

Two Strikes, You're Out: Safety Means Success on This SPF Roof

By Stephanie Marie Chizik

When a major international player needs sections of its roof reinsulated, the company needs a major contractor to get the job done right. In this case, the major player was Cargill, Incorporated — an international provider of food, agricultural, and risk management products and services — and the major contractor was Kohls Foam Systems Inc.

For Pat Kohls, his brother Jon, and their six-man spray polyurethane foam (SPF) team, the job would prove to be a challenge. The installation part was easy, but the parameters were tight.

The first parameter the Kohls crew had to tackle was the roof's surface. With 9,600 square feet to cover, safety on (and in) the research and development rooftop was paramount.



Before the first day of what would be a ten-day job, the Kohls crew sat down with Cargill to review their safety requirements and plans. Cargill wanted Kohls to be in accordance with their roofing project requirements. The SPF crew was asked to keep a daily safety log and hold daily toolbox talks. They were given emergency contact numbers in case there were any spills or injuries on the roof or anywhere else on the property. Representatives from both Kohls and Cargill put together an analysis of all of the processes that were to be completed on the rooftop job and discussed how potential hazards would be prevented. This process involved completing a pre-job hazard analysis (PJHA) prior to tasks being performed each day. If this plan still wasn't enough, Cargill had its Safety Manager on site to help.

To start, the Kohls team needed to mark off the roof's parameter — several sections three stories high. Safety barriers were set up all around the edge of the building. Unfortunately, because the building was open for business during renovations, the SPF crew also had to work around the Cargill employees — and their cars.



The parking lot, which was the only way the Kohls team could approach the building, was also the same area where the wind blew. Because the SPF team was occasionally unable to move the Cargill employees' cars during normal business hours, they were forced to spray only after the end of the day. This meant that they used the daytime to prep the rooftop and the evening to spray. Any remaining cars in the parking lot left after hours were protected with covers.

During these 11-hour workdays, the crewmen paid close attention to their safety gear. (Cargill warned Kohls that their site rules for contractors' employees stated one safety violation would warrant a notice, and a second safety violation would warrant removal from the jobsite. Although this was on a person-by-person basis, it could potentially affect the entire crew.) They wore full-bodied harnesses from FallTech — tied off to anchored steel beams and fastened steel cables — as well as 3M respirators, safety glasses, and hard hats 100 percent of the time. When they weren't wearing full-bodied suits, the crewmen wore Tyvek pants and long-sleeved shirts.

In addition to their gear, each member of the Kohls crew wore a daily access badge, which gave security limits. This allowed them access during their workday, but at the end of every day, each Kohls employee had to sign out. The Cargill Control Center was then notified to reset the security alarm on the roof access door. In case all of those safety parameters failed, the rooftop team could escape to solid ground by way of their two ladders used only in the event of a fire or other emergency.



However, the crew could not escape their first item to attack: the old ballasted EPDM system. After removing the old EPDM system, the crew found a rigid board with aluminum facing on it. Because about 80 percent of this layer was dry, they merely had to remove the wet parts and replace them with one-and-a-half-inch iso board. The Kohls crew attached the new recovery board over the insulation with three-inch plates and metal fasteners, which ranged in size depending on the depth of the

corrugation being reboarded. If the rooftop crews got too close to the conduit beneath the ceiling of the third story, Pat Kohls alerted them via walkie-talkie from the third floor to change the screw size.

Once the surface had been completely recovered, the team needed to prep for the foam. They used Stihl backpack blowers to remove any debris and to dry the substrate. Because there were Cargill employees

working inside the building during the day (and products were being researched), Cargill required that the facility's HVAC system remain operational throughout the project. This meant they also had to hook up a hose to the air conditioning unit on one of the smaller sections of the rooftop to catch condensation outflow.



Aside from digging out the wet board and fastening the hose to run off the roof, the crew thought they would have a dry job. The weather, however, had a different idea.

“We had to be smart about how we were going to do it,” Pat Kohls said. “It was September, which normally is a pretty stable month in Minnesota, but we were getting some days where we had to watch what we were doing...We wanted to make sure we weren't going to open something up and have a rainfall.” That meant that anything that had screws fastened into it or had other small openings had to be closed the same day that they were installed. Otherwise, “It would have been a million little rainfalls coming into the rooms.”

To the Kohls team, it seemed that if the rain wasn't falling, then the wind was blowing. On days when the wind was too strong, the crew was forced to stop spraying. In an already dwindling schedule, this put a damper on the crew's timetable, but not their quality of work. They weren't willing to sacrifice a quality finish for a quick finish. This meant that some days they could quickly finish what they'd started before the rain or wind came in, but on other days they just had to walk away before new holes could be made.

When they were finally able to spray, the crew tied off to the roof and pulled the foam and coatings' hoses up top with a rope. They sprayed BASF Polyurethane Foam Enterprises (PFE) 348 2.8-pound foam to help address the building's limits. To achieve a positive flow and drainage on the rooftop, additional foam — in place of scuppers — was added. Because drains were also available minimally, the crew used foam to direct the runoff. They used two inches of the BASF PFE's closed-cell foam to do this, as well as a Gusmer H20/35 and H20/35 Pro Proportioners and 300 feet of hose. To spray under the pipes and on detail work, the crew used FoamCat and Gusmer D guns.

The Kohls crew let the foam cure for a few hours before returning to the first roof section that was foamed. They then applied Conkilyn's benchmark basecoat at 1.9 gallons per square foot with a Graco airless coating gun and 645 tip. This basecoat was allowed to cure for 24 hours before returning with the topcoat. The second layer was a topcoat. The final layer of the topcoat received white SESCO granules to give durability to the roof. These final two layers were applied at 1 gallon per square foot with the same equipment used on the basecoat. All in all, the finished system would give the roof a 15-year warranty.

Luckily for each of the Kohls crew members and the Cargill staff, all safety guidelines — through project planning and communication — were followed to a T. The Kohls team completed the new research and development building without any safety issues.

“We’ve been working with Cargill for the last four to five years on different facilities,” Pat Kohls said. And they plan on continuing this partnership in the future.