

Highly efficient renovation in Milan

The property developer Hines held an international competition for the renovation of the 25,000 m² former Post Office complex in the Porta Genova area of Milan. The complex consists of four buildings dating from the 1960s and 1970s enclosing a central courtyard.



Bergognone 53 before and after renovation

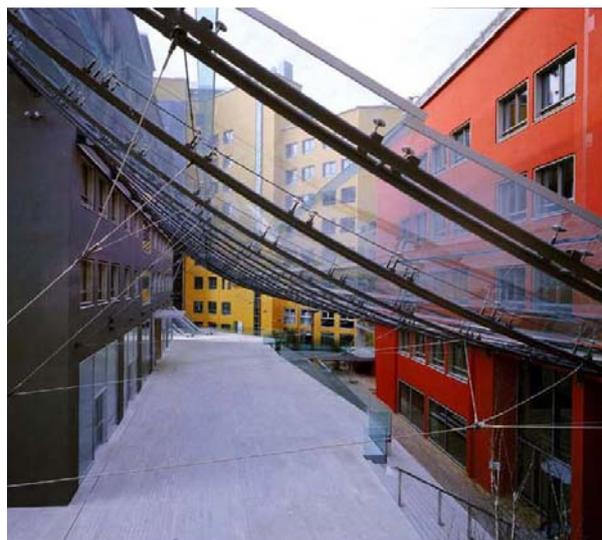
While renovation preserves the existing internal space, a new glass canopy over the internal courtyard and a double skin facade on the south transform the building complex design. Over 1600 people are working in the 19 000 m² of offices, and can use the amenities of the complex, including a daycare center, two restaurants, and underground parking for 100 cars. The four-building complex could be easily partitioned for four or more tenants.

A new glass facade was designed for the nine storey building facing Via Bergognone made of selective glass that serves as both a screen and a filter for the sun rays.



Outer glass facade

Even though the four buildings make a single urban block, each building of the complex was designed to be independent, thus linking visually and functionally by a glass canopy which covers the 900 square meters of the refurbished courtyard. Suspended from all four buildings, it also protects the offices from the sun, enabling energy savings.



Internal courtyard before and after renovation

The Glass canopy structure is based on catenary principle: double sequences of curved beams are connected to facades through a tubular beam frame. 255 x 140 cm glass scales are fixed on these curved beams by knee anchorages. Additional cables stabilized the canopy against external loads. The facades were reinforced to support these extra loads.

A finned-tube battery using warm and chilled water in summer combines with optimal air flows to ensure comfort zones temperatures where needed. Energy savings is ensured by the combination of minimal external air ventilation and the building's diversified heat exchange distribution. Direct radiation, convection and induction, usually separately dealt with, are here combined to provide better air distribution in specific areas of the building.

Photovoltaic cells on the roof of one of the buildings generate electricity for sheared area lighting. The overall energy demand has been estimated at 145 kW/m². This amount is rather low compared a similar building that would use standard cladding materials and that it would consume around 280 kW/m². Thus, double skin façade and glass canopy will lead to 50% energy reduction.

Sustainability benefits :

- Double glazed facade
- Glass canopy over the refurbished courtyard
- Highly efficient temperature regulation
- PV cells
- 50% energy consumption requirement reduction

Project team :

- Client :** Hines
- Architects :** MCA integrated design S.R.L.
- Structure :** lascone Ingegneri
- Steel framing :** Ove Arup & partners