

03 PROGETTO: Masterplan e Diagrammi



The project from the beginning was developed with the maximum attention on energy efficiency and the impact of it in the design decision.

We have chosen a courtyard building. From the road of the Working Training Centre you can identify the entrance, which is through two air chimneys.

When the visitor is inside, he is in a shading square where he is connected with all the sections of the complex.

The classrooms and the instructional area are situated in the north side in order to take advantage of the natural daylight of the north side that doesn't need any kind of shading. In front of the entrance there is a snack bar.

The square is the fulcrum of the Centre. All the roof gardens and balconies placed in the different levels face the square. We paid particular attention for maximum use of external space. The system of roof garden is important for the gardening and the caulking of the ceiling of the building.

We have modelled and oriented the building taking in consideration the wind direction, sun isolation and outside noise isolation. The Training Centre is a wooden structure, which was chosen because this material has a good behaviour in seismic areas and it is one of the main ecological materials. [depth examination in the technical Requirement Task 2].

We used solar panels, which are installed in the lecture hall ceiling with a 25° inclination, that's why the shape of the lecture hall creates a sculptural prospect for the identification of the centre from the road. There are photovoltaic panels and solar collectors (with accumulator in the technical area behind the lecture hall).

For the winter time the heating works thanks to the solar collector.

Water: we have decided to collect and use rain water for the subsistence of the bathroom of the centre. With a herbal depuration system we can re-use grey water, this system is efficient for the cleaning of the water water and has a green decoration around the complex. The tank for rain water and the Imhoff tank are underground.

Wind: we have studied the main directions and the average speed. The wind is sufficiently powerful for the installation of a wind turbine (min 16 ft/sec and max 29 ft/sec).

The building orientation lets the wind come inside the court for natural ventilation. In the interior space we have projected an opening in the upper part of the wall for permitting a natural circulation of air in the internal space and put out the warm water by the chimney hot air. That chimney should be closed during winter time, in order to keep inside the heat.

Sun: we have studied the temperature and the sun isolation during the different seasons.

We have decided to use the shade system for the southern facade vertical garden. The natural variation of the density of foliage in the different seasons, lets more daylight penetrate the building during winter time and keeps out the heat during summer time. Vertical garden gives 20% less of sunlight heating, which will be useful for summer time insulation. During summer time we will need a cooling system that will be done with natural ventilation. Furthermore, the vertical garden will provide a natural insulation on the windows with southern exposition.

The west facade is shading by a textile fabric that shades the windows but does not block the wind.

The east facade has rotating windows of 20° so the orientation is not E but N-E and the solar penetration is decreased.

We have decided to use triple glazed windows which bring a better compromise between light transmission, fenestration heating and cooling compared with single and double glazed windows. [depth examination in the technical Requirement Task 3]

With the solar tube we take the sunlight in the terrace of the third floor and we have a natural light in the classroom of second and first floor. The solar tube are a tube made with aluminium that reflect inside the tube the natural light that catch in the ceiling (in this case in the terrace) and you can use the natural light in the room in the downfloor.



- Concorso Obiettivi
- Gli obiettivi del concorso sono di incoraggiare e premiare l'eccellenza in architettura pianificazione e progettazione che integra le strategie di progettazione ambientale a regime.
- Gli aspetti che abbiamo cercato di perseguire durante tutte le fasi del progetto sono le seguenti:
- Esplorare l'efficienza energetica come uno standard di base della progettazione edilizia, e la fondazione del design zero-net.
 - Includere principi della sostenibilità nella scelta dei materiali da costruzione, usare acqua e la progettazione degli edifici.
 - Studiare nuovi materiali da costruzione e metodologie che contribuiscono a progettazioni sostenibili o ad alta efficienza energetica.
 - Comprendere l'impatto di orientamento solare, l'orientamento del vento, la costruzione volumetrica, i metodi di costruzione, e le scelte di materiale sulla costruzione di funzioni e consumo energetico.
 - Sviluppare la consapevolezza di tecnologie appropriate per i tipi di costruzione particolare, clima regionale e la posizione del sito.
 - cominciare a capire le esigenze e le implicazioni delle energie sostenibili generazione nei cantieri urbani.

