

BEST PRACTICE IN AUSTRIA – ENERGY EFFICIENT CITIES

BASIC INFORMATION

Title of the Best Practice

Renovation of Competence Center Dornbirn (office building)

Energy efficiency measures implemented in the building: Improvement of the energy efficiency of the façade and reduction of thermal bridges; Reduction of the cooling requirement through external, automatically controlled shading

Location:

City: Dornbirn

Region: Province of Vorarlberg

Country: Austria

GoogleMaps link:

<https://goo.gl/maps/usH1aTZZx1t>

Partners involved:

- Owner: BHD Liegenschaftsvermietungs GmbH
- Operator and contact: PRISMA Zentrum für Standort- und Regionalentwicklung GmbH, Mag. Gero Riedmann, Hintere Achmühlerstraße 1, A-6850 Dornbirn; www.prisma-zentrum.com
- Planner and Architect: Architekturbüro Nikolussi Häusler, www.nikolussi.at; <https://mustersanierung.at/projekte/buerogebaeude/competence-center-dornbirn/>

Implementation year: 2016

Photo:



Source: <https://mustersanierung.at/projekte/buerogebaeude/competence-center-dornbirn/#&slider1=5>

SYSTEM CHARACTERISTICS

Brief Description:

The Competence Center Dornbirn accommodates various companies from the fields of construction, environment and energy as well as complementary business services and is affiliated to the University Campus Dornbirn. The modernisation of the building was intended to consolidate and promote its use as an innovation centre in the long term.

The shell, which was already well conditioned when the building was erected, and the building services will be adapted to the current state of the art with a focus on economic benefits. The following measures were implemented:

- Deconstruction of steel and reinforced concrete elements to reduce thermal bridges in the attic and façade area.
- Replacement of the old mullion-transom facade on ground floor and 1st floor
- Use of aluminium windows with 3-fold glazing
- new shading by electrically driven, controlled external blinds
- Replacement of the existing ventilation system by a system with higher efficiency

FINANCIAL SOURCES AND FINANCING DETAILS

Total investment value: 1.270.963 €

Investment scale

Thermal reconstruction of the building envelope:

- Facade: Dismantling of the existing facade cladding and insulation with 20 cm ETICS EPS-F (U-value 0.15 W/m²K)
- Post-and-beam façade new on ground floor and 1st floor made of aluminium with triple glazing; interior facing in those areas where panels are mounted (U-value 0.15 W/m²K)
- Newly insulated attika
- Roof remains unchanged

Building material:

- Facade insulation by 20 cm EPS F-Plus

Windows:

- New aluminium windows with triple glazing (U-value - 0.86 - 0.91 W/m²K).

Building technology:

- Space heating - no changes: Combination of biomass district heating and gas boiler with biogas; heat dissipation by means of component activation and ventilation system
- Cooling: compression refrigeration system, distribution by building component activation and ventilation system
- Ventilation system: Mechanical ventilation system with heat recovery WRG degree 75%
- Use of energy-saving lighting system.
- Light: Maximisation of daylight utilisation through external blind shading and daylight-controlled use of artificial light; conversion to LED and T5 fluorescent tubes leads to total energy savings of more than 30 MWh/a

Energy Efficiency:

- Improvement of the energy efficiency of the façade and reduction of thermal bridges
- Reduction of the cooling requirement through external, automatically controlled shading

Sources of financing: This project was co-financed by funding of the Austrian Climate and Energy Fund (Mustersanierung) with € 454.048,-; and by the building owner.

Electricity savings (MWh/year): -

Or fuel savings (kg or m3 or kWh or GJ): reduction of HWB from 48,1 to 15,6 kWh/m².y, this means a reduction of 67 %; Reduction of cooling energy from 2,3 to 0,8 kWh/m².y

Cost savings (EUR/year): -

CO2-savings: of 28,3 tons per year

PROJECT IMPLEMENTATION BENEFITS

The measures implemented have led to a significant improvement in comfort. The sound absorption through the new windows helps to significantly reduce the noise level in the offices. The technical building measures lead to a considerably improved room climate, which is noticeably and pleasantly noticed by the users.

Mechanical ventilation was a major topic in the target definition, whether centralised or decentralised. The negative experience of a ventilation system in a school that had just been implemented at that time had a strong influence on this discussion.

ADDITIONAL INFORMATION

In the case of refurbishment during ongoing operation, it is important to ensure that the work is well prepared and scheduled well in advance, and that these deadlines are communicated to all parties involved on an ongoing basis. In combination with the knowledge that a great result can be expected after the refurbishment, a large consensus with the users is possible despite any impairments that may occur.

Already in the planning phase, random test openings were carried out to determine whether the originally planned master details had also been implemented during the construction of the existing building.

