The Hanover Insurance Group™

Hanover Risk Solutions

Hail Protection for HVAC Equipment and Skylights

Hail Damages Equipment and Your Business

Hail storms can damage your roof top equipment and skylights. This damage can cause loss of heating and cooling, water damage and loss of use of the facility.

HVAC systems are very vulnerable to hail damage; hail impact on the fins of the coil assemblies causes the fins to become compressed. When the fins are compressed, the heat transfer function of the HVAC unit is diminished and the system does not function properly. In addition to the physical damage to the equipment, you will have interruptions to the heating and cooling of the building. If you have processes that require cooling, then ongoing operations may be compromised.

Be aware that hail damage can have a cumulative effect on your system. Repeated damage may result in replacement of the unit. The downtime needed to make changes or repairs to the roof, ductwork and controls may make replacement a significant project. Protection of your systems may be the best risk management choice.

Hail Guards

Hail guards offer some protection for your HVAC systems. These guards provide a degree of protection from hail and other flying debris, though the size and velocity of hail can impact the performance of any hail guard. Most systems are designed around hail stones sized at 1 ½" in diameter or less.

If your local area has experienced larger hailstones, you should discuss with the designer of the hail protection system. They may change the materials, mounting and frame systems to compensate for heavier hail stones and higher impact forces.

The best solution is to purchase HVAC equipment with factory installed hail guards. These hail guards are engineered to provide the correct airflow though the system and to maintain the operating efficiency of the unit. They can be color matched to the factory finish for seamless appearance.

Frequently, this option is not specified for the HVAC units. What can you do now?

The first alternative is to contact the original equipment manufacturer and see if they can supply hail guards. This helps ensure that the guards are properly engineered and will not compromise system performance.

The second alternative is to find a third party provider who can manufacture a protective system for your units. We recommend you consider the following points when making this choice.

- A simple panel of expanded metal over the coils seems like an easy choice to protect the coils. But what is the impact on airflow through the unit? Changing the airflow through the coils can change the efficiency and capacity of the system. You should consult with the manufacturer's representative or a system designer to be sure the changes you are making will not impair system operations.

continued ▸

- Adding a system of louvers around the coils may be a solution. These can be engineered to maintain proper airflow and still deflect the hail from the coils. Proper mounting with the ability to remove the guard to service the unit are considerations.
- Systems that combine filtration and hail protection are also available. These systems use a tightly stretched filter media over a rigid frame. The frame is offset from the coils to allow the hail to bounce off of the filter surface. This system would keep the coils cleaner and improve system performance. The addition of the filter media means that routine cleaning is more important, but the external filter can be easily cleaned and the need to pressure wash coils is reduced.
- Consider the attachment of the system. Attaching a heavy guard to lightweight sheet metal may not provide the rigidity you require. How easy are the guards to remove for coil cleaning and system maintenance?
- If you need to build a framework to hold the hail guards, how will that frame be attached for wind resistance? Attaching to the building roof surface will require coordination with a roofer to maintain a waterproof surface.

Costs for hail guards are difficult to estimate. Factory supplied items vary widely by manufacturer and the age of the equipment may impact availability. Retrofitted materials are custom fabricated and require installation by either the supplier or your staff. The fabrication costs versus installation costs can vary by locality and the degree to which the units are accessible.

Our research indicated that retrofit systems may be in the range of $25 -$30 dollar per square foot; a unit with two six foot square fan coil surfaces could cost over $2,000. The cost factors for the louver system and the filter based system are comparable. Estimating costs is difficult due to labor and material fluctuations.

Skylights

Skylights are another exposure to consider. The impact resistance of the glazing material in a skylight may not be equal to the impact energy of large hail stones. Adding a protective cover over the skylight may be the solution. Polycarbonate and acrylic materials may offer good impact resistance, but may not offer the best UV stability or scratch resistance. You need to balance the need for optical clarity with impact resistance. The costs for this protection will vary based on materials used, mounting method and accessibility of the skylight for installation. Costs may start at $25 a square foot for these covers.

Window films may offer some resistance to hail. They may not keep the glass from breaking, but the film can hold the glass in place. These films can be clear, tinted and may offer some UV filtering.

To learn more about Hanover Risk Solutions, visit hanoverrisksolutions.com

The Hanover Insurance Group™

The Hanover Insurance Company
440 Lincoln Street, Worcester, MA 01653

hanover.com
The Agency Place (TAP)—https://tap.hanover.com

171-0859 (01/14) LC 12-148