

**Firestone**  
**BUILDING PRODUCTS**  
**NOBODY COVERS YOU BETTER.™**



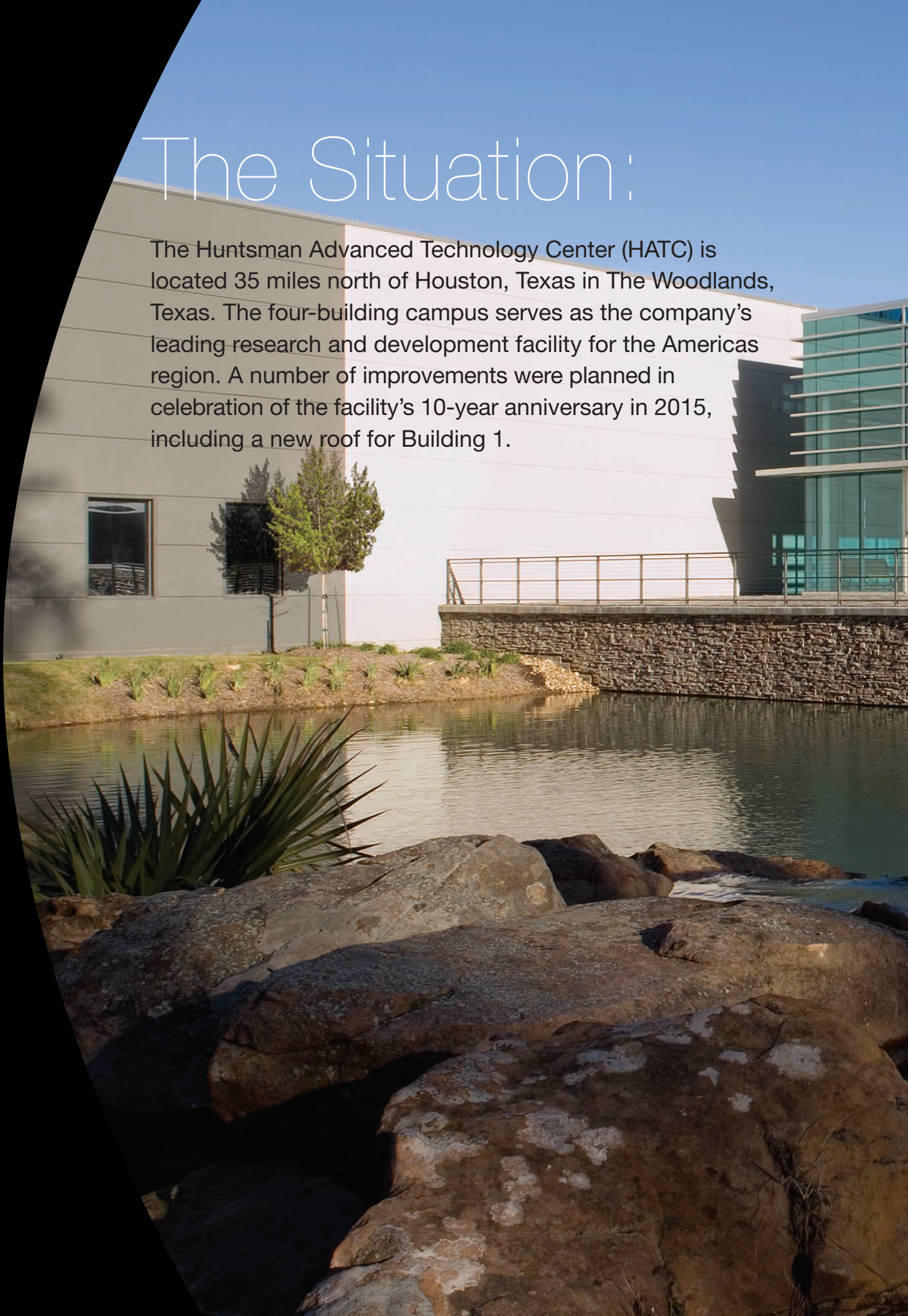
# Case Study: A Roof As Advanced As the Technology It Houses

Huntsman retrofits Advanced Technology Center  
with state-of-the-art Firestone Building Products



# The Situation:

The Huntsman Advanced Technology Center (HATC) is located 35 miles north of Houston, Texas in The Woodlands, Texas. The four-building campus serves as the company's leading research and development facility for the Americas region. A number of improvements were planned in celebration of the facility's 10-year anniversary in 2015, including a new roof for Building 1.







The aging PVC roof on Building 1 was approaching the end of its useful life, after more than two decades of wear, tear, and exposure to the elements. To protect the expensive equipment within multiple labs in the facility, and to obtain the highest level of certification from its insurer, FM Global, Huntsman decided to remove and completely replace the existing roof.

Huntsman wanted to utilize state-of-the-art roofing materials to modernize the L-shaped, 70,000-square-foot facility, and prevent future damage to the structure and its contents. Building and energy code requirements had changed over the previous 20 years; most low-slope commercial roofs in this Texas climate zone are now required to have an insulation R-value of 20 or higher to meet the latest standards in the International Energy Conservation Code (IECC) or ASHRAE standard 90.1. Compliance to local Texas building codes for wind, fire and weather protection is also required. Therefore, Huntsman needed to select a roofing solution that met or exceeded these increased insulation requirements and the updated building code provisions.

