BIZCOMMUNITY

Advances in green building changing construction industry

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In light of World Environment Day, and with carbon dioxide emissions continuing to be a major environmental concern, we decided to take a look at some of the most interesting advances in green building which might just change the construction industry for the better.

Recycled paper bricks

University of Pretoria student, Elijah Djan was only 11 years old when he invented Nubrix, a brick made from waste paper. With only about 5% of South African households recycling their waste paper, and the other 95% sending theirs to the already overflowing landfills, the environmental benefits of this product are clear.

Djan is now turning Nubrix into a business. While more durability tests need to be done, he has subjected his waste-paper bricks to rain and compression tests, and built a Nubrix wall that's still standing a year later. The hope is that in the near future there will be a very real drive towards sustainable innovation from both government and the building sector.

Bird-friendly glass

GlasPro UV glass makes man-made structures safer for birds. About two-thirds of South Africa is urbanised, and a wide variety of bird species are attempting to survive in these unnatural and dangerous new habitats. Reflective, transparent materials such as windows cause hazardous collisions that kill millions of birds every year.

GlasPro has come up with a simple, yet effective innovation to keep them safe: bird-friendly glass coated with UV liquid that makes it visible to birds, which will substantially reduce the number of injured birds in urban areas. Human eyes cannot detect the UV coating, so it also does not reduce visibility from our perspective.

Buildings made of wood

Constructing any conventional home or commercial building requires tonnes of aluminium, steel, clay bricks, and cement.

There are many ways to marginally reduce the carbon footprint of these components but their manufacture has always been less than sustainable.

Architects in the United States are now exploring a new kind of structure built entirely from timber. Wood is by no means a new building material, but new innovations have once again made it relevant to modern building.

Researchers are combining new super-strong plywood, with precision digital CNC manufacturing processes to build timber structures that will rival conventional brick-and-mortar buildings very soon. While the costs of buildings like this are still high, proof of the concept already exists. An 18-story dormitory in Vancouver called Brock Commons, which finished construction late in last year, is the tallest timber structure in the world.

Modern twist on old practices

Researchers in Sweden have devised a way to adapt the so-called Trombe wall, a solar building design from the 19th century. This new take on an old idea can help to not only passively heat but also cool buildings, without increasing carbon emissions.

A Trombe wall is a passive solar building design that is built on the winter sun side of a building with a glass external layer and a high heat capacity internal layer separated by a layer of air. This serves to heat the entire building in cold months.

The new design, unveiled by researchers earlier this year, uses renewable wind and solar energy to generate both cooling and heating in buildings. The adjustments have also eliminated the original Trombe wall problem with overheating, which in turn has drastically reduced the total energy consumption and carbon emissions.

Constructing these walls is also sustainable, with prototypes already having been built with stone, wood and even wool. Researchers have hailed the new design of Trombe wall, as one of the best ways to meet the increasing energy demands of modern homes and commercial buildings without increasing carbon emissions.

Beyond installing state-of-the-art photovoltaic, water heating and lighting solutions, sustainable building practices offer some of the best ways to bring new structures ever closer to being carbon neutral.

ABOUT THE AUTHOR

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