

Project name Forum Chriesbach, Dübendorf, Switzerland



Keywords Research object, ventilation system, architecture, passive house, building integration

Start of project 2006

End of project In operation

Contact person or organisation EMPA & EAWAG Dübendorf, Switzerland

Short project description / project function Forum Chriesbach was built as an administration and research centre for the two research institutes EAWAG and EMPA. The construction incorporates facilities for efficient water management, nutrients recovery, renewable energy generation, passive energy utilisation and is built of sustainable materials. The building itself serves continuously as a research object for the research institutes. Furthermore, there are offices for 150 people, a reception, an exhibition area, seminar rooms in different sizes, a library and a restaurant for employees.

Water The efficient use of water was one of the main aims in the construction process. Waterless urinals and NoMix toilets ensure minimum water use and the separation of urine from wastewater with solids. Moreover, rainwater is collected from the green roof system and clarified in a pond next to the building. The pond functions as a triple-chamber biological treatment plant. The treated water is used for toilet flushing.

Energy The building is highly insulated and has no conventional heating or cooling system. The restaurant is the only heated space in the building. The energy for heating and hot water is gained from waste heat from the commercial cooling system and from the vacuum tube collectors on the rooftop. To maintain a comfortable indoor climate, the building has a well-conceived ventilation system. Outside air flows through the three stations «thermal register - heat recovery server - Monobloc» before it is distributed in the building. One third of the electricity demand is covered by

	solar electricity generated by a photovoltaic system on the roof's edge. All in all, the building consumes the amount of energy used by a normal single-family house, although it is forty times larger.
Biomass	Men's and women's urine is collected separately by NoMix toilets and waterless urinals. The urine is collected in the basement of the building where there is currently a pilot plant installed with the aim to produce a fertiliser product. The end product contains both nitrogen and phosphor.
Project benefits	Forum Chriesbach incorporates significant advanced technologies and a number of innovations. The architecture allows a synergy of systems that are inseparably integrated and serve multiple functions. The project has won many prizes for its architecture and specific technical innovations.
Project level	Pilot project
Financial scale	Construction costs: 29.5 million
Environmental conditions	Climate zone: temperate; Climate type: moderate continental; Latitude: 47.21° N; Longitude: 7.56°
Altitude	436 meters above sea level
Description of special local conditions	Dübendorf is located in the Glatt Valley, which is a valley in the Swiss Plateau. It is bisected by the Glatt River and is situated on the northern side of the Adlisberg, a small mountain (700 meters height).
Context Zero Emission Buildings	Forum Chriesbach was designed with the leading thought of a research object. Thus many findings can be drawn and implemented in future Zero Emission Buildings. Moreover, the deployed technologies demonstrate a high level of building integration and multifunctionality. Forum Chriesbach is one of the few case studies in Switzerland that tackle all three aspects (Energy, Water and Biomass) of the Zero Emission Concept.
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