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Designs for sustainability

- P. Pradeep

Students of IIT Bombay are working towardsan energy-efficient housing solution

Team Shunya in Versailles, France.— Photo: Special Arrangement

A house near the 'Y point gate' at IIT Bombay is teeming with students at 2 a.m. There are around 43 of them in the three rooms of the house who appear to be involved in some serious discussions. Wondering what the students are up to so late into the night?

The house is the office and workspace of Team Shunya — the only team from India to be selected for the Solar Decathlon China 2017, an international competition being jointly held by China National Energy Administration, the Department of Energy, U.S., and the China Association for Overseas Industry Development.

Solar Decathlon challenges collegiate teams to design, build and operate the most attractive, effective and energy-efficient solar-powered house. The event comprises 10 different competitions in which the houses are evaluated based on their design and performance. The winner of the competition is the team that offers the best solution by blending the following concepts into one unit: affordability, consumer appeal and design excellence with optimal energy production and efficiency.

The challenge for the 2017 competition is to build a double storey (ground floor plus first floor) solar-powered house. It must be equipped with the necessary household appliances such as television, refrigerator, cooktop, dishwasher, washing machine, computer, and so on. All the appliances must be powered by solar energy.

For Team Shunya, the motivation is more than merely participating in a competition; its mission is to provide an energy-efficient solution to meet the expanding demand and need for urban housing in India. Why energy-efficient? So that the country can accomplish two major objectives — sustainable development and inclusive growth.

The aim of the project is to come up with a sustainable energy-efficient housing solution which would help in sustainable growth of the country," says Akhil Manepalli, team leader.

Team Shunya, a 70-member strong team, includes faculty and students from different departments. The team is divided into sub-teams with their share of responsibilities. The focus is on building a house that can be put together quickly, provide comfort and security, is intelligent, energy-efficient and cost-efficient — all this at zero electricity consumption per year.

The end result of this project is expected to be a product that would introduce a new era of housing, and, probably, a new industrial sector as well.

"The smart, net energy positive house would be apt for upcoming smart cities such as Amaravati, on which our problem statement is modelled. The production would be done indigenously, with most of the required raw material sourced from within the country. The energy consumption records of each household would be available on the Internet, improving transparency and ease of access," explains Ravi Vaidya, one of the team leaders.

The writer is project engineer, Team Shunya,

IIT Bombay. (www.teamshunya.in)

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