**Reach for the skies** *Strong wants to make solar power the standard for homes*

# A New Plan for the Planet. Protecting the earth means rethinking how we build, one solar panel at a time

BY RICHARD LACAYO

FOR A LONG TIME, WHEN PEOPLE THOUGHT ABOUT the environment they thought mostly about things they wanted to conserve: forests, species, oceans. But now we know that environmentalism is also about things we produce: houses, offices, factories. The Innovators we bring you here are all involved with what has come to be known as "green building." They include a Massachusetts "solar zealot" making sun power more affordable for homeowners, a couple in India developing eco-friendly communities, an Italian promoting concrete that "eats" air pollution and a Texas crusader for greener hospitals. They all want a world where concern for the earth is "built in" from the start.

Photograph for TIME by Asia Kepka

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## Steven Strong

He's working to bring down the cost of solar power for homes, so that lots more households can afford it

**ENGINEER** **He used to be a** "solar zealot." Those are Steven Strong's words. "Even back in the solar-crazy '70s," he says, "it was an open question if anyone could survive trying to sell houses that produce all the power they need through renewable energy sources."

It wasn't exactly a smooth ride, but survive he did. Along the way, Strong, 56, whose firm, Solar Design Associates, is based in Harvard, Mass., turned himself into one of the nation's foremost experts on solar buildings. His initial breakthrough came in 1980, when he found a manufacturer to build his "integrated" solar roof. The first of its kind, it provided an alternative to the costlier—and clunkier—solar panels that are just slapped onto rooftops.

Strong is very aware that solar can increase the cost of a house about 15%. One way to push down cost is through economies of scale, which is why he's serving as consultant for the Sonoma Mountain Village Project, planned by California developer Codding Enterprises and scheduled for groundbreaking late next year. "For the first time," explains Strong, "a developer has set course to create an entire town built according to principles of sustainability while keeping it competitively priced." Located 45 minutes north of San Francisco, the project is an entire community of environmentally conscious—and solar powered—apartments, houses and stores. "This," says Strong, "is solar for the people." **—BY STEFANIE FRIEDHOFF/HARVARD**

**Future farmers of America** *A solar-powered barn in New Hampshire*

**Village people** *Team Iype and Good Earth Orchard homes in Bangalore*

## Natasha Iype and Jeeth Iype

In India, building green can mean promoting a return to traditional living arrangements

**ARCHITECTS** **Bangalore may be** India's high-tech heart, but in one part of its leafy suburbs, there's a group of environmentalists trying to get back to the garden. In 2003, husband-and-wife architects Jeeth and Natasha Iype, working with Stanley George, a civil engineer, designed the Good Earth Orchard homes. Each of the 60 projected houses, now in various stages of construction, will feature slate and wood left in a natural state, without toxic waxes and finishes. Sewage will be treated in tanks that process waste without harmful chemicals. Household water will be heated by solar panels, which is expected to reduce electricity use—and electricity bills—30%. And whenever possible, local building materials are used, which reduces the need for gas-guzzling trucks to transport things from far away.

But the subtlest eco-friendly feature may be the verandas that open from each house onto a large, grassy courtyard shared by the entire community. The hope is that the shared space will encourage shared environmental awareness. "Building green homes is easy," says Jeeth. "Building green communities is incredibly difficult. You have to convince a group of individuals to buy into the same ideologies."

Most Indians still live with several generations in a single home. But as the country grows richer, a burgeoning middle class is moving into Western style single-family homes, which use more energy and resources per family. The Good Earth team is trying to provide India's élite with green homes that meet their rising standards but provide space that is still in some ways shared. "Communities make sense in India, given our history of joint-family living," says Natasha. "We are simply trying to re-create what we had." **—BY SHOBA NARAYAN/BANGALORE**

## Enrico Borgarello

You think cement is just a building material? Here's a man who says it can be a smog buster too

**Tidy whitey** *TX Active kept the cement of Meier's church bright*

**CHEMIST** **There's a man** here who wants to say one word to you. Just one word. Are you listening? Cement. As head of research and development for Italcementi, Enrico Borgarello knows cement isn't considered the most high-tech—or environmentally friendly—of products. But under his direction, the Bergamo-based Italian company has developed a substance that could turn an ordinary building into a weapon against air pollution.

