



AIRBUBBLE: A PURIFIED MICROCLIMATE

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AirBubble: A Purified Microclimate

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AirBubble creates a purified microclimate for children to play in, a true bubble of clean air in the center of Warsaw (Poland). The project is located within the public green space outside of the Copernicus Science Centre (Centrum Nauki Kopernik), a site which will also host a dedicated exhibition illustrating the design innovation behind the invention of AirBubble. The playground integrates the Photo.Synthetica technology for the advanced integration of photosynthesis in the built environment.



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AirBubble invents a new architectural typology. It incorporates a cylindrical timber structure wrapped in an ETFE membrane protecting 52 glass algae reactors. This creates a real urban algae greenhouse. The space is equipped with ropes, foot pumps and bouncy spheres, and can function as both playground and outdoor classroom. The white bubbling noise of the algae gardening system masks the surrounding urban noise to provide a calming atmosphere in which to play and interact.



The AirBubble monitoring system integrates urban air pollution sensors and is connected to a data processing platform capable of comparing measurements in real time and of highlighting the Air Quality Index for six core pollutants: fine particulate PM_{2.5} and PM₁₀, ground-level ozone (O₃), nitrogen dioxide (NO₂), sulphur dioxide (SO₂) and carbon monoxide (CO). AirBubble is capable of

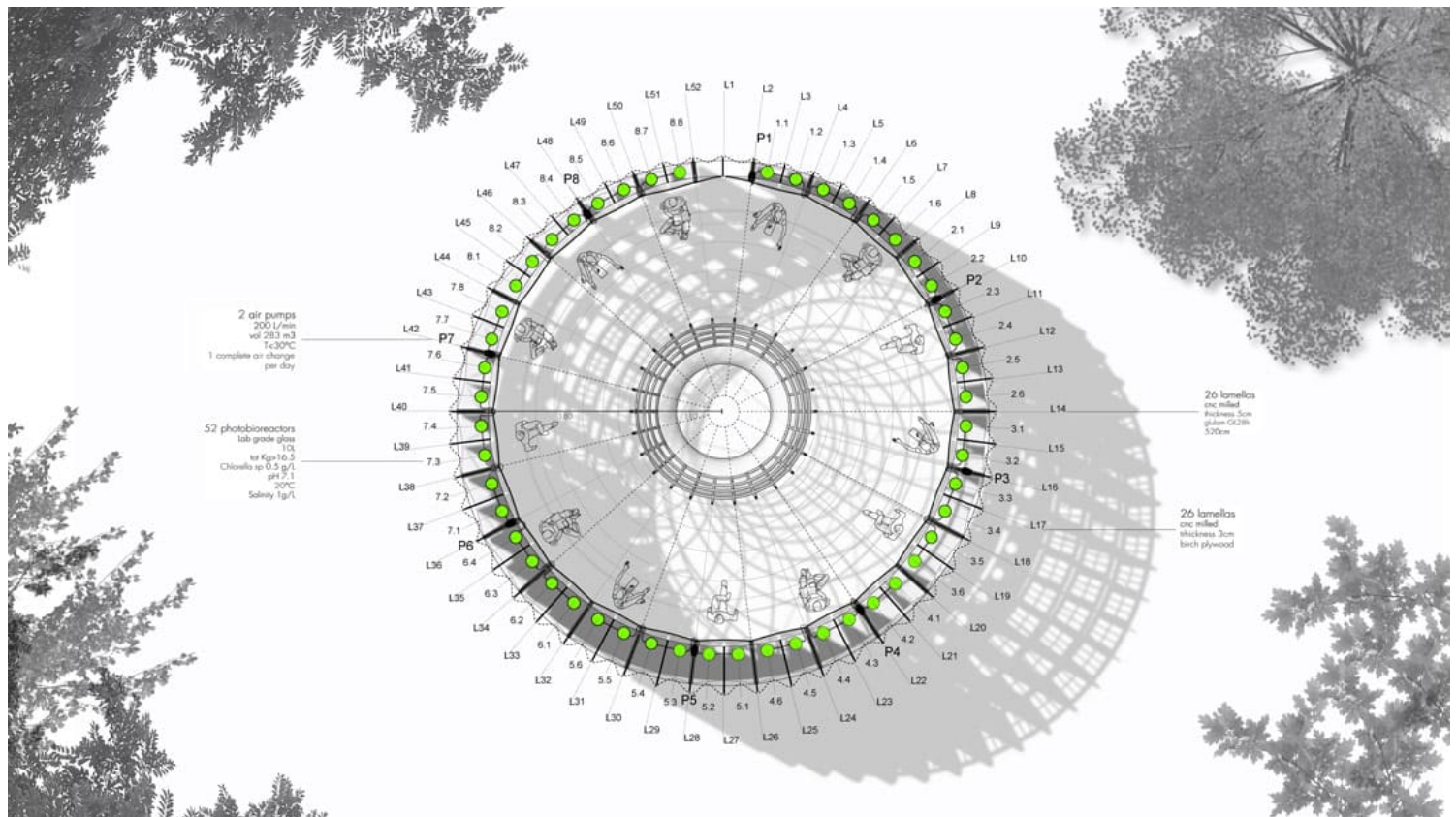
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absorbing 97% of the nitrogen and 75% of the particulate matter in the air.

