

energy view

2012

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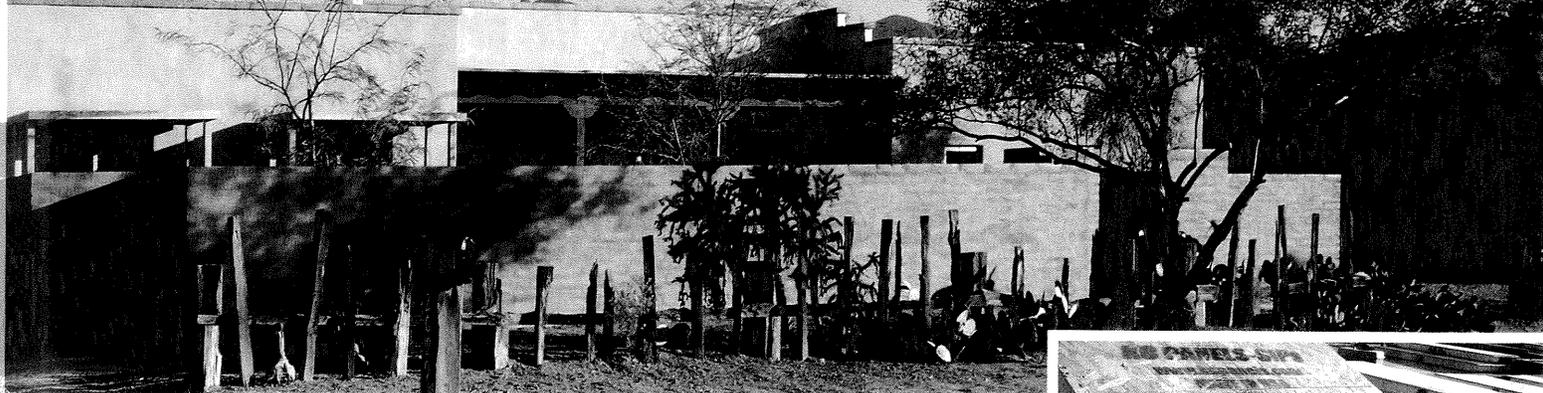
It's Always Sunny in Tucson

LaMirada Homes by Michael Ginsburg

Tucson, Arizona

Production Category, Hot Climate

Gold



When building new homes in Tucson, Ariz.—which happens to be the fifth sunniest city in the United States and has an electric utility that actively encourages renewable energy production—solar energy is almost a no-brainer. So, while production builder LaMirada Homes harnessed the sun by

installing a solar water heating system and 3.4 kW of photovoltaic capacity on this ultra-efficient urban infill home, it also recognized that the amount of sun through the windows affects the amount of cooling

needed. As a result, to prevent unwanted solar heat gain, the production home builder didn't just use reflective windows and roofing material, it went further by designing the home with the proper solar orientation and using architectural features like a covered patio and louvered trellises to shade the structure's south side.

But passive solar design features weren't the only techniques that were new to 35-year residential construction veteran and company president, Michael Ginsburg. In tackling this project, Ginsburg wanted to push the envelope to see what was possible. Working with the Davis Energy Group as part of the U.S. Department of Energy's Building America Alliance for Residential Building Innovation team, Ginsburg designed this 1,935-s.f. home to be as energy efficient and cost effective as possible. Ginsburg wanted the "superiority and

integrity of the thermal envelope [to be] the primary design factor." To effectively meet LaMirada's construction goals, the design team chose SIPs walls and roof because of their thermal efficiency and ease of installation. With SIPs installed to exacting specifications and combined with continuous insulation under the slab and around the slab edge, Ginsburg likens the home's thermal envelope to an "icebox." Designed without any interior load-bearing walls and exposed support beams that add architectural interest, the homeowners will have lots of flexibility with any future redesign.

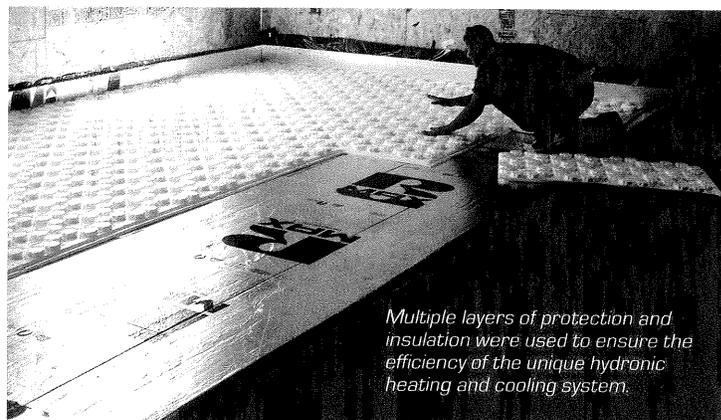
One of the most unique aspects of this home is the hydronic radiant floor heating and cooling system that eliminates the need for a forced air system, although one was provided for occasional dehumidification and additional capacity. In this system, a reverse-cycle chiller heats or cools liquid that is circulated through piping embedded in

