

Roofing

From the Top Down

Moderated by **Chuck Ross**, contributing writer

Q: What are the latest technology developments in your sector of the roofing market?



JAY THOMAS
SIKA SARNAFIL

Cool roofs are a hot topic. They provide building owners with a long-term roofing solution that saves energy and reduces carbon footprints without a cost premium over alternatives. Manufacturers are investing heavily in developing and improving radiative properties to compete for this business.



MIKE DU CHARME
CARLISLE SYNTEC

There is growing interest in alternative uses for the roofing surface that go beyond the scope of water tightness. For example, roofs are being used as a platform for solar energy production. Other developments include roof gardens for stormwater retention, plazas for recreation and a continued emphasis on energy efficiency. The industry is becoming much more sophisticated to keep up with these demands.



MIKE PETERSEN
PETERSEN ALUMINUM

The first thing we see is the transition to solar reflective coatings. It's a work in progress—there are already flexible solar panels that can be affixed to metal panels, and I think some progress needs to be made before those panels are ready for the average installation. To a lesser degree, there's also been some movement toward site management of water off of our products.



DENNIS MCNEIL
BUILDING TECHNOLOGY ASSOCS.

With an increasing interest in vegetative roofs, there is a parallel concern for the quality assurance of installing such a system, and the difficulty of locating and repairing leaks. One method for non-destructive testing and leak locating showing promise is electronic field vector mapping and moisture detection tape. This can be installed on the roof or waterproof membrane and also at penetrations through the membrane and in building walls.



BRUCE SCHENKE
BASEF

Another new technology gaining popularity is robotic applicators. The robot increases the width of the path and decreases the time of application. However, these applicators still require a bit more open roof area to be feasible. Smaller roofs, or those that have a lot of detail, still require the skill of a trained contractor.



CARLISLE SYNTEC

left:
ROOF GARDEN

Carlisle SynTec's Roof Garden System was applied to the roof of the Charlottesville, Va. City Hall as part of a retrofit and roof leakage repair project. The system includes mechanically fastened polyisocyanurate insulation, a ½ -in.-thick layer of DensDeck and EPS wood fiberboard. The plant material, itself, sits on a protective mat that's needle-punched and resistant to mildew and insects. A drainage system lays upon the mat and supports the 3 ½ in. of growth material that vegetates the 9,000-sq.-ft. roof. Within one month of placement, the roof was in full bloom. Visit carlisle-syntec.com or **Circle 519**

Q: How important are sustainability and efficiency characteristics to owners, beyond today's code requirements?

THOMAS:

Now more than ever, sustainability is essential. Owners and specifiers have clear sustainability goals. Meeting these goals is especially critical for roofing and waterproofing systems because sustainable roofing is an important component of sustainable construction.

DUCHARME:

While there is much buzz about green construction, most specifiers are forced, due to economic constraints, to justify the ROI of additional investments. Increased insulation and daylighting are two exceptions, since both provide savings and acceptable ROIs. Reflectivity also continues to be important. Reflective roofs can provide savings in warm, southern climates. However, darker-colored roofs have been proven to provide savings in cooler climates, where heating is used more than air conditioning.

SCHENKE:

Sustainability is very important. Many large corporations are implementing energy-efficient upgrades as proof points to support their sustainability claims and strengthen their brand value. But, having said that, the first question is still cost.

MCNEIL:

The recognition of the importance of sustainability and efficiency can vary significantly, depending on the technical proficiency and sophistication of the specifiers and owners. Some clients, unfortunately, are driven more by short-term economics than life-cycle value.

PETERSEN:

I think the owner's primary interest is energy efficiency. With solar panels, cost/benefit is all they're looking at, unless it's a government project where solar is mandated. In terms of private construction, unless you have an enlightened owner, the energy payback just isn't worth it.



BASF

below:

HISTORIC TRANSFORMATION

Helping to turn a 150-year-old textile factory into a facility training workers for 21st century 'green' jobs, **BASF** offered its Elastospay spray polyurethane foam roofing to replace damaged roofing and cover still-stable existing material. The 30,000-sq.-ft. roof now boasts an R-value of 38, with a white urethane finish intended to reflect solar heat. Visit basf.com or Circle **518**



PETERSEN ALUMINUM

above:

LEADER AMONG ITS PIERS

Metal Snap-Clad panels, finished in silver metallic, from **Petersen Aluminum** clad a series of structures gracing the rebuilt Bridge Street Pier in Bradenton Beach, Fla. The historic structure suffered hurricane damage and required a \$2.2 million renovation. The metal roofing now covers a popular, reopened restaurant, fishing kiosk and harbor master's office. Visit pac-clad.com or Circle **517**

Q: *How intent are specifiers and owners about analyzing payback periods for premium coatings and new thin-film solar offerings?*

MCNEIL:

If premium coatings are mandated by local code, there is little for specifiers and owners to do but grin and bear it. But some progressive specifiers and owners are diligent about self-educating on these matters. Owners that care to take the long view might look more closely at outside incentives, such as tax credits, to recoup some of their initial investment.



CARLISLE SYNTEC

above, right:
PERFECT MATCH

Carlisle Syntec pairs highly reflective single-ply, TPO membrane roofing with its cylindrical Spectro360 photovoltaic modules to create a system capable of capturing energy from both direct sunlight and diffuse light reflected from the roofing surface. Visit carlisle-syntec.com or Circle 516

DUCHARME:

For solar, due to the very high cost and long payback, the ROI analysis is critical. For coatings, which in many cases are used as restoration options, the ROI is less critical.

