

New York Institute of Technology

The New York Institute of Technology (NYIT) students call their design "OPEN House." If you close your eyes, you can imagine this house on a beach with the entire south wall open to the ocean, breezes, and natural light. The design also expresses the team's ideal home: a home with influence extending beyond its physical walls ... a home that is one with its community and nature. A white ceiling helps to maximize natural light, and a contained pond on the roof reflects light back into the open space, which further maximizes daylight and reduces the need for electrical lighting.

What's Different?

- The open space concept allows inhabitants to freely arrange and manipulate their environment and furniture element; bound by NanaWalls on the south wall, the house provides natural sunlight and virtual connections of occupants to nature.
- The automated building controls include a fingerprint scanner.
- It could be said that "What's Different" is that the NYIT team decided not to replicate its hydrogen-powered system that drew so much interest in the 2005 Solar Decathlon. Hydrogen electrolysis and fuel cell technologies employed in 2005 were less efficient, more complex from an engineering perspective, and significantly more expensive than competitors' battery systems. After careful analysis, the 2007 team concluded that hydrogen would significantly challenge its ability to compete in the various objective and subjective Decathlon contests.
- The 2007 team is committed to demonstrating a solar home that is cost-effective today and ready for mass adoption because it sends the right image to the public: solar is here today! The team is proud to employ commercially available solar technology, energy-efficient technologies, and sustainable architectural design principles.

Architecture, Interior Comfort

- OPEN House defines a home by its connection between the environment and technology (open space equals 480 square feet; core space equals 270 square feet). Three modular steel units—open space, manifold, and roof—all convene along an east-west axis, which allows for easier separation and reassembly on the National Mall.
- OPEN House features a 40 foot by 12 foot adjustable and open floor plan that creates flexible zones to accommodate multiple functions of the open space. Inhabitants can freely arrange and manipulate their environment and furniture element.
- OPEN House's 270-square-foot manifold (core) contains the essentials for living, including the kitchen, bathroom, storage, and mechanical/electrical/solar equipment.
- Environmentally-friendly and energy-efficient structural insulated panels and polyurethane closed-cell spray foam insulation are used to form a tight air seal barrier in the roof and floors, therefore eliminating air leaks, preserving energy, and improving air quality.
- Smart House technology provides the dweller with additional flexibility, convenience, and comfort. It allows for efficient control and the scheduling or maintenance of household functions, such as air temperature, lighting, and appliances.
- CaesarStone is used for the kitchen countertops: CaesarStone is 93% crushed quartz, one of nature's hardest minerals. The quartz is combined with high-quality polymer resins and pigments and then compacted under intense vibration, vacuum, and pressure into dense, non-porous slabs.
- The living area features cherry wood plank flooring; this sustainable hardwood is easy to replenish.

Heating and Cooling Systems

- The home's state-of-the-art HVAC system is based on the geothermal principle—a rooftop pool will replicate the heating and cooling properties of the Earth for demonstration. The HVAC system will also incorporate solar thermal technology. This innovative HVAC system is cost effective and viable.

Lighting (including Daylighting)

- Solar-passive design: The south-side glass NanaWalls (5 doors and 2 windows) visually connect occupants to the outside world and fill the living space with natural sunlight and heat.

- The design means less energy is spent on lighting and heating the interior of the home.
- In warm-weather months, the overhang keeps the living area from being overheated by sun.
- A customized lighting system includes LED bulbs and T5 electronically ballasted fluorescent fixtures, compact fluorescent fixtures.

Appliances

- A Diva Induction cooktop is used in the kitchen. This cooks faster because the technology is direct and much more efficient and will therefore heat the food much faster using less energy.
- ENERGY STAR appliances include a dishwasher and Sub-Zero refrigerator.

PV and Solar Thermal

- The home is powered by: photovoltaic modules (34); a battery energy storage system (24 batteries); an evacuated tube hot water system; a building-integrated PV overhang; and an integrated thermal storage system.

Communications

- The team is committed to demonstrating a solar-powered home that is cost effective and ready for mass adoption. The team wants to educate the public about the aesthetic and ecological benefits of solar energy and show that OPEN House can be viably developed.
- To encourage public support and sponsorship, the team appeared at conventions and sustainable conferences and invited green-friendly businesses to attend team presentations.
- NYIT has received notable press coverage for OPEN House, with features appearing in *The New York Times*, *Chicago Tribune*, *Newsday*, e-Oculus, Treehugger.com, various trade magazines, as well as on several broadcast outlets including *ABC World News*, WCBS-TV, Fox 5, CW 11, WCBS-AM 880, and WINS-AM 1010.

Budget

- The projected budget of OPEN House is \$400,000, which includes materials, construction equipment, transportation expenses for the house and students, and hotel accommodations.

Future Plans

- NYIT's 2007 Solar Decathlon team is exploring a variety of options for OPEN House.

Team Information

Web site: www.nyit.edu/solar

Contact: Thomas Rochon, tra@thomasrochon.com

Media Contact: Jason Selss jsselss@nyit.edu; 516.852.1864