



# RE:FOCUSed on the FUTURE

The average temperature in Madrid in June is 81 degrees, so the Florida Cracker-inspired house UF students and faculty designed and built for the Solar Decathlon Europe competition in the Spanish capital last summer was a popular place.

Thousands of visitors to the Villa Solar on the mall in front of Spain's Royal Palace flocked to UF's Project RE:FOCUS house to get relief from the unrelenting heat in the breezeway or "dog trot" that is one of the defining elements of Cracker architecture.

Tourists and other teams' members found the home appealing and comfortable, and the home's livability became well-known. Chosen by popular vote on the Internet as the "Fan Favorite" home, it became a hang-out spot for members of other teams, the natural ventilation through the breezeway being one of the few cool places in Madrid.

"It was extremely gratifying to hear the comments from the Solar Decathlon Europe visitors, who celebrated the livability — the comfort and home-like atmosphere — of our house," says Associate Professor Maruja Torres-Antonini, who led the design of the home's interior. "This is what good interior architecture is about: understanding human needs and then creating the most supportive and uplifting environments that satisfy those needs."



UF's Entry In The  
Solar Decathlon Europe  
Teaches Everyone About  
Sustainable Housing

By KATHRYN WATSON

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— DERECK WINNING

Project RE:FOCUS was the culmination of more than two years of research and construction on a 21st-century Florida Cracker house for the international solar power and sustainable building competition. More than 125 UF students and seven faculty members participated in the project, which began when Robert Ries, associate professor of building construction, arrived at UF in 2007.

“Looking at the types of programs and skills that were in the college, I thought it would be an ideal project,” Ries says.

Teams from 17 universities around the world competed in 10 categories ranging from architectural design to communications and social awareness. UF and Virginia Tech were the only U.S. universities to make the finals.

Given 100,000 euro by the competition to start the project, teams were challenged to create self-sufficient homes that were architecturally provocative, functional and sustainable.

The design process commenced with a series of intense design sessions called charrettes, where students split into groups to address the design prompt, then create dialogue by presenting each group’s idea to the whole.

“It wasn’t about what we were going to do or how it would look, but rather researching where we might be able to start from,” says School of Architecture Associate Professor Mark McGlothlin.

It was during a charrette in 2008 that the inspiration for a modern take on the Florida Cracker house first emerged. The sensibilities offered by the design, such as natural, modular design and porous skin, allowed for passive ways to reduce the amount of energy needed to live in the house.

The selection of a modern take on Florida Cracker design helped align Project RE:FOCUS with the identity of Florida overall, including the state’s climate, landscape and history.

In keeping with the sustainability ethic of the competition, Project RE:FOCUS used salvaged materials from a 140-year-old house in Micanopy, Fla., in their building.

In exchange for salvaged materials, the team helped owner Tom Smith deconstruct the McCredie house near Micanopy, Fla.

“We were impressed with their design and their dedication, and we wanted to help further their efforts in this competition,” says Smith, a UF architecture senior lecturer. “Including recycled materials in construction is in the spirit of the competition.”

Smith and his wife, Edith Williams, purchased the property in 2008, but ultimately determined it could not be saved. Instead of tearing it down like many suggested, Smith and Williams chose to deconstruct the house by hand and salvage what they could. They carefully preserved the house’s heart pine flooring; wavy handmade glass; fireplace mantels; and 2-by-4, 2-by-8 and 5-by-8 inch beams.

The team reused the flooring and lath recovered from the McCredie house in the Solar Decathlon house.

“It was a case of perfect timing: the house was coming down, and the UF Solar Decathlon team volunteered to help with the process in exchange for materials for their competition project,” Smith says.

During spring 2009, an architecture studio course of 11 students, graduate and undergraduate, collaborated with team members in building construction and marketing to finalize most of the design decisions.

Challenges such as availability of funds and products, differences between disciplines and the logistics of a project composed of volunteers pushed the team to its limits.

“The process was neither speedy nor linear,” says Torres-Antonini, yet the different participants — students from architecture, interior design, building construction and engineering — found ways to compromise and slowly craft a shared vision for the house.”

Project RE:FOCUS was the first time most of the students would see a project through from design to completion, and they gained significant experience dealing with logistical issues and collaborative difficulties that could not be recreated in a classroom.

“Many students had the opportunity to work on a project all the way through design and construction in their



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— KEVIN PRIEST

undergraduate or graduate education,” Ries says. “That gives them a head start on their professional careers and may give them an advantage in a difficult job market.”

Dereck Winning, student leader for the UF team and a doctoral student in the College of Design, Construction and Planning, says: “While the competition is about producing energy to turn on a light switch, it’s the how and the who I’ll take with me. It’s about who we’ve met, and how we’ve overcome obstacles together. This is what will sustain a global society.”

One of the biggest obstacles was how to design and build a house in Gainesville, dismantle it, then reconstruct it in Madrid. The solution was to create the frame from six identical pieces composed of steel and structural insulated panels. Reassembly of the frame in Madrid took less time and didn’t require as much on-site construction.

