Folding laminar cover and water collector - Prototype

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Abstract

This research born as part of a efficient structural design and to address three different problems: the need to design a hedge that may adapt weather flexible spaces, the problematic to gather water in the coast of Perú due to the lack of it and finally that this options can be replicable and scalable along the world

In order to solve these problems, a laminar structure inspired in the origami, was selected for three main reasons: For its morpho-structural characteristic that generates great rigidity along the sheet, due to the direction of the forces through the laminar surface, and throughout the folding and unfolded process. Because of its adaptability and spatial flexibility, which allows it to be extended or compressed according to the needs of light, covered area, storage, etc. And by generating a surface capable of directing rainwater to collector stiles at specific points.

The coverage is modular, each module folded has the shape of an inverted hexagonal pyramid. The hexagonal module generates a honeycomb pattern because it is the most efficient way to cover a larger surface, as it protects from sun or rain, and captures the water redirecting it to an upright located in the central point of it. This structure may be manually fold or unfold in the first prototypes that have been created.

The material of the cover will be polypropylene, due to its different qualities: the impermeability, the lightness, the change of memory of the material, as well as the fatigue resistance to folding and unfolding. Additionally, it allows an easy manipulation to creates the components of the coverage. Regarding to the water stanchion will be made of PVC pipes for its impermeability and lightness.

References

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