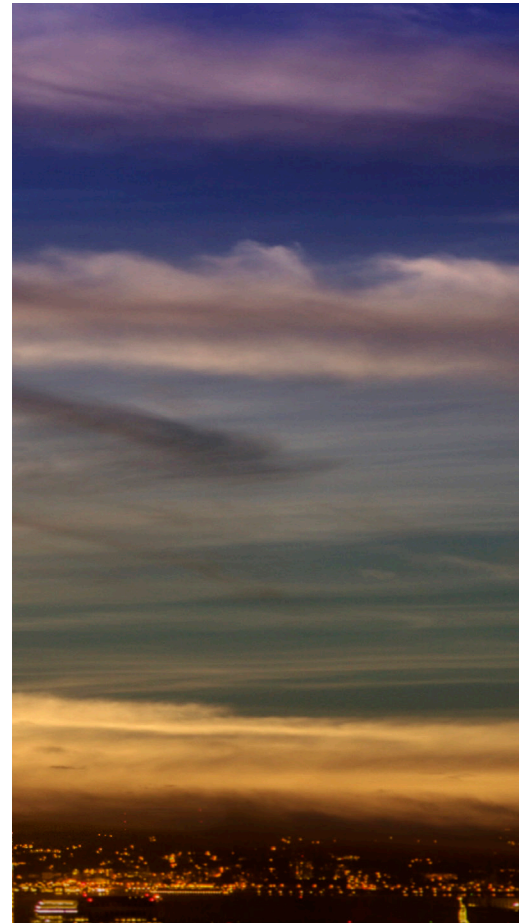
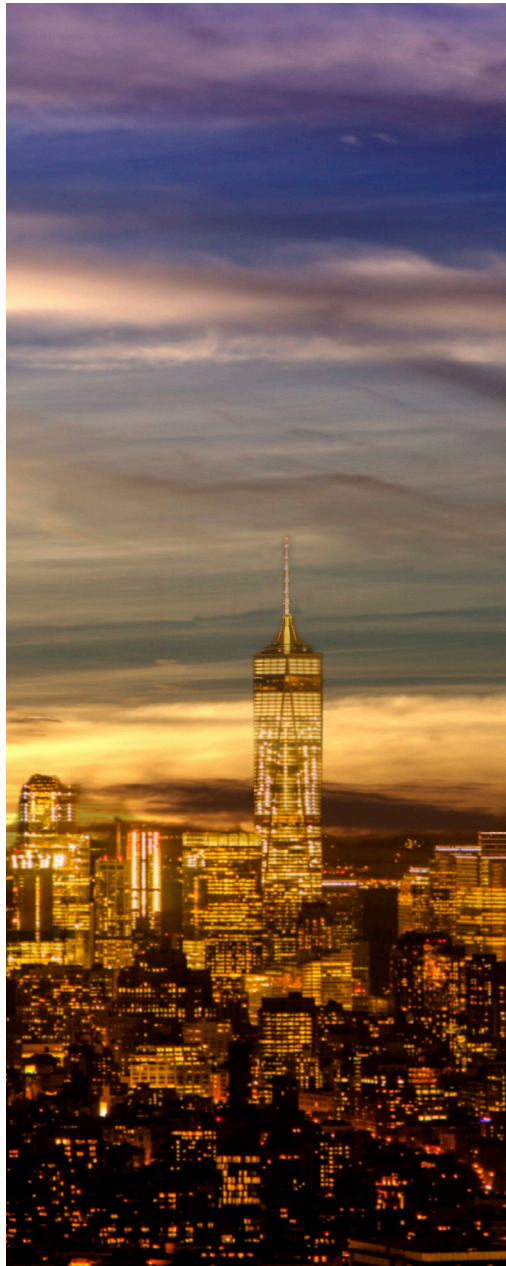


## CASE STUDY

# Empire State Building

Sustainability and energy efficiency goals have been paramount to the team at the Empire State Building since the early 2000's. ArmaFlex® insulation played a significant role in meeting those energy goals at the time of a massive renovation that was completed in 2010. We decided to check in with the engineering team at the building to see how ArmaFlex was holding up. **Armacell in action.**

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 **armacell**<sup>®</sup>  
ArmaFlex<sup>®</sup>

# ArmaFlex Still Performing After 30 Years

Long-lasting insulation helps the Empire State Building to exceed its sustainability and energy goals

**PROJECT:**

Empire State Building

**LOCATION:**

New York City

**PARTNERSHIP:**

Jones Lang LaSalle, Clinton Climate Initiative Cities Program, Johnson Controls, and the Rocky Mountain Institute.

**CHALLENGE:**

Renovate and retrofit the building to achieve LEED® Gold and deliver 40% energy savings.

**SOLUTION:**

Using ArmaFlex insulation on ducts, chillers, and piping provides necessary energy savings on key equipment, and is still performing decades later.

