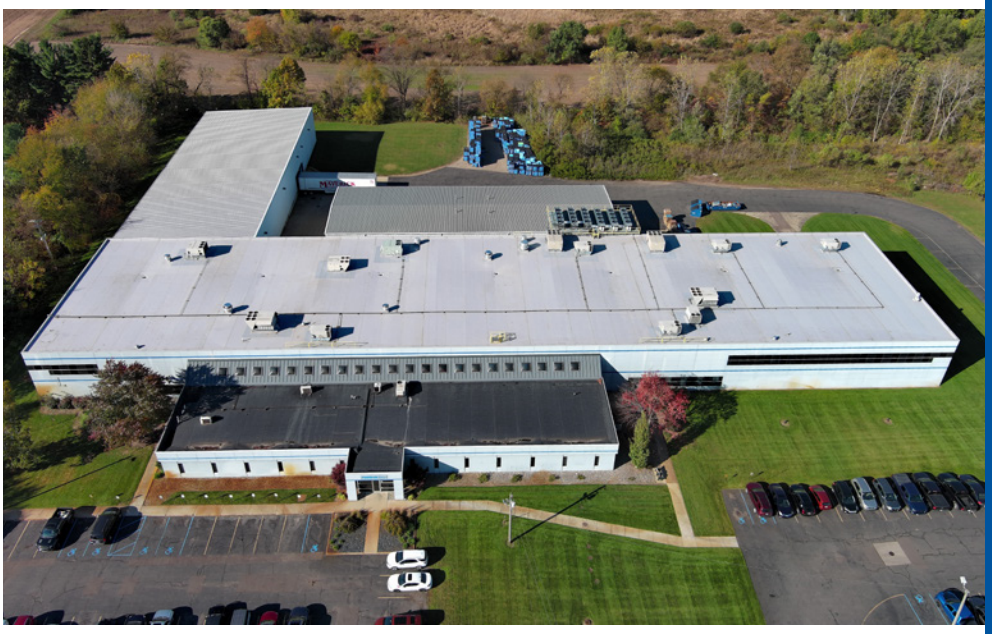
CARLISLE SYNTEC SYSTEMS

Sure-Seal® EPDM Roofing Systems

CASE STUDY

Nissha Eimo Technologies



When it comes to re-roofing manufacturing facilities, the projects are often straightforward and without any significant installation challenges. But when the facility is a highly sensitive technology company with extensive clean room space below and specialized processes for critical component manufacturing and assembly, then the roofing project becomes much more critical and challenging.

That was the situation facing Arrow Roofing & Supply, Inc., when they were awarded the bid to install a new 43,000-square-foot roof on the Nissha Eimo Technologies plant in Vicksburg, Michigan. Arrow is a full-service commercial roofing company headquartered in Grand Rapids, Michigan, and a longtime Carlisle applicator. They are also big fans of EPDM systems, which is one reason why they were selected to install the 60-mil Sure-Seal EPDM Cool Gray Membrane.

"We love EPDM, and since the administration offices on the plant has an EPDM roof, the client wanted a compatible system over the manufacturing plant," said Josh Neumann, president of Arrow Roofing. "However, because they generate lots of heat from various processes in the plant, they wanted to minimize the heat gain that you can get with a black roofing system, so the Cool Gray EPDM membrane was the perfect option for the project."

