Cattleya

Cattleya is an expression of a context-rooted strategy which embodies the interdependency between sustainable strategies and vegetal geometries.

The principle behind the design is to condensate and collect humidity from the environment in order to regenerate the surrounding desert soil while offering a public interactive spot. In this sense the shape offers both a shaded place and a staircase for an upper observation deck through the mimesis of the desert orchid evolution. Once installed the system is supposed to accumulate water autonomously through a passive behavior, avoiding any sort of maintenance.

Considering studies about different kinds of condensing fabrics available on the market we’ve estimated a production up to 1 liter per square meters of vertical surface, translatable in our case, where air-saturation is very low, in a daily production of 30/50 liters, considering every net is 2,6 m2 for a total of almost 80 m2.

Regarding the structure, it consists of steel frame, a water collecting tank that also serve as footing for the whole pavilion, and the nets are intended to be derived from recycled plastic. The pavilion is assembled by spatial steel truss based on modular system. The shape has been generated through a parametric research, studied to minimize non axial stresses in the structure and optimize costs and time in terms of assembly. In order to fulfill a reasonable optimization, we defined an algorithm able to reduce the differences between the 180 nodes of the reticular beam to just 6 different models of knots, speeding up the construction phase while dropping the production costs.

Finally, our project is also focused on wind interactions due to the impact in terms of condensation efficiency that it can have. The leaves as well as the whole pavilion are oriented to maximize the exposition to the main streams that blow from the Californian Coasts.