Living Valencia harbour: high energy-efficiency patio houses
by Lara Laurino
Tutor: Pierre-Alain Croset
Co-tutor: Luigi Bistagnino

The project takes place within the historic Valencia harbour dock which, owing to the 32nd *America's Cup* edition in 2007, has undergone noteworthy transformations. Within these changes, we chose to intervene on a particular historic industrial building which is part of a three buildings group: the *"Tinglados"*.
The *"Tinglado"* number 2, interested by the project, is the only one that preserved its privileged seafront position, keeping unaltered the striking harbour view.

Rendering

The project's theme consists in the replacement of the shed, in metal framework, with a new architecture which will build a new urban front among the head buildings, preserved and renovated.

The new architecture is based on the construction of a "plate" constituting the new artificial ground to the height of the present main beam, characterizing the *"Tinglados"* front. The "plate", which is around 4590 mq, supported by 32 pillars, defines a clean separation between the low ground – fully utilized as "public space" - and the upper level occupied by private houses.

The public low ground is conceived as a "passing space", characterized by an indoor square placed between two mediterranean gardens organized within the *"Tinglado"* head. The square, lacking in permanent installations, can host a wide range of temporary activities: markets, various events, exhibitions, etc.

The residential area, set up at the elevation of +7,80 m compared with the dock, characterized by the typological model of the patio house, constists in 42 detached houses partitioned in three blocks, each constituted by 14 units. The patio house is suggested as an alternative to the detached houses, as gives the possibility, when aggregated to the others, to create a higher density compound where it's possible to fulfil the privacy dream and, at the same time, live by other people, in a more urban dimension.

Ground floor plan, front and back views of houses

The 14 residences, 4 builded on one level and ten on two levels, are different from the others because of their floor area, plan-view distribution and direction; in the thesis are reported the specifications for each residence.

Plans of a typical house

To complete the planning, in the thesis we dedicated a chapter to the materials, to the stratigraphies and to the computation of the building roof covering's thermal transmittance characterizing the residences; for this purpose we compared the Spanish law (*Documento Basico HE Ahorro de Energia*) and the Italian law (D.M. 11/03/2008); we referred to the latter, turned out to be more restrictive, for the transmittance limit values.

In the project, a contribution to residences' energy-efficiency is given by the use of the green roof to which we dedicated a chapter in the thesis. The "green" technology, whose use implies unquestioned benefit, appears in two different typologies: extensive green roof in Sedum for the residences' roof covering and extensive green roof of the light type for the private gardens.

Finally, the will to contribute to energy saving, reducing fossil fuel use, determined within the project the introduction of photovoltaic technology, to which we dedicated a chapter in the thesis. Formal requirements and, especially, the ones related to the building fruition, implied the choice of: semi-transparent photovoltaic modules, totally architecturally integrated, to cover the south-western pitches of *"Tinglado"* heads; polycrystalline silicon modules, partially architecturally integrated, placed above the residences' flat roof coverings. Thanks to specific softwares we calculated the annual photovoltaic production – relative to the photovoltaic power introduced in the project – which turned out to be enough to satisfy the residents' annual electric demand.

For further information, e-mail:
Lara Laurino: lara.laurino@yahoo.it