SCHENKE:

Well, we need to delineate the payback period between premium coatings and thin-film solar. Although the systems marry up well—because you obviously want an energy-saving roof before you even consider an energy-producing roof—the climate makes the real difference. For example, if you are in a region where there is snow on your roof three to five months of the year, and most of your energy costs are in heating, the payback for a white roof is much longer. Conversely, if you put solar panels on a roof in a moderate to hot climate, it can reduce the payback schedule of white or cool coatings because you are now covering a large area with photovoltaics, which by their nature are designed to absorb radiant energy.

PETERSEN:

When it comes to thin-film solar projects, specifiers and owners are analyzing payback, and every project is different—you have to look at everything from tree shading to other buildings getting in the way of the path of the sun. As a result, we've probably quoted 70 projects, and only two or three of them had viable payback periods of less than 10 years.

REFLECTIVE ROOFS CAN PROVIDE SAVINGS IN WARM, SOUTHERN CLIMATES. HOWEVER, DARKER-COLORED ROOFS HAVE BEEN PROVEN TO PROVIDE SAVINGS IN COOLER CLIMATES, WHERE HEATING IS USED MORE THAN AIR CONDITIONING.



The natural airflow between the Spectro360 cylindrical tubes results in operating temperatures that are significantly lower than those of conventional flat-glass panels, improving both energy output and reliability.

Q: *How much education regarding maintenance and lifespan do you find yourself having to do with these new technologies?*

MCNEIL:

With any new technology, it's necessary to first become passingly familiar with the basic properties and then undertake comparative analysis to assess risks and benefits, initial and maintenance costs, and warranty issues. For building professionals, it's important to keep an open mind and rationally evaluate products and systems to provide clients with the best nonproprietary advice.

SCHENKE:

For the most part, owners and managers don't want to maintain their roofs. The truth is, before they call their contractor to clean their roofs, they are more likely to accept a little less energy performance—that's why we provide performance data for roofs that haven't been cleaned for three years.

Q: *What issues do you see specifiers and owners overlooking most frequently as they evaluate their roofing options?*

MCNEIL:

What I see is blind reliance on marketing claims about long-term warranties, and purported extensive membrane lifespan afforded simply by the presence of a vegetative roof—without regard for the long-term serviceability of the membrane itself. Some owners pursue shortsighted paths based on insufficient, incomplete or possibly biased information from a single source, instead of seeking broader-based expertise.

THOMAS:

I agree. It is important that building professionals consider real-life performance and not rely on the warranty period to make their decision. The best way to measure this is to ask manufacturers for a list of their oldest roofs in geographic locations similar to the project location.

DUCHARME:

We find that many specifiers are not focusing adequately on the elements that will provide long-term performance. Frequently, the specifier will select a white roof regardless of geographic location, or select a warranty term without carefully evaluating the performance requirements. A better approach would be to focus on long-term energy efficiency by properly insulating the roof or using a thicker membrane that will ensure long-term durability and performance.

PETERSEN:

Well, to start, if you really want a reflective roof, don't specify it in black. Color has an impact on reflective performance, and the amount of reflectivity you might want depends on geography.

SIKA SARNAFIL

below:

COOL OPERATOR

The Cool Color family of Energy Smart Roof coatings from **Sika Sarnafil** includes white, tan, light gray or patina green surface-coating lacquers. The single-ply membrane roofing is labeled under the U.S. EPA's Energy Star Roof Products program. The material may contribute credits toward achieving LEED certification. Visit sarnafilus.com or Circle **514**



Q: *How do you see codes and standards evolving in the next decade?*

DUCHARME:

I think codes will evolve rapidly as the government tries to ratchet up the energy efficiency and overall life cycle of buildings. Specific to thermoplastics, such as TPO, I would expect that there will be a dramatic increase in the ASTM requirements for both heat aging and Xenon Arc exposure. As warranty lengths increase, a new standard will need to be established in order to maintain a level of performance that customers have come to expect.

PETERSEN:

I agree on the emphasis on energy efficiency. I think you could compare it to some of the efforts in California in terms of zero-energy construction, and we're going to see more and more of that as time goes by. Also, we've already seen some changes in wind performance requirements, post-Katrina. Any kind of school construction in coastal areas now requires wind-load testing. If you don't have products tested to the new standards, you don't have a market in those areas.

SCHENKE:

I also believe there will be increasing emphasis on energy efficiency and fortification against severe weather conditions. For example, we've already seen massive changes in Florida's building codes intended to increase thermal performance and hurricane resistance. The reason is simple: We know a lot more about building science, good building practices and the importance of proper air sealing. These increased standards may be politically unpopular, but performance will ultimately win out and be included in the codes.

THOMAS:

Sustainable construction practices and the use of building exteriors for alternative energy generation are two evolving trends that will affect codes and standards over the next decade. Using vegetated roofing and installing solar panels are examples of technologies about which building codes and standards are very immature. However, over time, the industry will reach consensus.

MCNEIL:

Specifically, ASHRAE 90.1 will very likely increase the minimum R-value of roof insulation from the current R20 up to 24 or 30 for most areas of the country, except for warmer and milder regions. That said, science does exist that is at odds with some contemporary trends. Although there may be valid data to refute popular ideals—such as, “if a little insulation is good, a whole lot more must be that much better,” or “all roofs should be white to reduce the heat-island effect”—bandwagon effects and/or the mandate of code requirements may inhibit dialogue across the industry.