Early data collected in May 2021 shows concentrations of PM_{2.5} within the playground have fallen well within the recommended WHO limits (green zone, AQI below 20). The peak reduction rate is an impressive 83%. This figure has been calculated by comparing readings from a pollution sensor located outside AirBubble with real-time data feeds from a monitoring device placed inside. The monitoring phase will continue throughout the summer and into the autumn to verify these promising achievements over a longer period of time, under different climatic conditions and patterns of use.



The purifying process is powered by solar energy and children's playfulness. Kids can interact by jumping on four water foot pumps positioned on the ground while balancing on the bouncy bubbles and the internal rope system.

"This playground needs two sources of power: solar energy and kids' instinctive drive to explore and

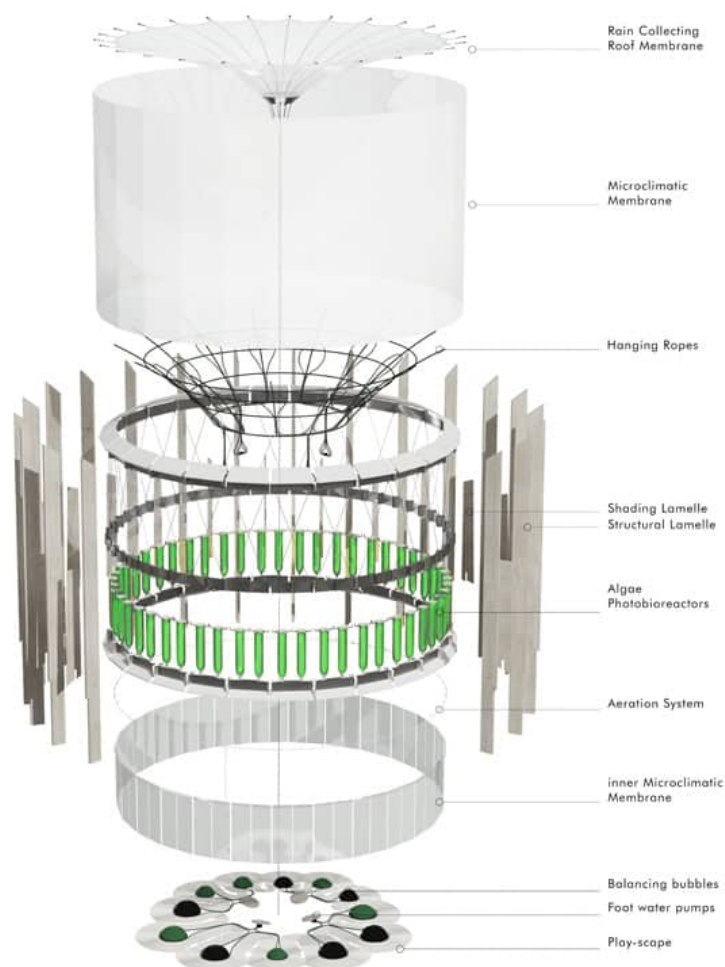
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to play. These constitute the inexhaustible and renewable fuels of the AirBubble that can be obtained effortlessly. The AirBubble is the trigger of a process that can only grow and multiply its beneficial effects towards future generations. It's all in our hands – we are responsible for our health and climate," explains Claudia Pasquero, co-founder of ecoLogicStudio.

To mark the inauguration of the first ever AirBubble, ecoLogicStudio has designed an interactive multimedia exhibition at the Copernicus Science Center (Centrum Nauki Kopernik), illustrating the architectural innovation and biotechnology at the heart of the playground system.



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