DK_Copenhagen_Pakhus

Image 01: South view ©Lundgaard & Tranberg Arkitekter A/S	**Image 02:** Atrium in the middle of the building ©ATP Ejendomme A/S	**Image 03:** Ventilation scheme ©Window master
		

Building Specifications

Address	Langelinie Allé 47, 2100 Copenhagen Ø, Denmark
Building Category	Office
Year of Construction	2015
Special Qualities	n/a
Location	56° northern latitude, 13° eastern longitude. Located in industrial area with only one neighbouring building located to the south. Water encloses the building from north, east and west
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)

The water around the building has an evaporative cooling effect. The building is freely exposed to wind and sun.

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

Form: Long rectangular building with 7 floors, stretched along south-north direction

Morphology: The building plan consists of different offices placed around the atrium. The atrium is the core of the building. The total floor area is 19,648m2.

Envelope: Seven different modules form the façade. These modules are duplicated and scattered around the facades. Different size of windows is used to maintain a good daylight factor and have a low heat loss

Construction: Heavy mass building

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

The main ventilation principle in pakhuset is stack ventilation using openings in the facade and in the roof of the atrium. The openings in the facade are specially made for this project with sound attenuated ducts which have 90 degrees bend. Mechanical exhausts are also activated when natural ventilation isn't efficient enough. The external part of the façade openings has constant opening area to the outside and variable opening area to the inside. Inlet openings are located above the windows.

Actuators, Sensors and Control Strategies

Chain actuators operate façade windows and roof openings.
Room sensors for temperature and CO2
Weather station measuring outdoor temperature, humidity, CO2 and wind was set on the rooftop.
NV Advance^{TM} ventilation control system
Information regarding heating and electricity systems is not available

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

Hybrid ventilation is based on the stack-effect.
The ground water is used as cooling, which has a more constant temperature as the seawater.
Heat from the mechanical exhaust in the atrium is recovered and used to heat up the underground heat storage
The building is heated by a geothermal heat pump.
Solar cells on the roof produce electricity.

Building Ownership and Building Facility Management Structures

ATP owns the building and rents it to different companies.

Acknowledgements

DGNB certificate silver mark. Special acoustics

Datasheet Source:
WindowMaster A/S