

CH_Zürich_ETH Sport Center Science City Höggerberg

Image 01:

Exterior view
 © Bruno Klomfar



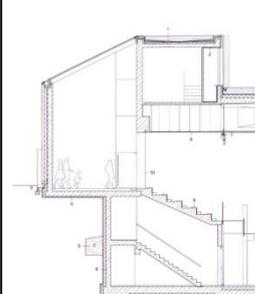
Image 02:

Interior View
 © Bruno Klomfar



Image 03:

Section façade
 © Dietrich Untertrifaller



Building Specifications

Address	Höggerberg Schafmattstrasse, 8093 Zürich, Switzerland
Building Category	Education
Year of Construction	2009
Special Qualities	Minergie-ECO®-Standard
Location	47° northern latitude, 9° eastern longitude, connection building between densified campus structure and afforested area
Climate	Cfb (Temperate climate warm, fully humid, warm summer (monthly mean temperature always under 22 °C, at least four month with a monthly mean temperature above 10 °C)

Vent. Cooling Site Design Elements (Solar Site Design and Wind Exposure Design, Evaporative Effects from Plants or Water)

Surrounded by extensive adjacent grasslands due to building form.

Vent. Cooling Architectural Design Elements (Form, Morphology, Envelope, Construction&Material)

Form: The flat structure forms the edge of a slightly depressed area and has been inserted deeply into the smoothly sloping landscape, forming a natural progression between the surroundings and the green roof. To the west the structure boasts an expansive façade, slanted edges on top and the sides. The building edges are polyhedral, respecting the site conditions.

Morphology: Access to the ground floor is L-shaped, leading from a deep narrow foyer in the backside to a multi-storey gallery through the whole length of the building, docked on by the secondary rooms. Although deeply in the ground, the spaces dispose a high amount of day light by strategic positioned skylight strips.

Envelope: Green roof; A partially opaque, and partially transparent façade made of green insulating glass facing the west, small enveloping surface through its underground cubature.

Construction & Material: Massive concrete construction mainly underground, reinforced concrete beams provide thermal mass

Vent. Cooling Technical Components (Airflow Guiding Components, Airflow Enhancing Components, Passive Cooling Components)

Airflow Guiding Components: Skylights can be opened manually.

Airflow Enhancing Components: Utilization of cross ventilation.

Actuators, Sensors and Control Strategies

Control Strategies are manual.

IEA EBC Annex 62 Ventilative Cooling

Building Energy Systems (Heating, Ventilation, Cooling, Electricity)
<p>Heating: large-scale underfloor heating system, static heating in the gym in combination to rapid warm-up through ventilation system. Underfloor heating system is supplied via the local low temperature network (max. 33% pre-heating in Winter) Heat pumping system on the roof is supplied via the local low temperature network to hot-water supply and to cool the server rooms.</p> <p>Ventilation: Comfort ventilation is done by controlled ventilation split into two divided ventilation systems and heat recovery. Ventilation "Hall" (Foyer, movement room, theory room, three sports halls): via rotary heat exchangers Ventilation "Movement" (Wardrobe, Movement, Wellness): in connection with two plate heat exchangers Through the division of two ventilation systems, energy loss is minimized Volume flow controller, velocity control for ventilators depending on user density</p>
Building Ownership and Building Facility Management Structures
<p>User: ETH Zürich, IBWS (Institut für Bewegungswissenschaften und Sport), ASVZ (Akademischer Sportverein Zürich) Architect: Dietrich Untertrifaller, Building Physics: Karl Brüstle</p>
Aknowledgements
<p>Swiss Standard of Minergie: reduced consumption of fossil fuels and reduction in CO2 emissions (> than 50%) Certificate «Gutes Innenraumklima®»</p>
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