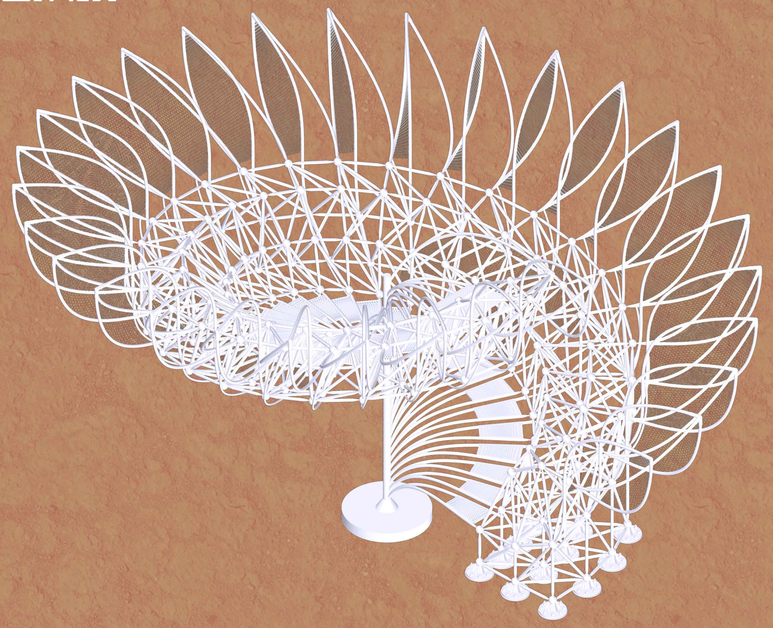
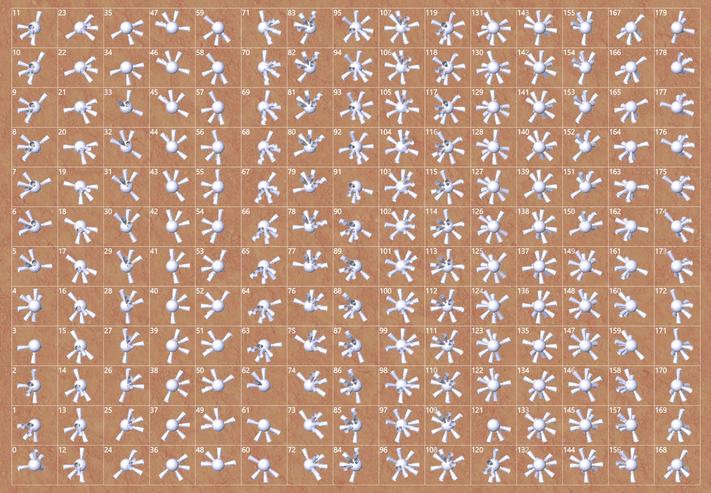
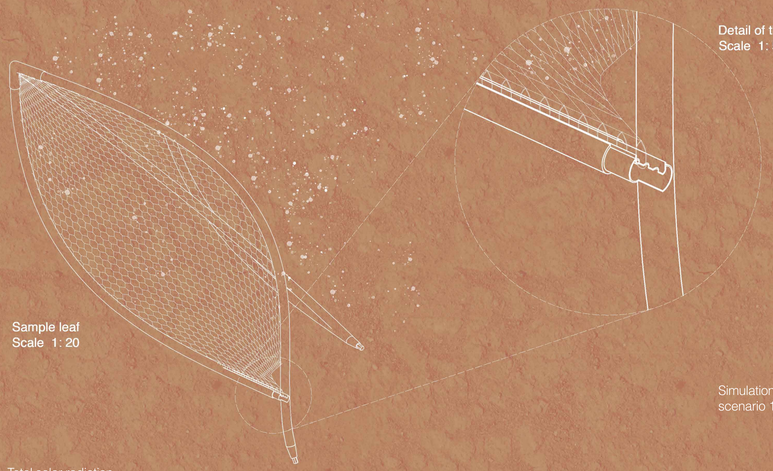


Mist catcher leafs

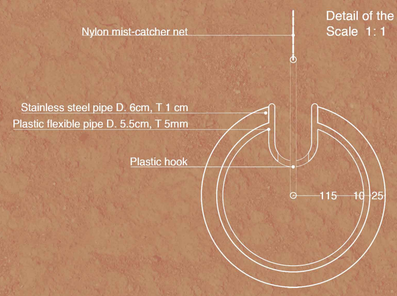
Constructive optimization

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.





Detail of the pipe
Scale 1: 5



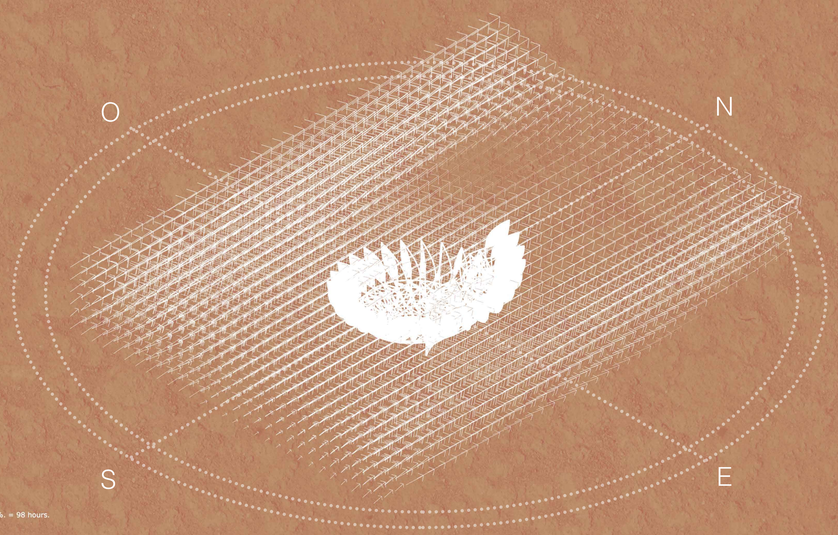
Detail of the pipe
Scale 1: 1

Collector system

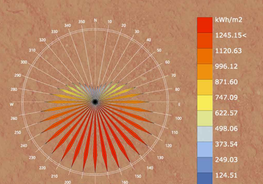
Mist condensed on the leafs gather inside the inclined pipe tha is internaly lined by a plastic membrane that leads every single drop of water to the collecting tank under the ground.

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.

Simulation runned in maximum speed
scenario 12 m/s constant speed

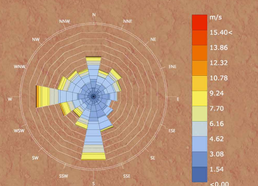


Total solar radiation



Total Radiation(kWh/m2)
Winnemucca_Muni_AP_NV_USA_1979
1 JAN 1:00 - 31 DEC 24:00

Wind speed and direction



Wind-Rose
Winnemucca Muni AP_NV_USA
1 JAN 1:00 - 31 DEC 24:00
Hourly Data: Wind Speed (m/s)
Calm for 7.43% of the time = 651 hours.
Each closed polyline shows frequency of 1.1% = 98 hours.

Wind simulations

Wind analysis 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.
The streams from the ocean are charged with a major percentage of humidity that can be trapped easily by the leaf sistem in the choosen configuration.

A huge amount of symulation has been done by a digital model using Blue CFD fluid dynamic symulator inside the ambience of Grasshopper model.
Even if the geometry of the pavillion seams to be prettty similar in every direction, the evolution of the steps defined a preferential orientation due to the variations on Z axis that affected the resistance to wind.