Mushroom-inspired campus clinches top architecture prize for students

Trio of students from Singapore, Vietnam wins over judges with integrated design techniques and sensitivity to nature

The winning entry for this year's International Tropical Architecture Design Competition was the “Mushroom Community Campus” by students from the National University of Singapore and the University of Melbourne. Image: Eco-Business

By Elga Reyes and Jessica Cheam Monday 16 September 2013

Inspired by nature’s mushrooms, a team of students from the National University of Singapore and University of Melbourne designed an eco-campus that relied heavily on natural resources such as fresh air, daylight and rainwater to minimize its use of energy.

Guided by biophilic design, which promotes the bond between people and nature, the students created a campus to be located in Sapa, Vietnam, that took into account its native conditions by using local construction techniques such as ramp earth and rice straw walls to construct the campus buildings.

The structures, which integrated innovative systems such as earth-air tunnels to reduce the need for air-conditioning and rainwater harvesting to recycle water, are built like “a cluster of mushrooms arising from the soil, blending into its surroundings”.

For its sensitivity to surroundings and thoughtful use of natural resources, the team clinched the top prize in this year’s International Tropical Architecture Design Competition 2013 for Institutes of Higher Learning held alongside the annual International Green Building Conference in Singapore.

The winning entry, the “Mushroom Community Campus”, is a joint submission by Pham Huu Loc and Ng Pui Shan from the National University of Singapore and

Hoang Van Anh from the University of Melbourne. The students are from Singapore and Vietnam.

Vietnamese team leader Pham Huu Loc, 28, told Eco-Business that the team was delighted to have won the top prize.

"We chose Sapa as the location because it's a popular destination that has so much potential for the tourism and education sectors… we wanted to propose a new campus as an extension to an existing school that would improve the quality of life of the people and use sustainable design as a way to raise public awareness on environment and sustainable development issues," he said.

The campus is a vocational and training and research centre focusing in environment, agriculture, forestry, education and sustainability management. It also features other eco-friendly components such as photovoltaic panels and solar water heating which enables the campus to be almost completely self-sustainable and reduce its carbon footprint by more than 70 per cent.

"The campus has an objective to teach young people about living sustainability, to encourage local people to protect environment and enhance living quality," said Pham.

The team, which won a S$3,000 cash prize, was given their award at a ceremony held on the sidelines of the conference at the Marina Bay Sands Convention Centre.

In its third year, the competition is organised by Singapore's Building and Construction Authority, the Singapore Institute of Architects and the Singapore Green Building Council and supported by main sponsor Surbana International Consultants and supporting sponsor ADDP Architectures.

The competition, themed "Live, Study, Play – Our Green Campus", is open to architecture students from institutes of higher learning around the world and focuses on tropical green architecture and sustainable building design solutions.

Owen Wee, vice president (architecture) at Surbana and one of the competition judges, told Eco-Business that judges were "looking for holistic solutions and ideas. Solutions that were not run of the mill."

In deciding the winners, Wee said he looked at "how the design relates to the site context, as well as energy solutions it provides, how its design changes lifestyles and habits and not in the least, a beautiful design that captures the imagination."

The winning team embraced integrated design - also known as "whole building design" to look at holistic ways of addressing the needs of the campus, Wee noted. He said this is a key design process for Surbana, which analyses the context and surroundings of a building to properly conceptualise it. For example, the students considered what mechanical and electrical (M&S) systems the campus needed and included it in their design - something that distinguished it from the rest of the competition."

The criteria judges used to score the projects include design concept and creativity, relevance to tropical context, design for behavioural change and social capital and reference to green rating systems.

BCA's group director for Technology Development, Tan Tian Chong, also one of the judges, noted that because of rapid population growth and climate change, Asia faces looming urban and environmental challenges.

"With this competition, we want to encourage young architects and designers to start thinking and designing from a sustainable standpoint. We are pleased with the entries received and impressed with the overall quality of thinking and design shown," he said.

Wee agreed, noting the impressive quality of this year's 19 submissions from countries including China, India, Indonesia, and Vietnam.

While the student entries are not indicative of the standard of sustainable architecture education in Asia, sustainability is becoming more visible in the architecture curricula, he noted.

Surbana is working with the BCA and SGBC to develop this further, by creating a curriculum for secondary students. He said, "Surbana believes that we need to create a whole new generation of consumers who understand what is a good sustainable building and the benefits that come with living in one. This is in the hope that as consumers demand more good sustainable buildings, developers will feel the need to meet expectations."

This is also why the firm felt that the competition was a worthy cause.

"The next generation of designers are key to the built environment of the future," he said, adding that through this competition, students at the tertiary level will be encouraged "to challenge the status quo".

From the pool, the top three prizes and two merit awards were given out. Winning teams were also offered the chance to intern at Surbana.

The building consultancy firm, which gained its expertise from decades of building Singapore's public homes, offers a full suite of building consultancy solutions, including architecture, engineering, urban planning, building technology and city management.

The BCA, SGBC and Surbana are also conducting a Green School Initiative to build on the competition's climate change awareness for the youth. Instead of the university level, this will concentrate on upper primary and secondary schools to teach younger students how to appreciate good sustainable design and to increase the dialogue on sustainability through talks in various schools.

"We want to nurture the next generation as we think they are the hope for the green movement," said Wee.

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Owen Wee, Surbana VP (architecture)

List of winning projects:

First prize of S$3,000: Mushroom Community Campus

National University of Singapore and University of Melbourne

2nd prize of S$2,000: Our Green Campus

National Institute of Technology, Tiruchirappalli, India

3rd prize of S$1,000: Cipadung Green School

Parahyangan Catholic University, Indonesia

Merit Awards of S$500:

Green Campus on the Wetlands
Ho Chi Minh City University of Architecture, Vietnam

Green Community – Green Shortcut
Parahyangan Catholic University, Indonesia

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