

## Shattering SPF roofing myths

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Although today's spray polyurethane foam (SPF) roofing systems have been around for close to three decades, when it comes to understanding the true nature of the technology and its potential markets, there is a decided gap between perception and reality.

While some would-be players assume that the market has its limitations in the way of potential growth, experienced SPF contractors are finding in some cases, they are getting more business than they can handle.

Those in the roofing world know that SPF makes good economic sense. There are inherent benefits to SPF roofing systems that cannot be found with many other type of systems, such as longer life expectancy, improved energy efficiency and lower life-cycle costs, to name a few. *Picture above: SPF*

*Myth #29: Spray polyurethane foam cannot be used on hard-to-reach roofs. The coating of this bell tower proves otherwise.*

SPF systems create a superior air barrier thanks to their inherent strength and their ability to flow into and fill every nook and cranny with a closed cell skinned foam. They are also 100% adhered to the substrate, creating a very high wind uplift resistance. These qualities contribute to minimal maintenance and renewal requirements and deliver a faster return on investment.

In addition, SPF can be installed over existing roofs, thanks to its light weight and ability to provide seamless construction.

Despite these advantages, there are a number of misconceptions that have prevented contractors from fully appreciating and/or embracing the technology as a viable option. Included below some of the most prevalent "SPF Roofing Myths" and what contractors should consider when working with SPF roofing systems.

### **Myth #1: SPF roofing systems are only for the retrofit market**

There is no question that the majority of SPF roofing projects (70 percent) have so far occurred in the retrofit market. At the same time, there has been a noticeable increase in the number of applications for new construction work.

A recent breakthrough in the new construction area was made with Factory Mutual Research's release of its approval of SPF for a new roofing assembly that allows select spray-applied polyurethane foams to be applied directly to steel roof decks without the need for thermal barriers, thereby simplifying field assembly and offering significantly improved wind uplift performance.

Mason Knowles, technical director for the Spray Polyurethane Foam Alliance (SPFA) in Arlington, VA, explains that the Factory Mutual approval "makes SPF a much more competitive product because it is now quicker to apply. This definitely opens the market for more new roofing applications."

Knowles cites statistics from the National Roofing Contractors Association (NRCA) that indicate a definite increase in the acceptance of SPF in new roofing application.



For example, in 1995, SPF systems accounted for 1% of the entire new roofing market. In 1999 they comprised 2-3% of that market. At the

same time, SPF accounted for 3-4% of re-roofing projects in 1999.

What's more, RSI's 2001 State of the Industry Report indicates that SPF now accounts for 4.07% of the average contractor's new roofing volume and 7.27% of his re-roofing work.

"What we are seeing now is that SPF for new roofing systems is beginning to catch up to re-roofing applications," said Knowles.

*Picture right: shows the use of spray polyurethane foam on domed roofs and storage tanks has historically been one of the strengths of the product.*

### **Myth#2: Anyone can install a good SPF roof**

Any expert in the SPF field will tell you that nothing could be further from the truth. According to Allen Webster, sales manager, Urethane Specialties, BASF Corporation, Newark, DE, "Many non-SPF contractors think they can get into the SPF business cheaply and that they don't have a lot to learn. In reality, to enter the market you need to have the right equipment, materials that comply with the published building codes, and employ trained applicators."

"There is a lot to learn in the way of specifications, engineering and application techniques," he continues. "You have to know, for example, about expansion joints, roof penetrations, detailing around air conditioners and drains. A lot of people saw SPF as an easy answer for problem roofs, but they neglected to put in the time to educate themselves."

While this lack of experience and education had initially been a stumbling block to growth for the SPF industry, indications are that awareness of the educational needs is increasing in the market and being addressed by organizations such as SPFA, NRCA, chemical systems providers and equipment manufacturers. Knowles says that the SPFA Accreditation Program has trained thousands of applicators in best practices, safety and health, substrate preparation, project control, sales, equipment troubleshooting, codes and standards, and application techniques and procedures. *Picture right: Recent OSHA rulings mean that full fresh air suits should be a thing of the past.*

There are also several suppliers that provide similar courses specific suppliers that provide similar courses specific to their products, as well as four Polyurethane Roof Training Centers for SPF roofing applicators in OH, California, Texas and Mexico, he adds.

"All of these courses have been instrumental in dramatically improving the quality of SPF roofs in the last 10 years. What we would like to see are new entrants to the market taking advantage of the many opportunities available to train their applicators."

### **Myth #3: SPF is of lower quality than conventional roofing**

If one approaches SPF roofing systems as a cheaper alternative, the benefits for contractors and customers can quickly evaporate. The key is understanding the profitability in this technology is not in reducing up-front costs, but rather understanding where the economics are found over the life cycle of the system.

"It makes good economic sense in a lot of cases," says Webster. "For one, installation is less labor intensive. When you factor in life-cycle costs, including long-term maintenance requirements, the return on investment for these systems is remarkable fast. It should always be presented to customers as the higher value alternative."

Dr. Dean Kashiwagi, of the Del E. Webb School of Construction Performance Based Studies Research Group (PBSRG) at Arizona State University, notes that, "In many cases the SPF system was sold as a lower cost roofing system than conventional built-up roofing systems. A high quality SPF system often has a similar installation cost to that of any other high performance system."

Dr. Kashiwagi says that SPF roofing systems installed by quality-oriented contractors have proven performance periods of 15 to 20 years.

