DK_Copenhagen_Københavns Energi

Image 01: Exterior view north façade ©www.mysona.dk	**Image 02:** Interior view atrium ©Building Advanced Ventilation	**Image 03:** Ventilation scheme ©Window Master
		

Building Specifications

Address	Ørestads boulevard 35, 2300 Copenhagen, Denmark
Building Category	Office
Year of Construction	2005
Special Qualities	n/a
Location	56° northern latitude, 13° eastern longitude, placed in suburban area south of Copenhagen. The other buildings in the area are a similar size. Railway runs parallel to the west facade
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 from the open water channel to the west, north and east facilitates the natural cooling effect. The building is not sheltered from either wind or sun.

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

Form: Compact five-storey box shape office building

Morphology: The internal morphology is built around a central atrium of 5 floors. The ground floor provides an access to reception, cafeteria and open areas for visitors. The four upper floors consist of office spaces. The top floor also contains a technical room and an open terrace. Total floor area is 13,500m^2.

Envelope: West façade has a large glazing area that is brought into the building and being shaded by the monolith concrete structure. Moderate amount of windows on the other facades and large skylights on the roof serves as a source of daylight and openings for natural ventilation.

Construction: Heavy mass construction

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

Airflow Guiding Components: Second to fifth floors are naturally ventilated, except for the meeting rooms.
Comfort ventilation is based on the stack effect in the atrium, where the fresh air enters the room through automated window openings in the external walls and then is guided through the room to the atrium where it leaves the building through the roof windows. Night ventilation is done by automated window ventilation, and making use of the stack-effect through the atrium or using the cross ventilation. In case of rain or snow, the roof openings are closed and the building is ventilated by cross ventilation. The windows on the west façade of the building are protected from the afternoon sun by the use of brise soleil supporting solar PV cells. The roof windows have automatic solar shading.

Actuators, Sensors and Control Strategies

Besides the fact that all ventilation systems are automatically controlled, manual window control is possible. The automatic control is activated again after the period of 30 minutes
Room sensors for temperature, CO2 and illumination
Outdoor sensors for temperature, humidity, CO2, wind, rain and irradiation
Duration of the window opening depends on the season and outdoor conditions
NV Advance^{TM} ventilation system is used

Building Energy Systems (Heating, Ventilation, Cooling, Electricity)

District heating, radiators
Mechanical ventilation with heat recovery
Grid connected PV system is installed on the west façade

Building Ownership and Building Facility Management Structures

The building is owned and occupied by Hofor A/S.

Acknowledgements

Part of the project “Advanced Ventilation Technologies”. Extensive building monitoring has been carried out.

Datasheet Source:
WindowMaster A/S, Advanced Ventilation Technologies