It's called TX Active, and it's an additive for cement that literally eats surrounding smog. "When light shines on TX, the material becomes active and neutralizes surrounding pollutants like nitrous oxide and sulfur dioxide," says Borgarello. According to tests conducted by Italcementi, which spent more than a decade and $10 million developing the product, TX can reduce local air pollutants from 20% to 70%, depending on sunlight levels and wind. (It also adds as much as 20% to the cost of the cement.) Cover 15% of the exposed surfaces of a city like Milan, Borgarello estimates, and you could cut pollution in half. And as a bonus, TX helps buildings stay whiter than white by resisting the pollutants that scar and stain cement over time. It's a benefit that's visible in the first structure to use TX cement, the 2003 Dives in Misericordia church in Rome by the architect Richard Meier, who is famous for his white buildings and who likes to see them stay that way.

More study will be needed to determine just how effective TX Active is over the long term. So-called catalytic agents can lose their power over time. But Italcementi is already marketing it in the U.S. and Europe. The biggest potential, however, could be in rapidly growing countries like India and China. With annual cement demand expected to exceed 1 billion tons in China alone by 2008, building materials will have an enormous effect on changing urban environments. "We want to show that cement can contribute to the reduction of pollution," says Borgarello. "We can deal with problems that every city faces." As he said there's a great future in cement. **—BY BRYAN WALSH**

**A man and his cement** *Borgarello at a test lab in Guerville, France*

BHARAT SIKKA—FOR TIME

MARCELLO D'ANGELA GRAZIA NERI, BERTRAND DESPREZ—VU FOR TIME

**A healthy difference**
*Vittori at Dell Children's Medical Center in Austin*

## Gail Vittori

She's showing health care providers the many ways they can enter the age of sustainable design

**DIRECTOR** **With an estimated** $200 billion in U.S. health-care construction planned for the next decade, how hospitals are built and operated will have a huge impact on the environment. And Gail Vittori means to have an impact on those hospitals. With her husband Pliny Fisk III, Vittori is co-director of the Center for Maximum Potential Building Systems, a nonprofit design center in Austin, Texas. MaxPot, as it's known, advises institutions of all kinds—from a homeless shelter in Austin to the Pentagon as it rebuilt after Sept. 11—on how to adopt environmentally sound materials and practices. But Vittori and Fisk have a special focus on health care. Two years ago, Vittori led a committee that devised the *Green Guide for Health Care*, a 360-page "design tool kit" that suggests steps that hospitals and other facilities can take to reduce hazardous chemicals and adopt green practices everywhere from the cafeteria to the housekeeping department.

"We have a long way to go to clean up what's really an unhealthy set of materials," she says. The guide, which can be downloaded at *www.gghc.org*, is currently the basis for more than 100 pilot projects at health-care facilities across the U.S. The California health-care giant Kaiser-Permanente has just decided to adopt *Green Guide* principles at its new Modesto medical center.

The latest showcase for the MaxPot approach is the new 500,000-sq.-ft. Dell Children's Medical Center of Central Texas, set to open this June, which aims to be the first hospital in the world to attain platinum status in Leadership in Energy and Environmental Design (LEED). Its green features include heavy use of local and renewable materials, on-site wastewater facilities and windows that open, allowing fresh air to become an alternative to energy-consuming air conditioning. Vittori's vision of hospital design also extends to the mental well-being of the patients and staff. The Dell Center's low-rise buildings, linked by courtyards and quiet spaces, are designed to be child-friendly and unintimidating. The gardens will reflect the plant life of the surrounding area, giving the children the comfort of familiar sights. And as everybody knows, there's no color more comforting than green. —**BY HILARY HYLTON/AUSTIN**