

AT_Ernstbrunn_Windkraft Simonsfeld AG

Image 01:
Exterior view – southwest ©WKS AG



Image 02:
Exterior view – southeast ©WKS AG



Image 03:
Exterior view – northeast ©WKS AG



Building Specifications

Address	Energiewendeplatz 1, 2115 Ernstbrunn, Österreich
Building Category	Office
Year of Construction	2014
Special Qualities	Plus energy house in passive house construction
Location	49° northern latitude, 14° eastern longitude, 293 m above sea level, located at the outskirts of a town with a population of approximately 300 in the lowlands of Lower Austria. It is separated from neighboring buildings by large green spaces and fields.
Climate	Cfb (warm temperate, fully humid, warm summer)

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

Evaporative effects from a water basin south of the building as well as interior greening improve the micro climate.

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

Form: The building form optimized for passive and active solar gains, but not deliberately for vent cooling.
Morphology: An atrium, offering strong buoyancy effect, is situated alongside the south-facing façade, with a fairfaced concrete and clay covered wall, separating the atrium from the north oriented offices.
Envelope: The envelope, with extensive glazing to the south and PV-Panels as shading devices, is optimized for solar gains. As regards Ventilative Cooling the façade is equipped with a row of fairly large inlet-air flaps.
Construction & Material: The effect of Night ventilation is supported by the massive central wall, which additionally can be actively cooled by ground water freecooling.

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

Airflow Guiding Components: Weatherproof ventilation openings in the roof and the south façade of the atria can be opened and closed by automated flaps.
Airflow Enhancing Components: Powerless rotating extract ventilators enhance the Ventilative Cooling air change during nights.

IEA EBC Annex 62 Ventilative Cooling

Actuators, Sensors and Control Strategies
<p>Sensors: In- and exterior temperature sensors, humidity sensors are installed to control the Ventilative Cooling operation in the atrium. Further CO₂-sensors influence the mechanical ventilation of the offices.</p> <p>Control Strategies: The Ventilative Cooling system of the atrium is fully automated, based on in- and exterior temperature plus humidity, with the possibility of manual overriding the control system.</p>
Building Energy Systems (Heating, Ventilation, Cooling, Electricity)
<p>Heating and Cooling: A heat pump utilizing geothermal energy is used to satisfy the heating demand. Geothermal energy without the use of a heat pump is used to cover the cooling demand. The heat and cold is distributed in the offices by a combined floor heating- and cooling system by the thermally activated concrete partition wall between the atria and the offices.</p> <p>Ventilation: All rooms but the atria are ventilated mechanically.</p> <p>Electricity: A building integrated 50 kWp PV-system is installed. The system produces more electricity in a year than the building consumes in the timeframe.</p>
Building Ownership and Building Facility Management Structures
<p>The building is owned, run and monitored by the Windkraft Simonsfeld AG.</p> <p>Architect: Architekturbüro Reinberg ZT GmbH, Vienna</p>
Aknowledgements
<p>First plus-energy-building in Lower Austria</p> <p>The building is constructed with <i>Smart und Simple</i> as the guiding principle</p> <p>klimaaktiv gold certified with 965 of 1000 points</p>
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