Das Dusseldorfer Stadttor

Dusseldorf lies in the middle of the Ruhr district of Germany. The ruhr district like many industrial areas went into economic decline with the disappearance of heavy industry. The upgrading of the region, the disappearance of heavy industry, the introduction of architectural solutions, and the development of new industrial areas have led to the creation of new economic districts of Germany. The Ruhr district like the district of Dusseldorf lies in the middle of the Ruhr highway and is connected to the city by the Dusseldorfer Stadttor.

The building is covered with a 2.7 mm thick glass skin. This layer of glazing protects the occupants from the high level of traffic noise and pollution in this area. The entire building is covered with a twin tower wrapped with transparent facade. The facade consists of two parallel towers, which are connected by a major transit route into this region. The building is located above a highway in the southern gateway to Dusseldorf.

Recessed Atrium

HVAC Chilled / Heated ceilings

Continuous attic stories

Highway below building

50 meter high atrium

DAS DUSSELDORF STADTTOR
THE FACADE

The external facade is a continuous glass facade. From the facade cavity, control of the uptake and exhaust of air behind the vanes is via a motorized valve. The vanes in the vent assembly are adjusted to the current wind speed and thus allow natural ventilation for most of the year. The external facade is a continuous glass facade.
The facade cavity

- Fixed exterior glazing
- Pivoting wood-framed glazing
- Interior operable wood frame
- Ceiling air grilles
- Aluminum blinds in storage

**Detailed Description:**

Glazing frames are 3 meters wide by 2.8 meters tall. Glazing layers are 3 meters wide by 2.8 meters tall. Glazing layers are vertically pivoting. The double glazing has a u-value of 1.4. The glazing layer is vertically pivoting. The office spaces have an interior layer. The facade cavity:

- **Construction:**
  - Net floor area: 30,119 sq.m.
  - Location: Düsseldorf, Germany
  - Architect: Petzinka, Pink und Partner
  - Construction consultants: Ove Arup und Partner

**The Facade Cavity:**

- View of interior of facade cavity
- View of interior of office space

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**Fixed Exterior Glazing:**

- Pivoting wood-framed glazing
- Interior operable wood frame
- Ceiling air grilles
- Aluminum blinds in storage

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**THE FACADE CAVITY:**

- Floor air grilles
- Ceiling air grilles
- Glazing support and bracket
- Interior operable wood frame
- Fixed exterior glazing
- Glazing
The double skin facade assembly of elements and layers:

1. Exterior single pane of toughened glazing.
2. Vent from vent assembly.
3. Fixed exterior 12mm toughened glazing.
4. Vertical pivoting wood frame.
5. Aluminum blinds in storage.
6. Mechanical vent assembly; see detail # for assembly.
7. Ceiling air grille; vents from vent assembly.
8. Mechanical vent assembly; see detail # for assembly.
9. Mechanical vent assembly.
11. Exterior glazing support.
12. Fixed exterior 12mm toughened glazing.
13. Floor to ceiling.
15. See detail # for assembly.
16. See detail # for assembly.
17. Exterior glazing support.
18. Ceiling air grille; vents to exterior.
19. Ceiling air grille.
20. See detail # for assembly.
22. Interior operable double glazing with wood frame. Allows the individual occupant to control the movement of fresh air.
24. Single floor facade cavity at each floor.
25. Prefab in this location.
26. Prefab from traffic noise and pollution.
27. Prefab for assembly.
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The facade cavity is utilized to both exhaust excess heat and introduce fresh air supply almost year round. The current wind speed allows for fresh air from the air cavity to enter the ventilation space. The facade cavity acts as a buffer zone to reduce heat loss in the winter. Air is introduced from grilles on the facade through aluminum blinds to control solar heat gain. Ceiling and floor grilles are arranged in the ventilation space to adjust to the current wind speed and allow for fresh air supply almost year round. The facade cavity is ventilated through grilles in front of blinds and exhausted through ceiling grilles.
The mechanical vent assembly; at each floor plate there is this continuous assembly of vanes, air grilles, and vents. This assembly controls the air flow from the floor to the ceiling, allowing for efficient ventilation and improved air quality. The chilled ceiling is operated on ground water cooling and a desorption process is included. Water cooling and a desorption process is said to reduce energy consumption by 50%. The system is in conjunction with a occupant controlled chilled ceiling, where the occupant controls the air flow to the exterior through a dynamic system. The interior operable glazing allows for natural ventilation. The floor and ceiling vents are controlled by the motorized valve in the floor and ceiling vents. The motorized valve in closed position allows for the interior to be sealed and controlled. The venting vanes in front of blinds are adjustable and allow for improved air flow to the exterior. The vertical pivoting wood framed windows and extrusion allow for the ventilation of exterior air. The interior glazing is designed to provide a view to the exterior and also for natural light. The motorized valve on the exterior of the assembly allows for the adjustment of the air flow from the exterior to the interior. This assembly controls the air exchange from the exterior to the interior, providing a comfortable environment for the occupants.