

The new east wing between natural elements and rational innovation (*)

The expansion project of the Bari passenger terminal aims at improving the service standards of Apulia's main airport and one of the most important in Southern Italy, and at enhancing Apulia's high-quality tourism and accommodation offering.

The East Wing has been operating since February 2015 and is part of the Master Plan that also involves the expansion of the west wing. Once completed, this expansion project will restore the symmetry and balance of the entire structure, which currently appears unbalanced towards the eastern side. The interior design of the east wing was inspired by the natural elements of **Earth, Air, and Water** as a symbolic reference to a great region, whose progress initiatives are based on "rational innovation".

Natural elements

Air is found in the cantilevered and corrugated suspended ceiling, which, extending from north to south, symbolises the dominant winds, i.e. mistral, and sirocco.

Earth. Apulian stone is the other element that provides an immediate perception of how processed and skilfully shaped stone has become the art and language of several Apulian artworks over the centuries.

Castel del Monte was the most distinctive choice. The local stone covering of the central row of pillars inside the terminal and that of the airside portico brings to mind the orthogonal layout of the castle of Frederick II. A tribute to all the workers who have helped construct this building and have made these antique ashlar blocks a piece of universally recognised art.

The sea is one of the elements that nature donated to Apulia. This is why we have created the sea route projecting towards the suspended ceiling in honour of the sea. The sea route has been conceived as a sort of millenary amber containing the sand, shells, sea-urchin shells, and starfishes of Apulia's sea. Another element that evokes Apulia's history and maritime tradition is the polychrome panelling made of reused planking resulting from abandoned or demolished boats. This art installation embellishes the structure with Saint Nicholas' effigy at the centre of the wall as a symbol of protection.

Technical and architectural solutions

The new wing is about 125 metres long and has an average 25 m depth. It is divided into 5 levels (ground floor, mezzanine, first and second floor, and basement intended for the technological systems). We added 7 new gates to the 8 existing ones, 5 of which are on the ground floor and 2 on the first floor near the boarding bridge.

Aeroporti di Puglia has always paid special attention to the environment. This is why we wanted the project to be eco-friendly and kept a watchful eye on environmental sustainability. To achieve this goal, we have integrated state of the art technological solutions for producing renewable energy, thus minimising the building's impact on the environment.

Natural lighting

Natural lighting enters the terminal through the large and long glazed façades and large elliptical skylight, which vertically crosses the whole core of the east wing. This allows for effective energy savings and contributes to the passengers' comfort and mental and physical wellbeing by giving the perception of a contact with the outside world.

Double skin façade

The double skin glazed façade allows for an ascending air flow, which brushes the internal wall, reducing the thermal loads resulting from solar radiation. This type of façade not only reduces electricity consumption in connection with the building's climate control, both during the summer and winter, but it also reduces the sound pollution resulting from the operations performed in the work area. This way, we ensure comfort for passengers and all those who work inside the building.

Selective glazing

The selective glazing limits solar heat gain and, at the same time, allows light to pass through. This way, we reduce not only the thermal loads resulting from solar radiation, but also the amount of energy required for climate control, thus ensuring significant energy savings. The double glazing guarantees high thermal insulation during the winter, thus decreasing the amount of energy required for air conditioning and heating.

LED technology at the service of the lighting system

The entire lighting system uses LED technology. Light and presence sensors manage and control the entire system. In brief, the light intensity of the lamps is constantly adjusted depending on the lighting levels detected in the environment. This allows the integration of natural light coming from the outside with the minimum amount of artificial light required. Combining LED lamps with automatic intensity adjustment allows us to save about 50% of energy compared to a traditional system. This value is extremely significant if we consider that artificial lighting is always active in this type of buildings.

Photovoltaic panels and solar thermal panels

Photovoltaic panels have always been part of the architectural composition of the terminal and have been installed in the southern façade and on the roof of the building. There are 632 modules, which produce 164,000 kWh/year. The use of these energy sources prevents the introduction of 85 tons of carbon dioxide, 150 Kg of nitrogen oxides, and 120 Kg of sulphur dioxide into the environment, which is equal to the production of about 37 tons of fuel. The reduction in environmental impact, greenhouse gas emission, dust, and toxic substances is clear.

Moreover, we installed 10 collectors on the roof of the building for the production of domestic hot water, which should cover over 80% of the terminal's requirements.

Green wall

The east wing's expansion plan, with its elongated lines and tapered and inclined ends, brings to mind the wings of an airplane that welcomes the passengers ready to leave for distant destinations. The new futuristic architecture stems from the old airport, which is now completely enclosed in a green wall designed and installed so as to offer a beautiful floral scenery all year round. This is part of the extensive energy efficiency intervention made on the current terminal with the aim to improve the city landscape and communicate Bari and Apulia's attention to the environment. The green wall creates an emotional bond with our airport and raises public awareness on the environment. This is Bari's contribution for a healthy and eco-friendly city.

Green roof

In the same way as with the terminal's core, this expansion aims at increasing the building's energy performance also thanks to the green roof installed on the new east wing. The green roof complies with ITACA protocol and, compared to traditional solutions, it ensures greater thermal insulation, reduced thermal loads in the summer, thermal inertia lag due to solar heating, and "heat island" effect.

Water resources management

One of our goals was to protect water resources by reducing their use and eliminating waste. With this in mind, we recovered rainwater from the building's roofs. The rainwater is conveyed to a collection and storage tank installed under road level to be reused as irrigation water for the green areas.

The choice of materials and ties with the territory

We have introduced elements that express Apulia's culture and construction tradition to harmonise the intervention with the territory. One example is the above-mentioned local stone covering, which reminds of the orthogonal layout of the castle of Frederick II in Castel del Monte. Even the boarding tower is a clear tribute to the Mediterranean, to its architectural icon represented by lime walls, blue doors, and purple bougainvillea, and tradition, which will always inspire the architecture of the future.

Another architectural element inspired by Apulia's territory is the olive wood book-matched veneered panelling whose grain creates eye-pleasing patterns. Moreover, we built the infrastructure using local materials or materials that allow the selective decommissioning of components, as far as possible, in order to reuse or recycle them in compliance with ITACA protocol.

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