The home consisted of two rooms, a sleeping area and a living area. Connecting the two modules was an open-air breezeway that provided natural ventilation throughout. Externally, a large deck circled the building, providing plenty of outdoor space.

Along the north and south facades, bi-folding screens of recycled wood treated for weather resistance through an environmentally friendly process served the dual purpose of providing privacy when down and shading the deck when up.

On the south facade, the team mounted 12 Solyndra panels of cylindrical photovoltaic collectors vertically. Although they are designed to be mounted horizontally, the vertical mounting, coupled with a highly reflective exterior paneling

surface, maximized energy production. In addition, 54 Sun-Power flat panels were mounted on the roof, providing additional power and creating shade over the home’s breezeway and roof. The rules limited solar power to 15 kilowatts (kW), and when the design was complete, they ended with a total of 14.6kW on the house.

The combination of the solar energy systems and the energy-efficient design and operation allowed UF’s house to produce nearly three times more energy than it needed for daily use. This resulted in a second-place finish in the competition’s electrical energy balance category, which measured the amount of energy produced versus consumed.

Kevin Priest, a building construction doctoral student who was the team’s energy modeler, used simulation software to show the designers the effect different design choices had on the energy consumption.

“They would design something, then we would plug it in and it would say, ‘No, you have too much glass’ or ‘the walls aren’t thick enough,’” Priest says. “At first they didn’t want to hear that the energy consumption of the building was going to dictate the design, but we all sat down and decided what was most important in this house, and the answer was design and solar production versus energy balance of the house.”

Another goal the team had for the house was that all its parts serve more than one purpose.

“For example, the roof canopy and PV on the south facade shaded the house, so the roof was protected from direct sunlight, which kept heat out of the house for comfort conditions,” Priest says.

It wasn’t an easy process for anyone who was involved, but Priest believes it was worth the struggle — especially when the results came back.

“What made it worth it going through all the headaches and having an iron fist about what the house could look like was the second-place trophy in energy,” he says.

On the interior, the home used open, visually continuous spaces to keep its occupants from feeling constrained. Natural separators such as furniture, storage structures and acoustic panels defined kitchen, dining and living sections.

Project RE:FOCUS finished eighth out of 17 teams in the competition, but won the Communications and Social Awareness Award.





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2. Fifty-four SunPower flat panels were mounted on the roof, providing additional power and creating shade over the home's breezeway and roof.

For this category, public relations, architecture, interior design and engineering students and faculty collaborated to create public awareness and education about the benefits of solar energy, energy-efficient buildings, sustainable construction and the Solar Decathlon Europe competition overall. A jury of communications specialists evaluated the teams' work, which included planning and strategy, branding, media placements, team website, guided house tour and documentary video and architectural model.

Deanna Pelfrey, a lecturer in the Department of Public Relations and an advisor on the project, says that after implementing a grassroots campaign in Gainesville, the UF public relations team worked in Spain to reach diverse Decathlon audiences.

"Project RE:FOCUS boasted a strong visual identity on-site and secured prominent international media coverage," Pelfrey says. "As a result, this team achieved significant success in educating local, national and international audiences to the benefits of solar energy and in extending a universal call to action that aligned with the competition's mission."

Juror Jane Kolleeny, managing editor of GreenSource: The Magazine of Sustainable Design, described UF's communications entry as "unrivaled." The jury also included Javier Gregori of CADENA SER, Spain's most popular radio station, and Miguel Ángel Valladares of WWF/Adena.

Abdol Chini, director of the Rinker School of Building Construction, says that competing in Solar Decathlon took the support and motivation of a large number of people, including practitioners from industry. Within UF, the team was represented by students, faculty, staff and alumni from the College of Design, Construction and Planning, College of Journalism and Communications, College of Engineering and Warrington College of Business.

"Everybody did their part in making this a success," Chini says. "It was completely a team effort. The logistics of sending 60 people to Madrid for 12 weeks was not an easy task and everybody did it with enthusiasm. Teamwork is the significance of the whole project."

Christopher Silver, dean of the College of Design, Construction and Planning, summed up the project after returning from Madrid: "Our real victory was the teamwork by the



Winner of the Communications and Social Awareness Award



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3. Connecting the two modules was an open-air breezeway that provided natural ventilation throughout.



4. Along the north and south facades, bi-folding screens of recycled wood treated for weather resistance through an environmentally friendly process served the dual purpose of providing privacy when down and shading the deck when up.



students and faculty, drawn from different professions and levels of expertise; they worked together with amazing precision and dedication. In our efforts to better integrate the design and construction fields through our professional education, the Solar Decathlon Europe competition showed how and why this is so important.”

The university is currently raising money to rebuild Project RE:FOCUS at the UF Energy Research and Education Park. ✕

*Julie Frey and Alexandra Layos contributed to this report.*

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**Related website:**

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