DK_ Kongens Lyngby _DTU building 324

Image 01: Exterior View © Technical University of Denmark	**Image 02:** The atrium with greenery © Technical University of Denmark	**Image 03:** Exterior view of the atrium from © Peter Jørgensen
		

Building Specifications

Address	Richard Petersens Plads, 2800 Kongens Lyngby, Denmark
Building Category	Educational
Year of Construction	2013
Special Qualities	n/a
Location	56° northern latitude, 13° eastern longitude, located in flat land. Located in an urban area with surrounding buildings of the same size
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 building is protected from the wind and sun in all directions because of surrounding buildings.

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

Form: Three storey box shaped building, stretched along the east – west direction.

Morphology: The ground floor houses the teaching rooms, and an open space with 24 evergreen olive trees that improve the indoor air quality. The first and second floors are used for offices. Internal planning of the building consists of eight detached glazed towers that are linked together with hanging walkways. The heart of the building is the atrium, which serves as a stack for natural ventilation system, and as additional source of daylight. The total floor area is 4600 m2.

Envelope: Window openings and skylights are scattered around the building with the intention of enhancing the performance of natural ventilation by utilizing the stack-effect in the atrium.

Construction: The load – bearing function is ensured by reinforced concrete structure. Internal and external enclosing structures are made of fully glazed constructions.

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

The Atrium contributes to natural ventilation. Classrooms on the ground floor have mechanical ventilation based on mixing principle. Offices on the first and second floor are ventilated by hybrid ventilation based on the displacement ventilation principle. Solar shading elements are installed on the south façade.

Actuators, Sensors and Control Strategies

Chain actuators operate façade windows and roof openings.
Room sensors for temperature, CO2 and illumination
Hybrid ventilation system operates as demand controlled VAV system.
Weather station measuring temperature, humidity, CO2, wind and solar irradiation on the rooftop
CTS building management system
If desired manual override is possible, after a certain time the system switches back to automatic control.

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

Low temperature district heating using the return flow from surrounded buildings as a heat source, floor heating.
Hybrid ventilation in the offices on the 1st and 2nd floor
Mechanical mixing ventilation with rotary heat exchanger
Energy efficient lighting solutions
Information about electricity was not available.

Building Ownership and Building Facility Management Structures

The building is occupied by DTU.
Architect: Christensen & Co A/S

Acknowledgements

n/a

Datasheet Source:
WindowMaster A/S