

To some people, a lichen-covered facade is an evocative sign of history; to others, it's a mess. But to a team at the Universitat Politècnica de Catalunya, it's a way of regulating buildings' temperature and improving air quality.

The researchers have developed and patented a type of biological concrete that supports and accelerates the growth of microalgae, fungi, lichens and mosses. It starts looking good within a year, they say, and evolves over time, changing color according to the time of year and the predominant families of organisms.

The concrete consists of a structural layer, with three others on top. First, a waterproof layer protects the structural layer from possible water damage.

Next, the biological layer supports colonisation and allows water to accumulate inside it, giving a base for the organisms to attach to; and finally there's a discontinuous coating layer with a reverse waterproofing function that redirects the flow of water to where it's needed.

Thanks to its biological coating, the new concrete absorbs atmospheric CO2. At the same time, it has the capacity to capture solar radiation, making it possible to regulate temperatures inside the building.

Unlike current systems for 'vertical gardens', the new material supports biological growth on its own surface, meaning there's no need for complex supporting structures, watering systems and the like.

"The biological concrete acts not only as an insulating material and a thermal regulator, but also as an ornamental alternative," says the team. "The idea is to create a patina in the form of a biological covering or a living painting."

Source: www.tgdaily.com