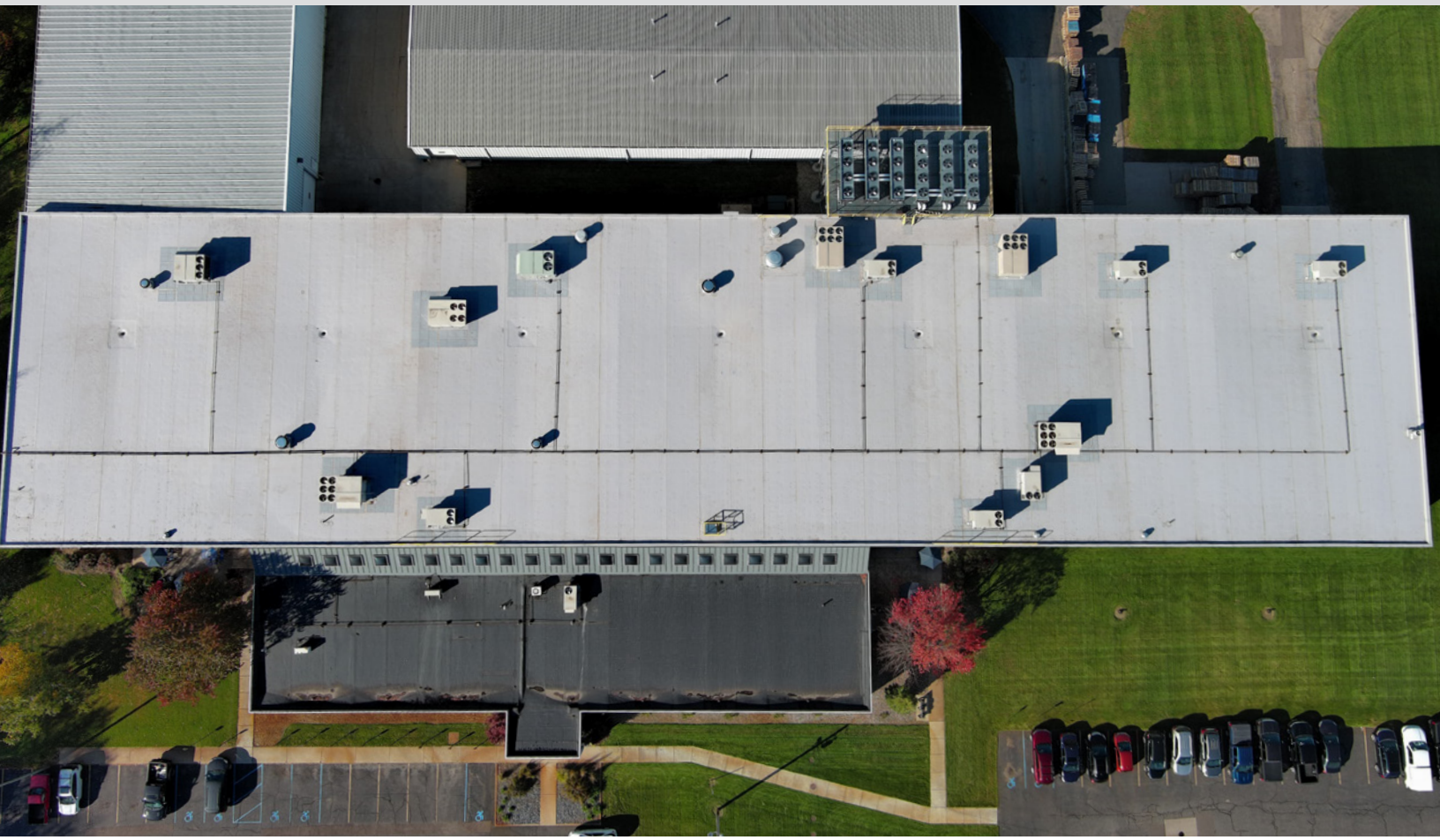
JOB PROFILE

PROJECT LOCATION:
Vicksburg, Michigan

CARLISLE APPLICATOR:
Arrow Roofing & Supply, Inc.

BUILDING OWNER:
Nissha Eimo Technologies

ROOFING SYSTEM:
Carlisle 10'-wide, 60-mil Sure-Seal® EPDM Cool Gray Membrane, adhered to 2" InsulBase® Polyiso with Carlisle Sure-Seal 90-8-30A Bonding Adhesive.



Out with The Old

The project was managed by Frederick Construction, a Vicksburg-based general contractor, who worked with MasterTech Roof Management of Stanton, Michigan, to develop the project specification.

The original ballasted rubber roof on the plant was about 25 years old and at the end of its service life. So, the first step in the process was to remove the existing ballasted EPDM roof from the building.

“We removed the ballast from the roof using traditional shovels and wheelbarrows.” said Neumann. “Since the facility was operating, we had to control how much we could remove and re-roof in a day or two, which was about 5,000 square feet, so shoveling the ballast made the most sense for this project.”

In with The New

During the tear-off process, the Arrow team identified wet areas in the assembly which needed to be removed and replaced as well. Once each area was ready for the new roof, the team added a layer of 2" Carlisle InsulBase polyiso insulation.

“The facility generates lots of heat from the inside,” said Neumann, “so they didn’t want to add lots of R-value to the roof, which was another reason for the Cool Gray vs. black EPDM membrane.”

The Arrow team mechanically fastened the polyiso using 5" Carlisle InsulFast™ Fasteners and 3-inch insulation plates.

“Mechanically fastening the insulation was our biggest challenge for the project,” said Neumann. “The facility has tons of nested conduit runs, including some high-voltage power lines, installed just below the roof deck. As a result, it was critical that our guys carefully install the insulation, making sure to fasten only into the high ribs of the metal decking.”

Using the 5-inch fasteners ensured that they would not hit the low ribs or fasten into any of the conduit or power lines below the roof.

Another challenge that Arrow had to address while mechanically fastening the insulation was controlling the dust generated during the process.

“The facility includes several clean rooms and areas that must remain free from falling dust and debris,” said Neumann. “For example,

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they deal with glass for touch screens, which need to remain absolutely clean and dust free."

To ensure that they did not introduce any contaminants into the plant, the Arrow team coordinated their work carefully with the plant supervisor and made sure to take measurements both inside and out for fastening into the top ribs.