This level of roof insulation R-value is highlighted by a recent code update in the 2015 IECC, which clarified the long-standing requirement that the roof insulation for most low-slope roofing systems must meet current energy codes when roofs are replaced. (It is important to note: when tearing off and replacing a roofing system that includes insulation above the roof deck as part of the thermal envelope, the roof insulation has to be brought up to the R-values outlined in the current code.)

## ABOUT THE PROJECT

**Size of the roof:** Approximately 70,000 sf.

**Location of project:** The Woodlands, Texas

**Building type:** Single-story research and development facility

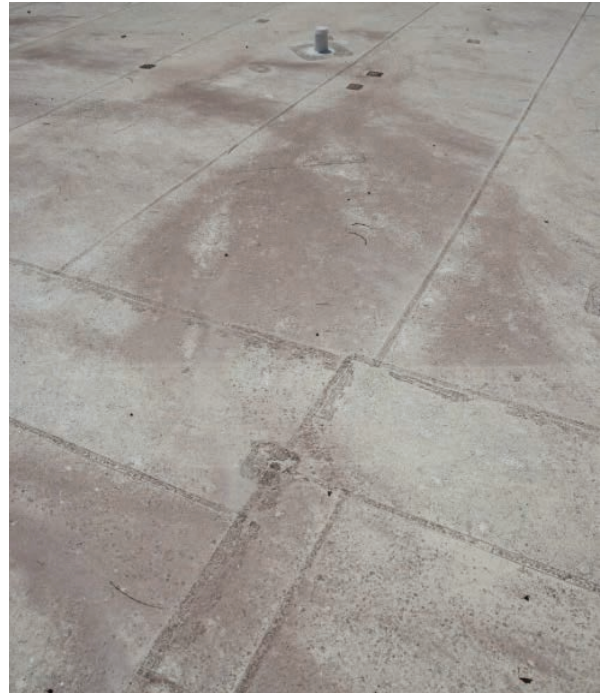
**Original roof material type:** PVC membrane, light weight insulating concrete on metal deck

**Replacement roof material type:** Thermoplastic membrane roofing on top of polyiso board

**Age of building:** Over 22 years







# The Solution:

Huntsman considered a number of roofing materials, but one seemed like a natural fit: a long-lasting thermoplastic polyolefin (TPO) roofing system from Firestone Building Products. Firestone Building Products is a long-standing customer, and some of the TPO roof system components were developed in part at the HATC.

TPO single-ply roofing membranes are among the fastest growing commercial roofing products and have gained broad industry acceptance, mainly for their performance and installation advantages.



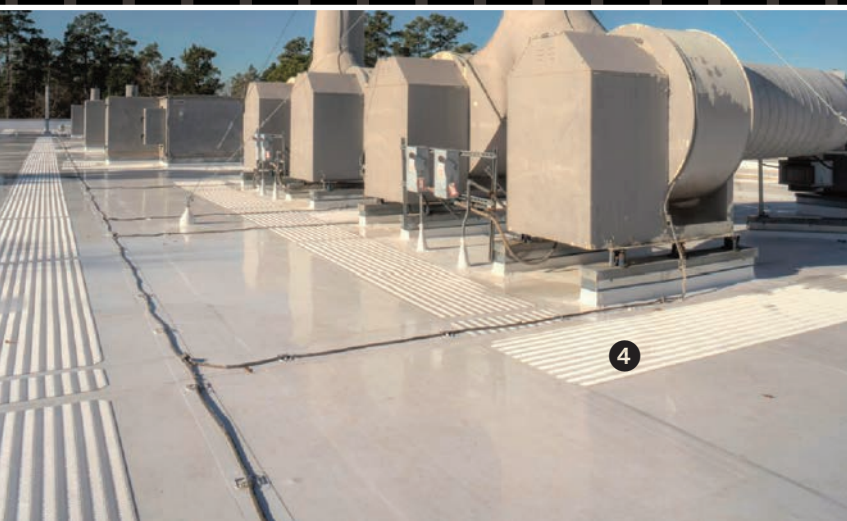
The following roofing system components were installed over the existing roof deck, which is a 2.5-inch lightweight concrete over 24-gauge steel form decking:

#### 1 Firestone ISO 95+™ GL Insulation

Insulation boardstock that offers significant energy efficiency benefits through the highest R-value ratings per inch compared to other insulation materials. The 3.2-inch, ISO 95+ has an R-value of 18.6.

#### 2 Firestone ISOGARD™ HD Cover Board

Insulation cover board (.5-inch thick) with a closed-cell polyisocyanurate core for high thermal performance, with superior wind uplift resistance. Cover boards traditionally have a very low insulative value, but Firestone ISOGARD HD Cover Board — developed in part at the HATC facility in collaboration between the Huntsman and Firestone Building Products technical teams — boasts an R-value of 2.5, which is five times greater and weighs less than one-third of common glass mat gypsum cover boards.



