

DK_Copenhagen_Ørestad Gymnasium

Image 01:
South and west façade
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Image 02:
Atrium
©Adam Mørk

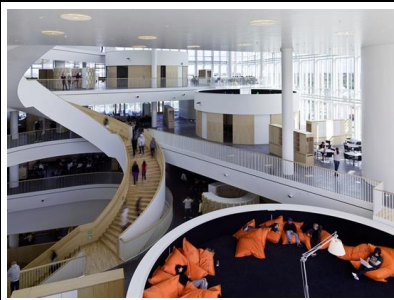


Image 03:
Active façade
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Building Specifications

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| Address | Ørestads Boulevard 75, 2300 Copenhagen S, Denmark |
| Building Category | Educational |
| Year of Construction | 2006 |
| Special Qualities | "The future gymnasium" |
| Location | 56° northern latitude, 13° eastern longitude. Located in a flat land, urban area surrounded by buildings |
| 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 water channel to the west facilitates the natural cooling effect. The building is sheltered from wind and sun from the south by other nearby buildings

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

Form: Compact six-storey squared shape building
Morphology: Huge atrium containing a spiral staircase, which combines all the floors, is placed in the centre of the building. There are no classrooms like in traditional school. Instead, the studies take place in different zones throughout the whole floor. The building is divided in four different zones, and each zone has the form of a boomerang. Each zone consists of open spaces, academic zones, grooves and has a free access to the atrium. The total floor area is 12,000m².
Envelope: The area of the facades is mainly covered with glazing. Coloured hinged glass is placed in front of the windows, which is used as solar shading.
Construction: It is a medium thermal mass building

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

Airflow Guiding Components: Comfort ventilation is ensured by hinged windows placed in the façade and skylights on the roof. The main ventilation principle applied in the building is stack ventilation.

IEA EBC Annex 62 Ventilative Cooling

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| Building Energy Systems (Heating, Ventilation, Cooling, Electricity) |
| Automatic and manual natural ventilation is used to maintain a satisfactory indoor environment The building is heated by radiators, which are connected to district heating system Information about electrical system was not available. |
| Actuators, Sensors and Control Strategies |
| Chain actuators operate the windows. CO2 and temperature sensors to measure the internal condition, which automatically control the natural ventilation system. Manual window control is also possible. NV Advance™ natural ventilation control system The control, which runs the window openings, is also regulating the automatic external solar shading. The solar shading is automatic controlled in proportion to internal luminosity and room temperature. |
| Building Ownership and Building Facility Management Structures |
| Copenhagen municipality owns the building. Architect: 3XN A/S |
| Acknowledgements |
| n/a |
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