

# First algae powered building goes up in Hamburg

April 12 2013, by Bob Yirka

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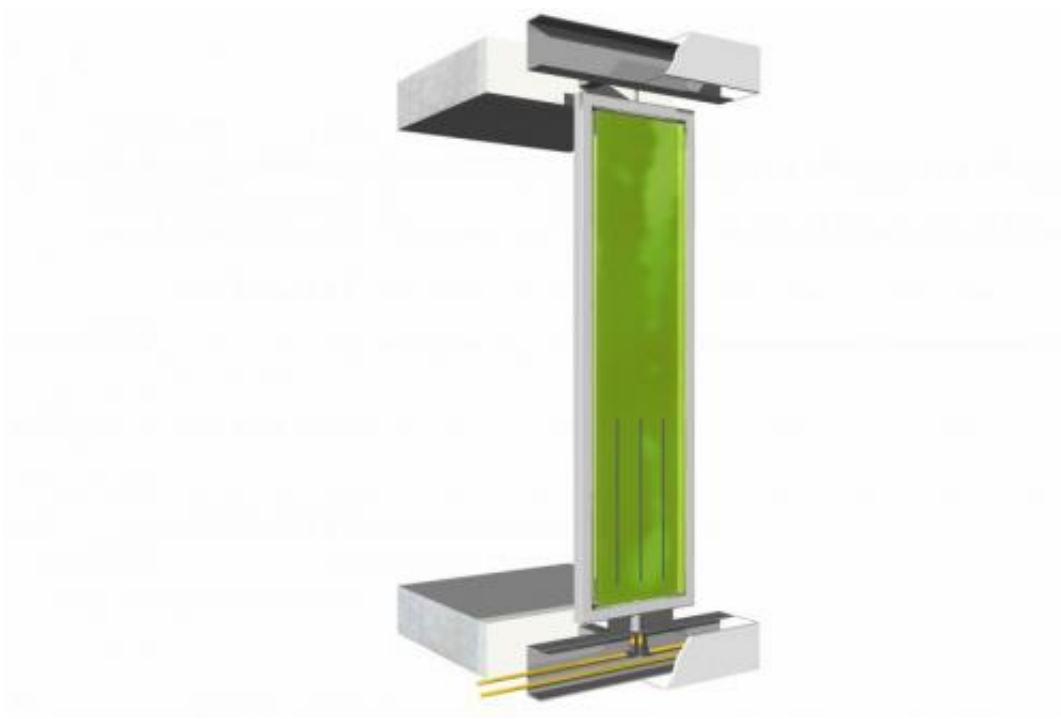
(Phys.org) —A 15-unit apartment building has been constructed in the German city of Hamburg that has 129 algae filled louvered tanks hanging over the exterior of the south-east and south-west sides of the

building—making it the first in the world to be powered exclusively by algae. Designed by Arup, SSC Strategic Science Consultants and Splitterwerk Architects, and named the Bio Intelligent Quotient (BIQ) House, the building demonstrates the ability to use algae as a way to heat and cool large buildings.

To make use of the algae, which the team retrieved from the nearby [Elbe river](#), it was put into large thin rectangular clear cases. Inside, the algae live in a water solution and are provided nutrients and carbon dioxide by an automated system. Each tank was then affixed to the outside walls of the building onto scaffolding that allows for turning the tanks towards the sun—similar to technology used for [solar collectors](#).



As the algae grows—mostly in the summer—it provides more shade for the building, helping to keep it cool (and serves as a sound buffer as well). Excess heat that builds up in the water in the tanks is transferred to [saline water](#) tanks underneath the building for use later. When the amount of [algae growth](#) in the tanks reach a certain point, some is harvested and taken to a processing facility inside the building. There the biomass is converted to biogas which can be burned to provide heat in the winter. Thus, the building makes use of both solar thermal and [geothermal energy](#) allowing it to be heated and cooled without using any fossil fuels.



The design and construction of the BIQ has taken three years and has cost approximately €5 million, all funded by Internationale

Bauausstellung (IBA) as part of the ongoing International Building Exhibition – 2013. The BIQ House is one of 16 projects undertaken by the group, with the goal of proving that cost effective ways of making bio-friendly buildings are available today. To highlight the building, the team has painted its exterior green and has added a giant cartoon-like bubble on one side with the word "Photosynthesis?" in it.



The building is to serve as a test case and will be studied by various architects and engineers from around the world to determine if the design is feasible and if so, to perhaps serve as a model when erecting buildings in other cities.



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