

DK _Copenhagen C_DR Byen		
<p>Image 01: Four segments of the building ©Dragor Luftfoto</p> 	<p>Image 02: Office area ©Adam Mork</p> 	<p>Image 03: Technical Scheme ©Vilhelm Lauritzen Arkitekter</p> 
Building Specifications		
Address	Emil Holms Kanal 20, 2300 Copenhagen, Denmark	
Building Category	Office/Concert hall	
Year of Construction	2009	
Special Qualities	Largest solar heating system in Denmark	
Location	56° northern latitude, 13° eastern longitude. Located in an urban area, surrounded with buildings of the same size to north and east, vacant land to south and west of the building	
Climate	Cfb (warm temperate climate, moist with adequate precipitation in all months and no dry season, warm summer with the warmest month below 22°C)	
Vent. Cooling Site Design Elements (Solar Site Design and Wind Exposure Design, Evaporative Effects from Plants or Water)		
Evaporative cooling effect of the open water channel, which separates segments 1 and 2 from 3 and 4, facilitates the natural cooling effect		
Vent. Cooling Architectural Design Elements (Form, Morphology, Envelope, Construction &Material)		
<p>Form: DR Byen is 6 storey box-shaped building that consists of four segments each designed by different architects.</p> <p>Morphology: All four segments are interconnected via an indoor street. Total floor area is approx. 133,000 m²</p> <p>Envelope: The external walls have large glazed areas. The roof area has skylights, large PV installations and cooling units</p> <p>Construction: Heavy mass building</p>		
Vent. Cooling Technical Components (Airflow Guiding Components, Airflow Enhancing Components, Passive Cooling Components)		
<p>A combination of free cooling, night cooling and groundwater cooling is applied to meet the cooling needs of the building.</p> <p>Airflow Guiding Components: Night ventilation is performed by controlling window openings. Comfort ventilation is ensured by a combination of natural, hybrid and mechanical ventilation. Automated window openings are used as air inlets for naturally and hybrid ventilated parts of the building</p> <p>Airflow Enhancing: In different parts of the building cross or stack ventilation principles are used for night cooling</p>		

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Actuators, Sensors and Control Strategies
<p>Chain actuators operate façade windows and roof openings</p> <p>Room sensors for temperature, humidity, CO2 and illumination</p> <p>Mechanical exhaust is activated when, due to outdoor conditions, natural ventilation cannot fulfil the indoor air quality requirements (room temperature or CO2 requirements)</p> <p>Weather station measuring temperature, humidity, CO2, wind and solar irradiation was set on the rooftop</p> <p>NV Advance™ ventilation control system</p>
Building Energy Systems (Heating, Ventilation, Cooling, Electricity)
<p>Hybrid ventilation includes mechanical ventilation with heat recovery and automated natural ventilation</p> <p>1060 m2 PV system producing 80 – 100 MWh of electricity per annum</p> <p>Groundwater reservoir 20 m below the building is used as a cooling source. The reservoir is connected to the building by two boreholes (warm and cold) located on either side of the building complex thus forming a “cooling loop”. In summertime circulating water around the cooling loop cools the building. During winter the building is cooled by free cooling.</p>
Building Ownership and Building Facility Management Structures
<p>The building is occupied and owned by the Danish Broadcasting Company (DR)</p> <p>Architect: Vilhelm Lauritzen Architects</p>
Acknowledgements
<p>n/a</p>
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