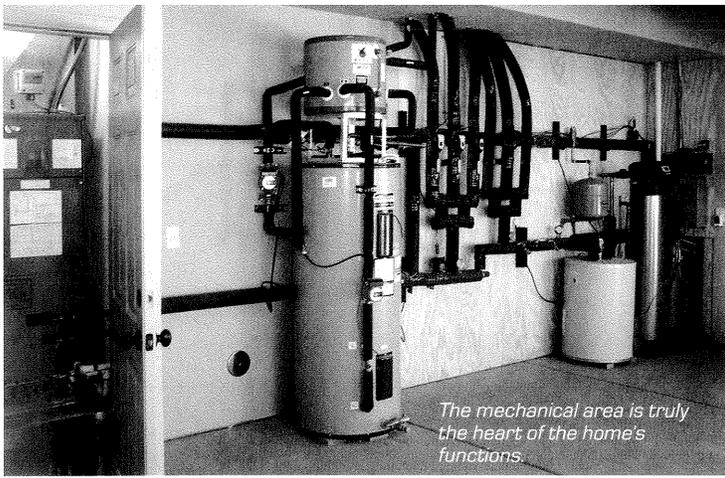
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Multiple layers of protection and insulation were used to ensure the efficiency of the unique hydronic heating and cooling system.





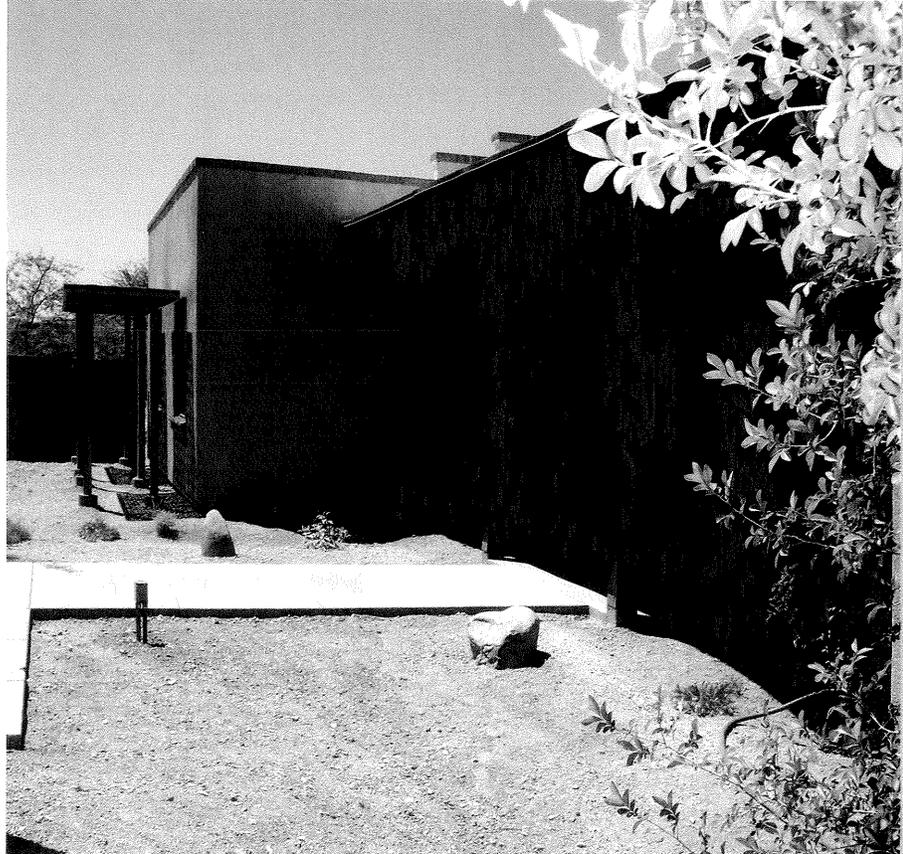
The mechanical area is truly the heart of the home's functions.



the concrete floor. To cool the house, the chiller operates between midnight and 7 a.m., when electricity rates are low, and uses the concrete mass to store the cooling energy. Despite the chiller operating only at night, the system has worked like a charm during the early cooling season—with evening temperatures deviating only 3°F above the morning temperature. Energy-efficient ceiling fans can supplement cooling, when needed.

To allow the hydronic heating and cooling system to do its job most effectively, the concrete floors throughout the house were left exposed, eliminating the need for expensive floor coverings. The savings nearly covered all of the additional expense of the efficiency features.

According to the EVHA judges, LaMirada has done an exceptional job with this first effort. "This is a very unique and well-executed concept home," that received an "impressively low HERS Index (40 without & 20 with renewable energy sources)" due to its excellent systems engineering. Asked if he'd do it again, Ginsburg said, "This is the process and method by which I will design and build all future homes."



SIPs Installation.

