



| Photo source Maja Wirkus

Innovation > Architecture & Design > Playground uses algae bioreactors to purify polluted air

PLAYGROUND USES ALGAE BIOREACTORS TO PURIFY POLLUTED AIR

  ARCHITECTURE & DESIGN

The playground runs off solar power and kinetic energy emitted from children's play

Spotted: London-based architecture and innovation ecoLogicStudio has designed an air-purifying playground in Warsaw that runs off algae biotechnology.

Warsaw is considered one of Europe's 50 most polluted cities, with nearly two-thirds of kindergartens thought to live in regions that are severely polluted. The AirBubble project was built to create a microclimate where children could play whilst breathing clean air.

EcoLogicStudio was founded in 2005 by Claudia Pasquero and Marco Polettowill with the aim of leveraging "systemic" design, a method according to the office, defined by "the combination and integration of systemic thinking, computational design, biotechnology and prototyping."

Structurally, timber pillars form a cylindrical design that is covered by an ethylene-tetrafluoroethylene copolymer membrane for insulation. Between each pillar, algae reactors are in place. A total of 52 glass bioreactors hold 520 litres of living green algae cultures which are able to filter 200 litres/minute of populated air, according to ICON. An inverted conical roof membrane further stimulates recirculation of air and natural ventilation to keep the play area clean.

The algae in the bioreactors essentially feed off polluting molecules and carbon dioxide and in return release clean oxygen into the microclimate. Energy is supplied by a combination of solar power and kinetic energy emitted from children bouncing and running as they play.

There is also an integrated AirBubble monitoring system that measures urban air pollution in real-time. Early data collected in May 2021 suggested that AirBubble was capable of absorbing 97 per

cent of pollutant nitrogen in the air and 75 per cent of the particulate matter.

According to ICON, AirBubble will serve as an 'urban laboratory' over the next few months, studying the role of biotechnology in tackling air pollution and in turn mitigating its effect on children's health.

Written By: Katrina Lane

21st July 2021

Email: ecologicstudio@ecologicstudio.com

Website: ecologicstudio.com

Takeaway:

AirBubble sounds like something found in dystopian society straight out of a George Orwell book. However, sadly this is a much needed reality. **According to the World Health Organization**, 93 percent of children in the world live in what WHO considered harmful levels of air pollution, with 630 million of them being under 5 years. Until pollution levels are tacked in a sustainable manner, AairBubble will serve as a striking reminder of this impending reality.