

## Roof Replacement Leads to Proven Energy Savings



### JOB PROFILE

**CARLISLE APPLICATOR:**  
S. D. Carruthers Sons, Inc.

**ROOFING SYSTEM:**  
Carlisle 60-Mil Sure-Weld® TPO

Over the course of the 60 years they have been in business, S. D. Carruthers Sons, Inc. of Argyle, NY has developed a reputation for professionalism, excellent workmanship, and technical expertise. They provide customers with a wide variety of services ranging from roofing evaluation to installation. They offer a long and distinguished client list, and have decades of experience installing large commercial roofing projects. Carruthers is serious about their commitment to follow-up service, quickly responding to maintenance or roof modification requirements after installation. These reasons and more are why Carruthers' Vice President Bob Minder knew his team was up to the task of replacing the failing roof of a nearby 140,000 square foot manufacturing facility.

After receiving a call in 2009 about this reroofing project, Carruthers' team of experts spent a day on the rooftop, inspecting every detail. The entire roof, made up of 140,000 square feet of standing-seam metal, was subject to a thorough evaluation. "We observed leaks around the rooftop penetrations and laps in the metal panels," said Minder. These issues had been dealt with for years by addressing them as individual repairs, but maintenance was becoming extremely costly. By 2009, the annual cost of patching leaks on an as-needed basis had skyrocketed into the tens of thousands of dollars. While considering various roofing systems to present to the building owner, Minder wanted to ensure the system would be durable, long-lasting, and environmentally friendly.





Minder knew that the design of a building's roofing system, particularly the amount of insulation used in the roofing assembly, could dramatically lower the building's energy use, as well as its energy bills. Reduced energy consumption would obviously be great for both the environment and the building owner's bottom line. While an insulation-free coating system was originally considered, Minder knew the best choice was a more energy-efficient system.



Identifying the energy impact of the facility's heating and cooling needs, and determining how a properly insulated roof could mitigate that impact, was critical when designing this roofing system. Carruthers employed RoofSense®, a life cycle analysis program developed by roofing industry leader Carlisle SynTec Systems, to develop a recommendation for the optimal roofing system for this facility. RoofSense is similar to models for determining energy efficiency developed by organizations such as the Department of Energy, the Environmental Protection Agency, and the Carrier Corporation. However, RoofSense is unique in that its data is gathered from several of these independent sources and its results are benchmarked against those sources, ensuring accurate and unbiased results. A roofing system specification, along with the building's historical energy consumption data, was plugged into the RoofSense program. As Carruthers knew, and as RoofSense confirmed, a full recover of the outdated roofing system was the best choice for the job in terms of energy savings over the long term.

Carruthers recommended an environmentally friendly hybrid insulation assembly consisting of 3" (R-12) Carlisle Insulfoam® expanded polystyrene (EPS) insulation between the ribs of the standing seam metal panels, overlaid with 1.5" (R-9) Carlisle HP-H rigid polyisocyanurate insulation. The proposed insulation

# CASE STUDY

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assembly would mitigate heat gain/loss and provide an added R-21 insulation value on top of the metal panels to remain.

The system would feature a 60 mil, white Sure-Weld thermoplastic polyolefin (TPO) membrane, selected for its toughness and ease of installation. The building owner decided to re-roof the building's 28,000 square foot office facility with Sure-Weld TPO as well, with an additional inch of polyiso insulation. The Roof\$ense report suggested that the benefits of the new roof would be realized immediately, with potential energy savings of \$20,000 annually. These savings would result primarily from reduced natural gas expenditures during the colder months.

Plans were finalized in the late summer of 2010, and crews began the job in mid-October. Due to weather-related safety hazards and concern over maintaining the highest-quality roofing standards, work was halted in December. Crews returned in the spring and completed the project by mid-May 2011. In the end, Carruthers was able to install a roofing system with

a 20-year total system warranty, and with the potential to save tens of thousands of dollars per year in energy costs.

In the case of many roofing jobs, the story would end with a quality, leak-free roof and a satisfied customer enjoying the benefits of a well-designed roof installed by an expert contractor. However, this particular success story has an additional chapter. Bob Minder of S. D. Carruthers was able to review the energy bills for the eleven months after the roof was installed versus the same time period prior to installation. Minder found that the year-over-year savings were approximately \$21,000. This number was about 9% greater than Carlisle's Roof\$ense program had originally predicted. Bob Minder was pleasantly surprised at the results Roof\$ense provided, stating, “The amount of reduction we saw in the heating bills over that year was right on target. The numbers really spoke for themselves. There is no question, this system was simply the best choice for the job.” These findings further validated Minder's confidence in Roof\$ense and made him even more enthusiastic to offer the service to other customers.



# CASE STUDY



A few simple but compelling conclusions can be drawn from this success story. The first is that the proper amount of insulation is a very important component of the building envelope and can dramatically decrease energy costs. Furthermore, the study demonstrates how using high-quality, energy-efficient materials – in a day and age when building ‘green’ is seen as important but often too expensive – is in fact a boon to bottom-line savings. This school of thought is in stark contrast with the approach that seeks to save money only on the initial installed cost, which often ends up costing the customer more in the end. Lastly, hiring a contractor such as S. D. Carruthers, who has the experience, technical skill, and access to the latest technological tools such as RoofSense, was absolutely essential to the success of this project.

If your roof is aging and inefficient, please contact S. D. Carruthers (800-244-3545) for a free roof condition report and/or RoofSense energy analysis, or visit their website at [www.sdccarruthers.com](http://www.sdccarruthers.com).