



the sun king

JOSEF KIRÁLY'S SOLAR HOMES AREN'T JUST VISUALLY PLEASING...
THEY'RE ENERGY EFFICIENT WONDERS

BY DAVID REICE | PHOTOGRAPHY BY JAKE CURTIS

A SMILING MAN WITH A THICK WALRUS mustache gazes out at the Tyrolean Alps. He's wearing black pants, snakeskin boots, and a corduroy jacket the color of a ripe pumpkin. It's a perfect day in Austria, and the morning sun glints off the craggy peaks that surround the mountain town of Innsbruck. Less than 50 miles from where he stands, nestled in the verdant valleys below, stands the man's handiwork: several of the most architecturally innovative solar homes ever built. The man who designed them is Josef Király.

Although he's famous in Austria, Király, 58, is nearly unknown outside Central Europe—a surprise given that his solar houses are visual and technical masterpieces. Most solar homes use photovoltaic cells, the large exterior solar panels often seen on rooftops, to convert solar radiation into an electric charge. Király's low-energy houses bypass the photovoltaic middleman: The buildings themselves are

giant energy collectors, absorbing and storing the sun's rays to warm the interior, heat the water, and in several instances keep the pool just right—all for much less than the usual cost of photovoltaic cell panels, and a fraction of the cost of heating a traditional home.

How is such a thing possible? Hold your hand up toward the sun. Feel for a moment its warming rays. Now imagine painting a breeze block black and leaving it in the sun all day. Because of its high specific heat, the block will remain warm even on a freezing winter day and will continue to slowly radiate stored heat back to the outside world.

By virtue of clever design, construction, and orientation, one of Király's passive solar houses may require as little as one-tenth the energy a conventional house requires. In fact, even in the Austrian Alps, where temperatures can drop below freezing for more than half the year, a spacious Király house can be heated using

just a small pellet stove that burns compressed sawdust—which renders it completely free of fossil fuels.

The simple formula, according to Király, is maximizing direct gains from the sun's energy and minimizing thermal losses through good insulation and smart design. This is why nearly all the windows in his houses face south, and why nearly all of the houses' floor plans are arrayed around a large central triple-glazed atrium—a greenhouse-like space disguised as a living room. Outside these glass-walled living rooms are often carefully placed roof overhangs. In summer, when the sun's azimuth is high, they block light to prevent the collection of too much heat. In winter, when the sun's angle is lower, their height keeps them out of the way, allowing as much sunlight as possible to penetrate the atrium windows. Ideally, the surrounding rooms are left slightly open to facilitate the flow of air around the house. Heat gains are also maxi-



mized by painting south-facing interior walls a dark color. It's these walls (usually integrated discreetly into the color scheme) that retain and then radiate the heat. In many of Király's houses, the façade incorporates panels that use sunlight to heat water flowing through them. The hot water from these panels is stored in big barrels and, when needed, funneled though the floor to create radiant heat, as well as sent to the sinks and showers throughout the home.

Király is a charming, exuberant man. "Mostly, I design for people who already are or will become my friends," he says. Indeed, as I visited a number of his houses and the people who inhabit them, I found not only fans but friends. "I love this place," says Stefan Fürst, a once-professional rock climber whose home features a 30-foot climbing wall that extends from basement to ceiling. "And I'm grateful to Josef for perfectly integrating the house with nature." Of course, it doesn't hurt that the lot where Fürst chose to build allows him to step outside his living room and climb straight up a steep ravine into the mountains without ever crossing anyone else's property.

A bit farther west, on a hill overlooking Kössen and the Untersberg, sits the house that retired engineer Walter Schmidt and his wife call home. The Schmidt residence, replete with a small scenic pond suitable for swimming, is one of Király's finest—both architecturally and in terms of energy efficiency. Other than the

electricity for appliances (which will eventually come from photovoltaic cells), the entire house runs on renewable energy. It features a sweeping curved façade, huge integrated vertical solar panels, and an insulated "green roof" planted with moisture-retaining plants that blends so seamlessly into the surrounding hillside that neighbors have regularly spotted red deer grazing on it.

Even more astonishing is the command system: a flat-panel display on which Schmidt can monitor and control the temperature in every room. Schmidt had always wanted to build an environmentally conscious home, not only to be in harmony with nature. He believes that as the European Union moves more aggressively to regulate energy consumption, Király's unique style and innovative designs will become far more prevalent. "What's particularly wonderful," Schmidt explains, "is that the whole system has paid for itself in six years. It's not only wonderful to live in and very environmentally friendly; it's also cost-effective." In fact, it's so pretty and cost-effective that the next-door neighbor decided he wanted one too. A similar Király design now sits right next door.

Of course, as with many architects, the purest manifestation of Király's eclectic style can be found in his own home. "When he began," says Trudy, his wife of almost 40 years, "Josef had enough ideas to build an entire village. He was

just exploding with them. Unfortunately, he tried to incorporate almost all of them into our house." Király began their house in 1978, and remodeled it 20 years later. It exudes a warmth independent of the clever solar setup. Almost every room is connected to the central atrium, yet each feels both intimate and separate—discrete spaces integrated into a harmonious whole.

Standing in the Alpine morning sunshine, Király is thinking about how to explain his guiding principle to me. "It's not that we live to build," he exclaims finally in heavily accented English, "but instead that we build to live!" Satisfied with this short manifesto, one of the world's foremost solar architects turns, squinting, back toward the sun. □



Visit www.lexus.com/magazine to learn more about solar homes and environmentally friendly living, and to connect to Josef Király's Web site for additional home designs.



Page 32: solar-home architect Josef Király (inset) and his Schmidt house design. Page 33: the sun-absorbing southern exterior of Király's Wallnöfer house. This page: the Fürst home's atrium living room (inset) and sun-regulating roof overhang.



