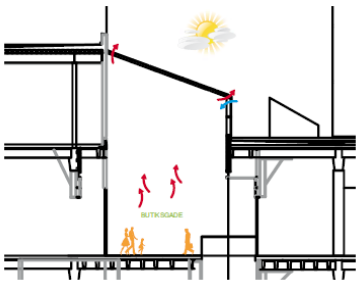
DK_Copenhagen S_Field's

Image 01: South-east view © C.F. Møller Danmark A/S	**Image 02:** Hallway /Atrium ©Window master	**Image 03:** Natural ventilation principle ©Window master
		

Building Specifications

Address	Arne Jacobsens Allé 20, 2300 Copenhagen S, Denmark
Building Category	Shopping mall
Year of Construction	2004 (natural ventilation implemented in 2011)
Special Qualities	Largest shopping centre in Denmark
Location	56° northern latitude, 13° eastern longitude. Located in flat land, urban area, with free space around the building. Øresund motorway runs along the south side of the building. Other shops and office buildings of the same height enclose Field's to the north and east, and a large parking lot is situated to the 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)

n/a

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

Form: Rectangular shaped building with one to three storeys in different parts of the building

Morphology: The building is split into sections by four long hallways (atria) that are covered with skylights. The shopping centre contains 18 cafes and restaurants, and more than 140 retail shops that are placed along the hallways. Total floor area of the building is 148,000 m^2 with a total shopping area of 74,000 m^2

Envelope: Roof windows in the glass roof above the hallways form 98% of opening area for natural ventilation. Ventilation openings in the facades account for only about 2% of the opening area. This non-optimal opening allocation is induced by the fact that natural ventilation system is retrofitted into an existing building

Construction: Heavy mass construction

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

Airflow Guiding Components: Façade windows; roof windows where placed at different levels in the glass shed roof

Airflow Enhancing Components: The main natural ventilation principle is stack ventilation. The rest of the buildings (shops, cafes, restaurants, warehouses, etc.) use mechanical ventilation. In summer and transient season (week 16 – 45) hallways are ventilated with natural ventilation whereas the rest of the building is mechanically ventilated. During summer, when the operative indoor temperature in hallways is above 26°C, the mechanical ventilation is activated. During the cold season the entire building is mechanically ventilated.

Actuators, Sensors and Control Strategies

Chain actuators operate façade windows and roof openings
Room sensors for temperature and CO2

Weather station measuring temperature, humidity, CO2, wind, rain and solar irradiation was set on the rooftop
NV Advance™ natural ventilation control system to control natural ventilation and smoke

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

Hybrid ventilation in hallway (natural ventilation based on stack effect + mechanical ventilation with heat recovery)
Mechanical mixing ventilation with heat recovery in the rest of the building
Energy efficient lighting solutions
Information about electricity was not available.

Building Ownership and Building Facility Management Structures

The building is owned by Steen & Strøm Danmark A/S, and retail spaces are rented out to different companies.
Architect: C.F. Møller Danmark A/S

Aknowledgements

n/a

Datasheet Source:
WindowMaster A/S