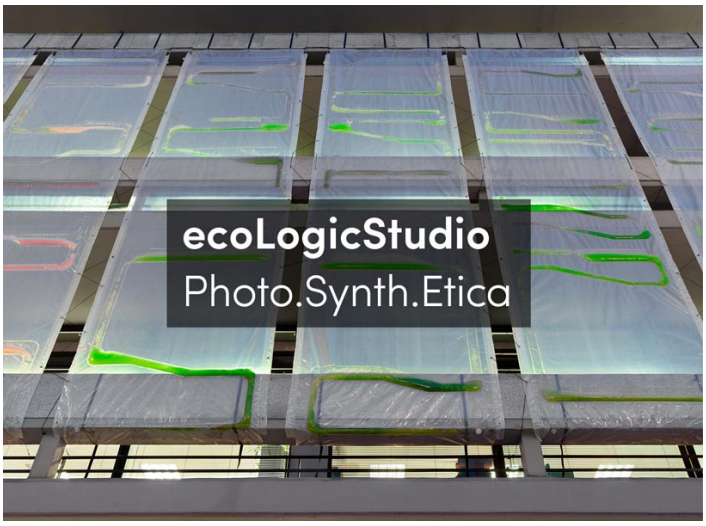

PHOTO.SYNTH.ETICA: A BIO-DIGITAL URBAN CURTAIN

Posted on August 13, 2019 by martabuges

Categories: Designing Matter, ecoLogicStudio, Energy and sustainability, No Density, Project

Tags: Architecture&climate, Biotech, Climate change, CO2 emissions, Designing Matter, Digital design, Dublin, Ecological researches, Extended Envelopes, Façade, Future cities, Global Awareness, Innovation, Ireland, Living system, New materials, Organic life, Project, Research, Smart city, urban

ISSN : 2575-5374

Photo.Synth.Etica is a large-scale installation designed in collaboration with Climate-KIC, the EU's most prominent climate innovation initiative, which aims to accelerate solutions to global climate change.

Conceived as an "urban curtain", Photo.Synth.Etica, presented in Dublin during the week of Climate Innovation Summit 2018, captures CO_2 from the atmosphere and stores it in real time: approximately one kilo of CO_2 per day, equivalent to the effect of 20 large trees.

Composed of 16 2x7metre modules, the unique curtain prototype envelopes the first and second floors of the main façade of the Printworks building at Dublin Castle. Each module functions as a

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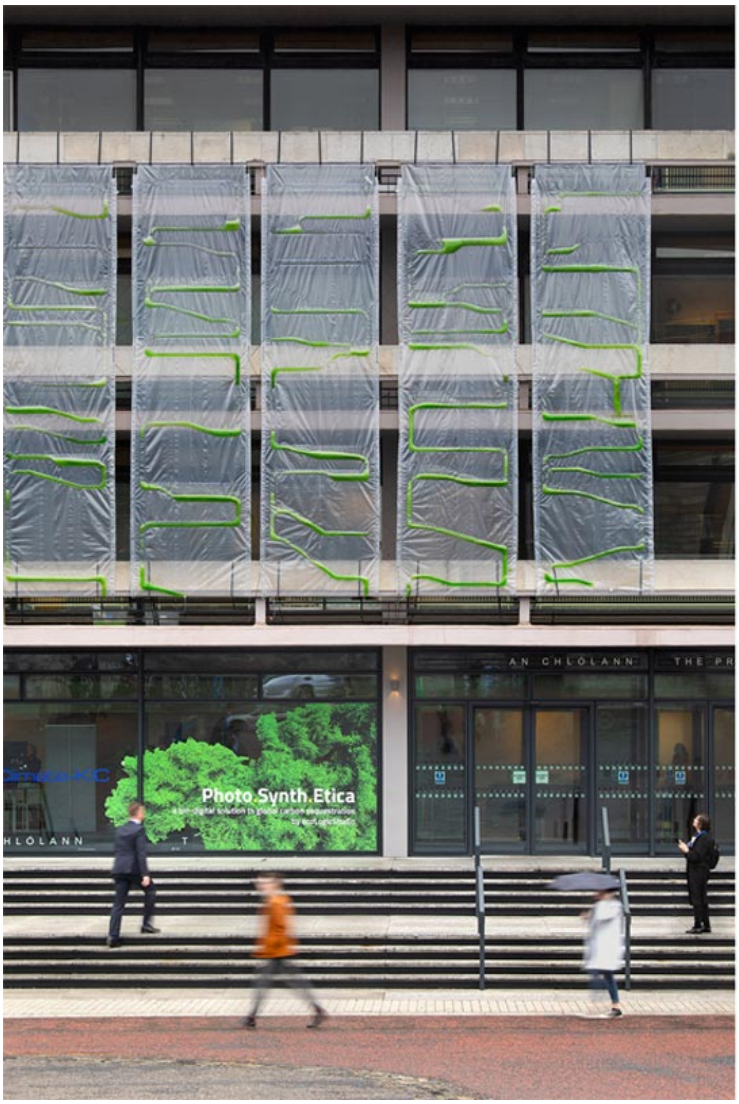
photobioreactor, a digitally designed and custom-made bioplastic container that utilizes daylight to feed the living micro-algal cultures and releases luminescent shades at night.

