbourhood groups were founded.

The 13 different houses built by 5 architectural teams showcase the state of the art in sustainable building technologies. Different materials (e.g. wood, insulating concrete, monolithic brick walls), ventilation systems, and water recycling technologies have been implemented in the project.

'mehr als wohnen' has been widely published and discussed as a successful example of urban renewal and mixed-use development of a former industrial site. The project won the Special Prize of the Wienerberger Brick Award 2016, the European Community Led Housing Award and is nominated for the Zurich Architectural Prize.

See [mehralswohnen](http://mehralswohnen.ch) online

Guide: Andreas Hofer





opposite page:
Outdoor Areas Workshop with children,
© Ursula Meisser.

Mobility Station with shared bicycle
facilities, © Anna Haller.

above:
Facades, © Ursula Meisser.

right:
Atrium, © Ursula Meisser.

Swiss Society of Engineers and Architects (SIA)

June 16 / 15:30 – 18:00

This tour started at the offices of the Swiss Society of Engineers and Architects (SIA). It provided insight into SIA's area of activity as well as the Swiss public procurement sector. During a guided walk with Andrea Leuenberger – project leader at the Zurich Civil Engineering Office, Department of Urban Space – participants gained insight into the complexity of urban projects with traffic considerations, urban design principles and social indicators.

Guides: Andrea Leuenberger, Denis Raschpichler, Susanne Kytzia

1 | Wiedikon station

traffic planning considerations such as through traffic and bypass, accompanying measures

2 | Intersection Birmensdorfer-/Weststrasse

planning history, western bypass, accompanying measures, ruling of the Swiss Federal Supreme Court

3 | Intersection West-/Zweierstrasse

requirements during the project, revitalisation Zweierstrasse, bike traffic, Zurich urban space strategy

4 | Brupbacherplatz

urban design approach, program, public square, gentrification, future development, public-benefit housing (25%)



5 | Seebahnstrasse

traffic planning considerations, design principles, multi-purpose zone/shared space planning

6 | Anny-Klawe-Platz

new square as recreational area, cooperative housing, design principles and expectations, participation

7 | Bullingerplatz

design principles, local square, meeting places, urban gardening, café

opposite page:

SIA office building in Zurich,
© ETH Zurich, Chair of Sustainable
Construction 2016.

right:

Workshop participants at SIA offices,
© ETH Zurich, Chair of Sustainable
Construction 2016.

below:

Map of the guided tour with Andrea
Leuenberger.