"However, it is a more complex system," Kashiwagi says, "and that requires the contractor's trained craftsmen to make more decisions affecting the performance of the system than more conventional roofing systems.

"The bottom line for any good system is performance," he continues. "You need quality applicators who are aware of what SPF does and how it performs. You also need a good product with documented proven performance backed by the manufacturers that make them. When you have a good product with documented proven performance, then you make more money."

#### **Myth #4: All SPF roofing systems deliver the same performance**

The key to SPF roofing systems, according to Dr. Kashiwagi, is that they must indeed be approached as systems that take into account not only the materials used, but also the performance of those materials, as well as the performance of the contractors applying them. Any shortcomings in one area can impact the overall performance of the system, as with any high performance product.

In his efforts to establish a certifiable performance based system for SPF roofing systems, Dr. Kashiwagi, in conjunction with high performance contractors, has developed the Alpha Program. The Alpha Program defines quantifiable, verifiable standards of excellence in roof performance, a process that has been identified and used repeatedly in the Performance Information Procurement System (PIPS).

This system extends beyond basic cost and specification criteria to identify the "true value" of contractors and systems based on a number of measurable, quality-related factors, "With PIPS, facility management can weight specific the criteria and know they are getting documented performance levels from both materials and contractors," says Kashiwagi.

He adds that the attention to performance levels is important to the industry, because it can use performance information to define warranties to customers, which can create a considerable competitive advantage.

"Manufacturers' specifications are not enough by themselves," says Kashiwagi. "You must educate yourself to be able to differentiate between materials and coating from various manufacturers and choose the best product for your customer's roof. Customers throughout the United States are now recognizing the Alpha Program as a viable means to guarantee performance results when it comes to SPF roofing systems."

#### **Myth#5: All SPF coatings are created equal**

"A roofing job is only as good as the workmanship and materials that you use," says Webster. And an integral part of any SPF roofing system is the coating.

While coatings fall under the categories of acrylics, silicones and urethanes, each has its specific attributes and applicability. Any experienced SPF contractor will know when to make the appropriate choice based on a number of factors, including climatic conditions, anticipated foot traffic and roof design.

George Carruthers, president of the former Polycoat Systems Incorporated in Hudson Falls, NY, which was recently acquired by BASF, explains, "Acrylics, for example, have lower mechanical properties, but they are a popular choice in warmer climates because of their inherently quick cure properties and ease of application. As with any product, they can be used wherever they match performance needs and budget conditions."

He notes that when estimating life-cycle costs, one should assume that acrylic systems will require recoating every eight to 10 years.

Silicones offer an extremely long life, as well as high UV resistance, durability and ease of application.

"Silicone coatings are by far the most popular with major applicators and have been in use since the early 1970's" says Carruthers. "They are the most common coatings to be cited by specifiers and major national account building owners because of their longevity in the market and the fact there is a highly recognized Qualified Applicator Network for them."

The cost of silicone coatings can run as much as 50 percent above the cost of acrylics, but they have a longer, 15 year recoating cycle.

Urethanes, on the other hand, are a much tougher coating material.

"Their main attribute is toughness in the way of tensile strength," says Carruthers. "Although more expensive (25-30% more than silicones, up to two times the cost of acrylics) and more difficult to apply, they are the ideal choice in situations where there is a lot of foot traffic on the roof or where there are severe hail conditions."

Recoating cycles for urethanes are in the 10 to 12 year range.

"Both silicones and urethanes maintain their properties under a wide range of temperatures, so they are often preferred in climates experiencing hot and/or cold conditions," notes Webster.

Knowles adds that "acrylic and polyurethane coatings can vary widely from formula to formula. In some cases, impact and abrasion resistance of coatings can be enhanced with the application of granules of aggregate into the last layer."

He notes the SPFA guideline on coatings (AY 102) is available on the alliance's website: [www.sprayfoam.org](http://www.sprayfoam.org)

SPF broadens its scope

As the demand for SPF roofing systems continues, contractors who have done little work in this area might investigate its potential as a new and profitable business opportunity.

However, the decision to become a player in this market is not one to be taken lightly. It requires a considerable investment in training and equipment, as well as a commitment to delivering a high performance system with guaranteed results. Having the right tools, the proper training and an informed

approach is as much a part of the process as the materials themselves.

### **Other SPF roofing myths that need exploding**

1. **Too many failures:** However, these failures are known and have been studied extensively. The industry has learned from them, and it's become a much more educated market.
2. **SPF roofing is too difficult and complex for most contractors:** Actually, the equipment is simple to understand and use. The process involves just heating, mixing and pumping the materials on the roof.
3. **SPF roofing is too weather dependent for most installation:** Really? Then why is one of the SPF roofing industry's most successful applicators located outside of rainy, snowy Cleveland, OH? New formulations and new markets are also broadening SPF's reach.
4. **There are negative health issues associated with using SPF roofing:** Studies are unanimous in supporting the safety of installing SPF. Full fresh air suits are a thing of the past.
5. **SPF is too difficult to repair:** Problems with the Superdome in New Orleans more than 20 years ago gave SPF a bad name in this regard. Today, some training, a repair manual, foam kit and caulking are all you need.
6. **SPF spray equipment is only good for roofing:** Use of polyurethane adhesives for single-ply membranes, roof insulations and other applications is growing dramatically. There are also new markets in tanks, walls, refrigerated trailers, and the residential market.
7. **All SPF roofing systems deliver the same performance:** Only Alpha Program roofs offer industry-leading performance.

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