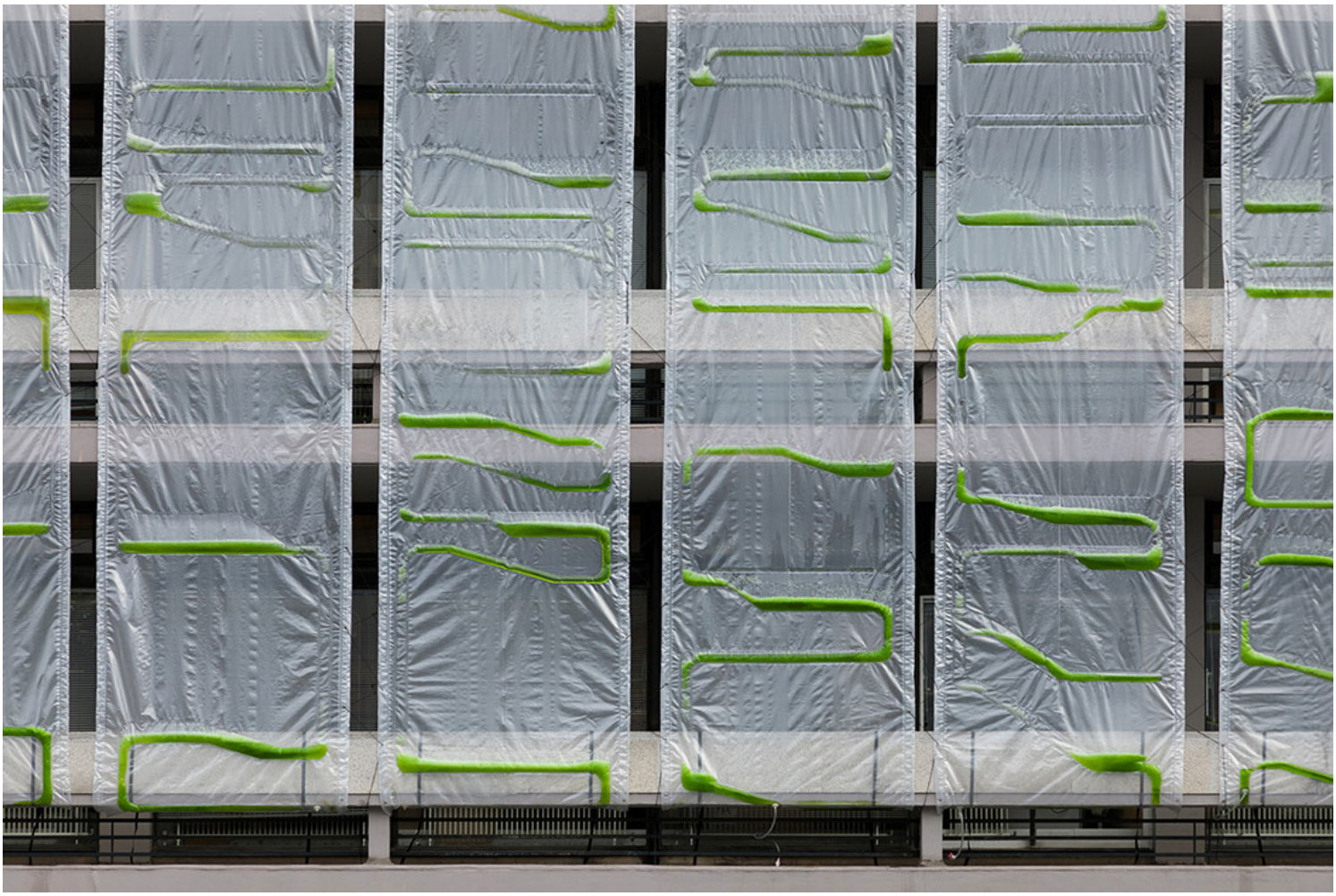


Unfiltered urban air is introduced at the bottom of the Photo.Synth.Etica façade and as air bubbles naturally rise through the watery medium within the bioplastic photobioreactors, they come into contact with voracious microbes. CO_2 molecules and air pollutants are captured and stored by the algae and grow into biomass. This can be harvested and employed in the production of bioplastic raw material, which constitutes the main building material of the photobioreactors. To culminate the

ISSN : 2575-5374

process, freshly photosynthesized oxygen is released at the top of each façade unit of Photo.Synth.Etica out into the urban microclimate.

Thanks to their serpentine design, the modules optimise the carbon sequestration process. The full curtain pattern is reminiscent of a large trading data chart, which embodies Climate-KIC's commitment to promoting new models to solve the global climate crisis.



Moreover, the Photo.Synth.Etica project seeks to symbolically embody a parallelism between the monetary carbon trading market and the transactions carried out by the molecules. As ecoLogicStudio's founders say: *"The message is one of spatial convergence and connectivity between the financial marketplace of cyberspace and the relative organic molecular transactions in the*

ISSN : 2575-5374

biosphere."

ISSN : 2575-5374

The innovative shading system could be integrated into existing and newly designed buildings. Smart cities, smart homes, autonomous vehicles, robotic factories, etc. dominate the current panorama of popular futuristic scenarios, but they all desperately need spatial and architectural re-framing to engender beneficial societal transitions.

Photo.Synth.Etica suggests that, in the Anthropocene age, a non-anthropocentric mode of reasoning, and deploying cutting-edge technologies based on digital and biological intelligence, could be at the core of urban design and stimulate our collective sensibility to recognise patterns of reasoning across disciplines, materialities and technological regimes.

ISSN : 2575-5374

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