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ENVIRONMENT

White Rooftops Keep Their Cool

An eco-friendly coat reflects sun so less Energy and money go toward air conditioning.

Tiffany Hsu

On bright days, the rooftop of the Anaheim Hilton is so blindingly white that it looks like a mirror positioned directly at the sun. That dazzling glare might just be the greenest thing to happen to the top of a building since solar panels.

The white coating deflects nearly %85 of the heat that hits it, reducing the surface temperature by as much as 50 degrees. That means less energy is needed to cool the hotel's interior, cutting air-conditioning costs and carbon emissions.

This is no ordinary coat of paint. Designed by a former military scientist from the Inland Empire, the tinted topcoat is filled with tiny, hollow glass balls that deflect heat, layered over a waterproof undercoat made of recycled rubber.

The Hilton spent more than \$150,000 on the project, which was completed in March. That is \$300,000 less than the cost of a conventional repair to

the old, leaky roof, said Jerome Annaloro, director of property operations at the hotel. If the reflective material cuts utility cost this summer the way management anticipates it will, Annaloro said, He will recommend white roofs for the entire Hilton chain.

"I was skeptical at first... but the product spoke for itself," he said. "it's a win-win."

Americans spend about \$40 billion a year to cool buildings, according to the U.S. government figures. So called cool roofs are being touted as a simple, inexpensive way of lowering surface temperatures on the tops of structures by as much as 100 degrees, cutting operating costs and slowing climate change.

Energy Secretary Steven Chu, a Nobel Prize winner in physics, recently called for all roofs to be painted white to promote saving energy. Some scientists suggest that covering dark tar roofs with light-colored coatings could help mitigate the "urban heat island" effect. Development has raised temperatures markedly in many cities, leading to more energy use and smog as well as greater number of deaths during heat waves, experts said. But it will take more than the Hilton to make a dent.

"To change an entire city and save energy all the way around, you need to get to a critical mass," said Scot Horst, senior vice president of the U.S. Green Building Council's Leadership in Energy and Environmental Design rating system. "One or two buildings don't make that big of a difference."

Mass implementation of cool roofs in the largest 100 cities would offset 44 billion tons of carbon dioxide emissions, or the equivalent of taking 600 million cars off the road for 18 years, researchers at Lawrence Berkley National Laboratory found last year. Some cities, including Chicago, already have ordinances that require light-colored roofs.

Skeptics say white roofs aren't always the eco-friendly panacea they're sometimes made out to be. The reflective component is most effective is sun-

saturated regions like the Southwest. And it could lead to higher heating bills in the winter because the sun's warmth can't permeate the roof. Still, the niche is booming.

The Energy Department and U.S. Green Building Council are pushing cool roofs to consumers and developers. Entrepreneurs are developing a host of new products using metal, ceramic tile, reflective paints, and coatings and even rooftop gardens to beat the heat. Among them is Ronald R. Savin, inventor and holder of nearly 20 patents, who developed the paint atop the Anaheim Hilton.

An engineer and retired Air Force colonel who spent much of his military career creating coatings for spacecraft and airplanes, Savin started his own paint company in 1957 and later sold it to a British conglomerate. He slowed down a bit when he reached his 70s, spending more time collecting first-edition books and ornate clocks and less time tinkering.

Then, three years ago, he saw a program on the History Channel about recycled rubber. Inspired, he returned to his lab and spent six months experimenting before making a breakthrough on a new formula.

Glass "microspheres," which are used to lighten airplane parts and bowling balls, are suspended in a paint that includes Teflon. The whiter the titanium dioxide tint, the more heat bounces off.

Underneath, his Hyperflex primer serves as an insulation layer that also helps prevent water damage and erosion. And because it uses powdered recycled rubber, it helps address another thorny environmental issue: the millions of tires discarded annually in the U.S.

Hyperseal paints are free of harmful volatile organic compounds known as VOCs and are relatively cheap to produce, but the company's Palm Desert factory can make only 5 million gallons a year. Most large products, such as bridges, require several hundred million gallons, Savin said, so he's looking to license his formula to other companies.

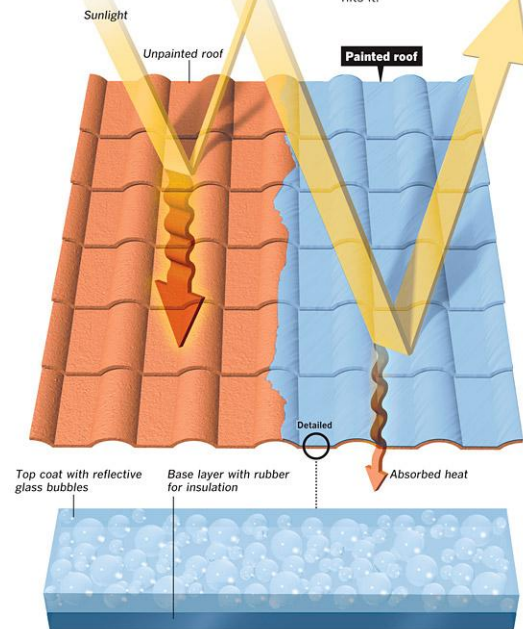
He'll have plenty of competition. Big players such as Sherwin-Williams Co. and Benjamin Moore & Co. are also debuting eco-friendly paints.

Heat-repelling roof

Paint containing tiny glass bubbles and rubber can cut down on cooling costs by reducing the amount of heat a building absorbs.

Many roof surfaces, especially dark ones, absorb a lot of heat from the sun's rays.

A new type of paint, especially the lighter shades, reflects up to 85% of the sunshine that hits it.



Source: Hyperseal Inc.

DOUG STEVENS Los Angeles Times

Still Savin's product is winning a following. In addition to the Hilton and the roofs of dozens of homes, the rubberized undercoat now covers a large swath of pavement outside a Palm Desert Wal-Mart.

He also hopes to expand the use of paint to other structures such as shipping cargo containers and dams to prevent rust.

Ranch Mirage resident David Baron credits Hyperseal paint with helping him cut his \$2,500-a-month summer electricity bill by more than half. Living without air-conditioning in 110-degree heat just wasn't an option.

"I gave it a shot because I was looking for anything to help," said Baron, who spent \$10,000 to cover the roof of his 5,600-square-foot house. "We're talking huge energy savings. This will pay for itself in a year or two."

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