

## Special Mention in the Architecture Category

**Agora Valencia Pavilion** (Valencia)

**Arqueha + Miguel Arraiz**

Photos by Alejandro Gómez Vives

### REPORT – Agora Valencia, transforming a main square into a focus of design

This 350m<sup>2</sup> modular pavilion pays tribute to a long history of prestigious **Mediterranean** design through materials developed as a result of **innovations in tile design and traditions like *la vareta* (flexible strips of wood)**, brought to us by artist Manolo García.

Agora Valencia is a 24x10 metre structure with a height of 9 metres, located in Valencia's City Hall Square.

**Estudio Arqueha**, the coordinator of Plan Zero for the climatic transition of three of the city's neighbourhoods, was in charge of the project's technical development, based on a sustainable, prefabricated design. By taking advantage of **digital BIM systems and parametric design methods**, all the building's different components could be industrially manufactured in such a way that each of the dismantlable prefabricated frames that supports the pavilion's ceramic slats is unique.

#### Parametric design methods and BIM systems

The design, technical development and construction of the pavilion had to be done in record time. With a construction deadline of two months, digital tools and prefabricated systems played a key role in the completion of a project that embodies the future of sustainable, industrial, digital construction.

Two different digital tools were used in order to **maximize the number of prefabricated processes, without relinquishing the building's highly original design.**

Firstly, **parametric design** tools were used to create the skin of the pavilion, with full control of the distribution of the ceramic slats and their density and position on each of the frames. Consequently, each of the frames that encloses the pavilion has a unique design and, in conjunction, they form a totally heterogeneous skin.

In addition to parametric design techniques, **BIM methods** were also used to design the structure and to generate all the necessary documents to factory-produce the components for their subsequent assembly in City Hall Square.

Given the project's ephemeral nature and its location, it was designed to be assembled and then dismantled once it had fulfilled its purpose. Because it stands in a public space, no

foundations could be made, and so it was assembled on a base of concrete slabs that support and distribute the weight of the structure.

### **An analysis of solar radiation, wind and thermal comfort**

Thermal comfort was also taken into account in the design of Agora Valencia through climatic variables such as air circulation and solar radiation, which directly influence the sensation of improved comfort inside the pavilion when compared with the rest of the square. The skin of vertical slats offers protection from the sun and reduces the amount of solar radiation from the east and west, while the wood ceiling provides natural ventilation and filters the light from the south. As for the wind, the only item to offer any wind resistance is the central screen, as the study shows.

The solar protection and ventilation that is afforded by the pavilion's design reduces the temperature inside it by 10 degrees in relation to any other part of the square, without the need for any energy, hence ensuring zero CO2 emissions.

The building is clad in a skin of slimline porcelain slats, hung perpendicularly on the façade to filter the light as the day progresses. Indeed, light was treated as yet another construction feature through the contribution of other components, like the big roof, with its striking appearance.

The wood-strip sculpture used as a ceiling was designed by Manolo García, master carpenter and Falla artist, who returned to the square where so many of his creations for the Valencia Fallas have stood. His sculptural ceiling simulates the waves of the Mediterranean Sea, evoking the city's role as a historical melting pot for different civilizations. The ceiling will be replaced each year with a new, innovative design.

Ceramic materials feature prominently on the façade and ceiling through the white slats, made with high-purity minerals, so that the body and surface of the building have a fully continuous appearance. The slats are sustainable products, made with 50% recycled material, reclaimed from their own manufacturing process. With the solvent-free digital printing technology used to print them, 70% savings on water were also achieved.

The engineering company and specialist in innovative technical applications for ceramic roofs approached the Agora Valencia project as a new challenge, overcoming it by designing an architectural skin conspicuous for its light weight and simplicity, without relinquishing safety or modularity.