Canopy Made Of Algae Creates Clean Air For Urban Areas

By Leah Gonzalez on July 2, 2014 in Design

Algaetecture uses micro-algae photosynthesis to produce the same amount of oxygen as four hectares of woodland.

The Urban Algae Canopy developed by architecture and urban design studio ecoLogicStudio is a bio-digital canopy that uses a combination of micro-algal cultures and real-time digital cultivation protocols to create a naturally formed urban structure that potentially serves as source of energy.

The bio-digital canopy, which is the first of its kind, uses algae to perform photosynthesis to absorb carbon dioxide and emit oxygen. The structure is built using a custom-designed four-layer ETFE cladding system and a frame built with CNC welding technology. The flow of energy, water, and carbon dioxide are controlled and regulated in real time and can adjust to the weather conditions and the movements of
Canopy Made Of Algae Creates Clean Air For Urban Areas

Once the structure is fully completed, it will be able to produce an amount of oxygen equivalent to that of four hectares of woodland, as well as up to 330 pounds of biomass per day, with about 60% consisting of natural vegetal proteins.

During daytime or when sunlight hits the canopy, the algae would grow and reduce the transparency of the structure to provide more shade inside. This means the transparency, shading, and color of the canopy depend on the micro-algae, the weather conditions, the visitors, as well as the digital controls of the system.
The bio-digital canopy is a part of ecoLogicStudio’s HORTUS series and is being created as a part of the EXPO Milan 2015 Future Food Project curated by Italy-based architectural practice Carlo Ratti Associati. The bio-digital canopy is being featured along with another prototype developed by Cesare Griffa, the Urban Algae Facade, which explores how vertical algae farms can be used as part of the skin or walls of a structure.

The design of the two projects are based on the properties of micro-algae organisms, which are considered ten times more efficient than trees or grass when it comes to photosynthesis. The Urban Algae Canopy and the Urban Algae Facade are prototypes that explore the use of micro-algae as an integrated architectural cladding and urban agriculture system that can potentially become a source of renewable energy and food in cities.
Canopy Made Of Algae Creates Clean Air For Urban Areas

http://www.psfk.com/2014/07/photosynthesis-algae-canopy.html#bIxmA

Carlo Ratti Associati // ecoLogicStudio

Source: Inhabitat