

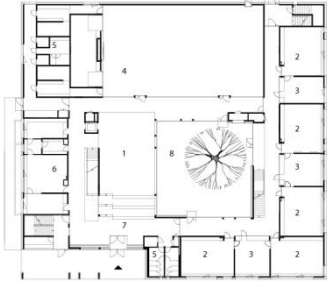


AT_Wels_Volksschule Mauth		
Image 01: Exterior view ©Lukas Schaller	Image 02: Exterior view courtyard ©Lukas Schaller	Image 03: Ground floor ©marte.marte architekten
		
Building Specifications		
Address	Kopernikusstraße 1b, 4600 Wels, Austria	
Building Category	Other	
Year of Construction	2009	
Special Qualities	Passive House	
Location	48° northern latitude, 14° eastern longitude The building is situated near to the town center. It has a town peripheral location in the middle of a park landscape, adjoining land plots with single family houses A spacious area of sport facilities sprawls in the east. Behind the school, to the north starts an open field. A lake is located in about 1 km distance.	
Climate	Cfb (warm temperate, fully humid, warm summer) (monthly mean temperature below 19°C, at least five months with a monthly mean temperature above 10 °C)	
Vent. Cooling Site Design Elements (Solar Site Design and Exposure Design, Evaporative Effects from Plants or Water)		
Evaporative Effects from plants and a little stream, afforested area, along the north-east side of the building Green roof and planted trees inside the inner courtyard, natural school garden Parking area in front of the building composed by green surfaces planted by bushes and trees		

IEA EBC Annex 62 Ventilative Cooling

Vent. Cooling Architectural Design Elements (Form, Morphology, Envelope, Construction&Material)
<p>Form: The two storey building has a compact form and is designed with an almost-square floor plan and a generous inner courtyard. The teaching rooms are distributed around the inner space and on the other side all spaces open towards the park and allow the interior to flood with daylight.</p> <p>Morphology: An incision in the south-western corner marks the entrance and offers protection and security for waiting pupils. Inside the almost square building structure orients itself around an open atrium with plastering, two trees and a bench. The corridor area with generous glass surfaces leads around the courtyard. In front of the library on the first floor, the school's "learning and research station", there is a terrace for reading facing the inner courtyard. Between two classrooms there is a shared common room. In addition there is a workshop, a school kitchen with a canteen, a gymnasium, the assembly hall which can also be used for events, and spacious rooms for teachers and the school management.</p> <p>Envelope: The bright plastered façade is covered by golden metal windows and sun-yellow blinds. Size and Positioning of the windows correspond to the interior. Generous glass surfaces are positioned towards the inner courtyard. Exterior blinds can also be adjusted individually in the classes. There are centrally controlled exterior blinds in order to prevent overheating on hot days.</p> <p>Construction & Material: Massive construction of reinforced concrete and in-situ concrete, interior made of wood, untreated wood, plasterboard, low-emitting materials</p>
Vent. Cooling Technical Components (Airflow Guiding Components, Airflow Enhancing Components, Passive Cooling Components)
<p>Airflow Guiding Components: Windows can be opened automatically via air-conditioning unit in each class room and via the central ventilation system - and sport areas. Smoke ventilation flaps can be adjusted manually.</p>
Actuators, Sensors and Control Strategies
<p>Sensors: Temperature regulation control by interior and exterior temperature sensors. Windows are closed by the input of presence sensors which activate the air condition system. Air quality sensors in each room.</p> <p>Control Strategies: The presence sensor activates the air conditioning system. The whole building energy system is operated through a digital control system. Operation and monitoring is possible through a special installed I&C system via the school and the municipality's intranet.</p>
Building Energy Systems (Heating, Ventilation, Cooling, Electricity)
<p>Heating: Energy from geothermal probes through heat exchangers and decentralised ventilation units controlled via CO2 Sensors ensure warmth in winter and coolness in summer. The heating requirement is so low that under-floor heating has only been installed in front of the windows.</p> <p>Ventilation: Comfort ventilation is done by decentralized ventilation units controlled via CO2 Sensors.</p> <p>Each class has its own air-conditioning unit; the CO2 levels are measured in every room and automatically controlled by the air-conditioning. The maintenance of the air-conditioning units is done from the corridor so that it does not disturb the lessons.</p> <p>Electricity: A 28 m² photovoltaic unit is integrated in the green roof and a 50 m² solar array produces electricity and hot water.</p>
Building Ownership and Building Facility Management Structures
<p>Owner: Holding Wels Immobilien GmbH&Co KG; Building Facility Management: LAWOG Genossenschaft m.b.H Architect: Marte Marte Architekten</p>
Aknowledgements
<p>Austrian national award for Architecture and Sustainability 2010 Participation in building and operation by a school caretaker (concept "moving school")</p>
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