#### 3 Firestone UltraPly™ TPO, 60 mil

Single-ply, polypropylene and ethylene propylene composite roofing membrane. This is one of Firestone's most popular materials and offers a 20-year warranty.

#### 4 Firestone UltraPly TPO Walkway Pads

Since workers will regularly access the roof to maintain HVAC equipment, Huntsman opted to protect the roof by placing walk pads in high-traffic areas.



#### 5 Firestone QuickSeam™ Yellow Safety Strip

High-visibility tape delineates walkways to all designated work areas, and provides a warning strip before reaching the edge of the roof.





# Installation & Completion:


The roof system installation was estimated to take 30 to 60 days, depending on weather, and was completed in 90 days during October, November and December 2015.

Peak Roofing, Inc. in Houston, Texas, completed the project with safety and quality in mind. The company is a highly-regarded Firestone licensed contractor that has a track record of outstanding performance for its customers. The crew of roof mechanics were knowledgeable, skilled and took the proper precautions to maintain a safe work environment. The result is a high performance roofing system, warranted by Firestone Building Products for 20 years, which will help protect the HATC Building 1 from the outdoor elements.

Removing an existing roof and replacing it in good weather can be a complex process, but torrential rains, like the ones experienced in The Woodlands, Texas in late October after this project was well underway, provided a considerable challenge. Fortunately, Peak Roofing was diligent in their temporary tie offs and attention to details, so despite the record rainfall while the project was in progress, there was no interruption of operations at the HATC throughout the construction.

The days of hoisting materials up ladders and mopping tar and gravel on the roof are long gone. Today, cranes safely lift the materials onto the roof. Polyiso insulation is attached with fasteners and plates or foam adhesives to the deck, and the TPO membrane seams are welded together using robotic welders. These technological advances make roofing safer for the installers and longer-lasting. The project was completed in late December 2015.

Huntsman worked hand-in-hand with commercial property insurer FM Global, from product selection through completion, to ensure the roof system exceeded requirements for wind class, R-value and more. FM Global thoroughly vetted the completed project and recently awarded Huntsman the 'Highly Protected Risk' designation, which is given to facilities with a lower than normal probability of loss.



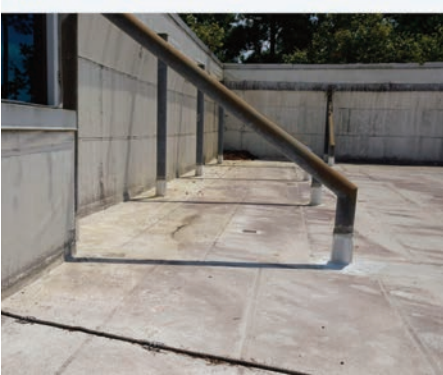
# The Advantages:



Several key advantages made the Firestone TPO roofing system an easy choice for Huntsman:

## **Long-lasting and recyclable**

Huntsman was dedicated to selecting a material with a long lifespan, thereby reducing the roof's environmental impact. TPO single-ply roofing membranes provide resistance to ultraviolet, ozone and chemical exposure, helping to ensure their longevity. In laboratory testing, Firestone UltraPly TPO lasted three times longer than PVC and 12.5 percent longer than its closest TPO competitor. Furthermore, TPO is recyclable.



## **Field tested**

Firestone's basic TPO formulation is virtually unchanged since its introduction in 1998. Nearly 3.5 billion square feet of TPO has been installed worldwide.

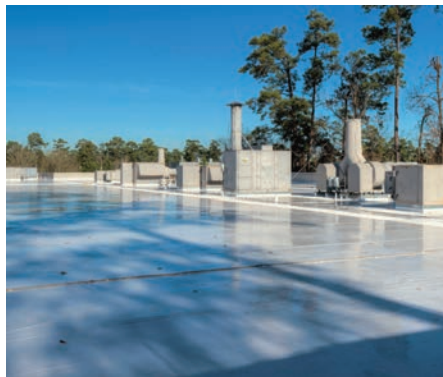


## **Increase indoor comfort**

The increased level of insulation and the highly reflective white TPO membrane can help lower roof temperatures and help lead to greater indoor comfort. Firestone UltraPly TPO is ENERGY STAR® certified and many of the components of this roofing system contribute to points for LEED® certification.

## **Low-maintenance**

Huntsman's new roof is virtually maintenance-free. Additionally, the new roofing material will help avoid the pooling or ponding of rainwater, which occurred with the old roof. TPO is less susceptible to the mold, mildew and discoloration that affect PVC roofs. Workers who access the roof or remove debris from the tall trees on the HATC campus can easily stay on the safety-taped walk pad areas.





# The Conclusion:

Thanks to the new, energy efficient UltraPly TPO roof with polyiso insulation and cover boards, the HATC Building 1 roof has achieved a combined R-value of 21 – exceeding local, state and international energy codes. The durable roof has an expected lifespan that should well exceed 20 years. By utilizing state-of-the-art materials developed in partnership with this key customer, Huntsman can truly say that with Firestone Building Products .....

**“nobody covers you better.”**