"We also made sure to manage the process by capturing the falling dust below the roof," said Neumann. "Our team worked closely with the plant guys to make sure that we completely protected their equipment and processes while the new roof was being installed."

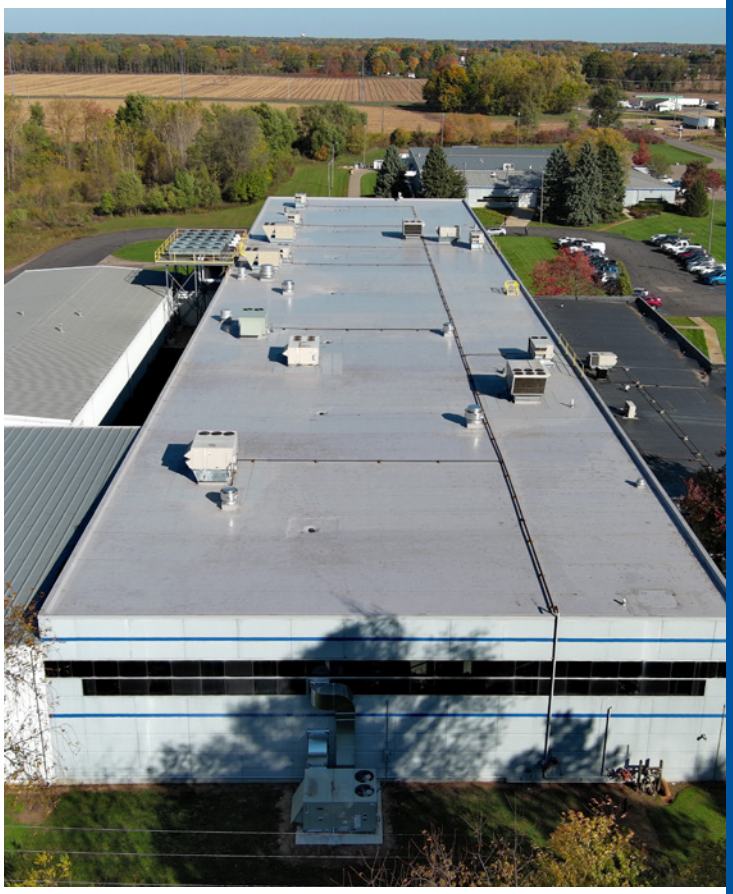
The portion of the plant being re-roofed is rectangular. The steel roof deck has seven internal drains located in a line down the center of the long side of the structure. The deck slopes to each drain creating a series of ridges and valleys like an accordion across the long axis of the building's roof deck.

Once the insulation was installed, the Arrow team mechanically fastened four-way tapered drain sumps around each of the drains and also cleaned and repaired the existing cast iron drains.

There are about a dozen air handlers on the roof as well as some other vent stacks and penetrations that had to be flashed. Each of the air handlers were set on curbs. The Arrow team flashed each curb and installed counter flashing at the top of each one. In addition, the team installed gray walkway pads around each of the units to provide additional roof protection when the units are being serviced. In total, 350 walkway pads were installed.

In addition, there is a parapet wall around the entire perimeter of the roof. The Arrow team terminated the EPDM membrane at the perimeter by running the membrane up and over the wall, and then installing a shop-fabricated 24g Pac-Clad edge metal.

In the field of the roof, Arrow installed the EPDM membrane using Carlisle Sure-Seal 90-8-30A Bonding Adhesive, a high-strength,



solvent-based contact adhesive, which they applied to both the substrate and the membrane before mating the two together and rolling it in place.

"Removing the old EPDM left tons of carbon black on the roof," said Neumann. "We had to make sure the roof was really clean by removing that dust before installing the new Cool Gray membrane in order to keep the new membrane clean and looking good."

CASE STUDY

The membrane was also provided with Carlisle's Factory-Applied Tape™ which makes the seaming go much faster.

"The Factory-Applied Tape is great for saving us save time and reducing the risk of seam issues," added Neumann. "You only prime one side and there's no setting time, so it goes much faster."

Arrow also found the Cool Gray to be much more comfortable to work with. The temperature during the installation ranged from the 50s to the mid-70s, and the roof stayed within a few degrees of the ambient temperature.

"The team really liked working with the Cool Gray membrane," said Neumann. "It was our first time using this product and our guys really liked it, and everyone likes the fact that EPDM has a long and successful performance history and can be serviced in the future if need be."

The project required extensive planning and coordination with the Nissha Eimo team, but the result is a beautiful new roof that will protect the plant for decades to come.

NISSHA EIMO TECHNOLOGIES

800-479-6832 | P.O. Box 7000 | Carlisle, PA 17013 | Fax: 717-245-7053 | **www.carlislesyntec.com**