**THAT WAS THEN**

In 2009 the Empire State Building underwent a multi-million dollar upgrade to save energy and meet carbon reduction goals. The project required an expert team of organizations leading the field of energy efficiency and sustainability which included the Clinton Climate Initiative Cities Program, Jones Lang LaSalle, Johnson Controls, and the Rocky Mountain Institute. Together they mapped out a plan to help the world's most famous building not only meet, but exceed, their goals in record time.

Because buildings are one of the largest contributors to greenhouse gasses, especially when emissions from electricity end-use are included, the renovation included many upgrades such as efficient windows, a chiller plant retrofit, updated building controls, and new tenant energy management systems. Armacell's ArmaFlex® insulation was written into the

specification without substitution and used on the chiller, chilled water piping, condensate lines, and ducts. Its closed-cell structure and flexible nature makes it the perfect choice for new installations or retrofits. It can be installed in tight spaces and when installed properly can last the life of the system, bringing years of performance with basic maintenance. And of course, it meets all the thermal conductivity requirements to save energy and control condensation, especially on below ambient temperature equipment.

An issue that is unique for skyscrapers is the stack effect. This occurs in tall buildings when the outside temperature is much colder than the indoor temperature. Warmer air inside rises looking for a way to escape, creating negative air pressure at lower levels, and pulling the cold air inside. This creates a challenge for maintaining temperatures throughout the building and is another reason why it's important

## Empire State Building Fun Facts:

- Has its own zip code 10118
- Largest tenant is LinkedIn
- 6<sup>th</sup> tallest building in the US (including antenna)
- 6514 steam radiators
- 5 miles of chilled water piping



to insulate piping on exterior walls. The low thermal conductivity of ArmaFlex makes it a great choice to prevent freezing.

ArmaFlex also met the indoor air quality expectations of the project managers. It's fiber-free and non-particulating, meaning no fibers will be introduced into the airstream, especially important in a duct liner application. Because it's manufactured with Microban® anti-microbial product protection, it inhibits the growth of mold and mildew in the insulation. It's also GREENGUARD Gold certified assuring low VOC emissions, which is appreciated by any building's occupants.

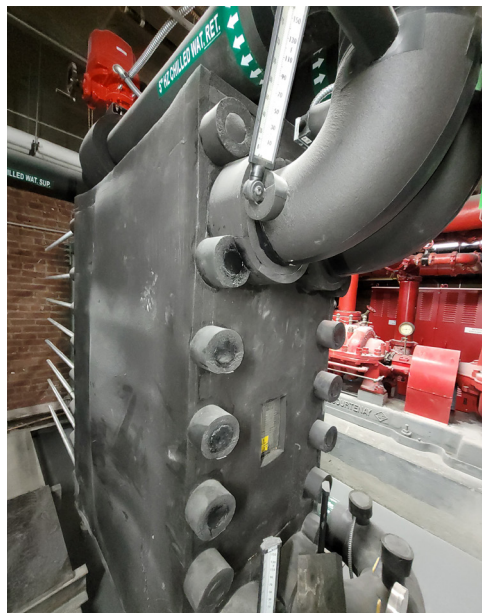
The renovation was very successful in terms of energy savings, easily achieving LEED Gold, exceeding the one-year goal by 5% and saving \$2.4 million in the first year. Powered by the successes of their own renovation, Dana Robbins Schneider, the SVP & Director of Energy, Sustainability and ESG, established the Empire Building Playbook: An Owner's Guide to Low Carbon Retrofits, a model for commercial real estate buildings to reduce energy costs and maximize real estate value, all while making sustainable decisions that reduce a building's carbon footprint.

Available to other interested commercial real estate developers, this guide offers step-by-step directions to meet sustainability goals and make smart investments.

### THIS IS NOW

To follow up with current product performance and energy goals in 2024, Armacell spoke to Timothy Dailey the Director of Engineering at the Empire State Realty Trust (ESRT) which holds a portfolio of many NYC properties including the Empire State Building. Dailey, an engineer with more than 40 years of expertise, along with his in-house team is responsible for multiple buildings. When asked about their progress with energy goals today, Dailey said "we're proud to say we are way ahead of schedule."

**"ArmaFlex doesn't fail, it performs great, and it looks good."**



Since the 2009 renovations concluded, already documenting tremendous energy and cost savings, NYC's Local Law 97 was enacted in 2019 setting limits on greenhouse gas emissions allowed by law. Its framework outlines that buildings in NYC must reach a goal of 40% reduction by 2030 and 80% reduction by 2050. "We're on track for our goals and improving every year," says Dailey. In addition to GHG emissions, the trust also focuses on energy, water, waste, health, biodiversity, and community engagement, setting targets that are independently

verified to meet or exceed local, federal, and international standards like the NYC Carbon Challenge, US Department of Energy's Better Climate Challenge, WELL Health-Safety, and the United Nations Sustainable Development Goals. In 2022, the ESRT achieved carbon neutral standing through a combination of initiatives including using renewable energy sources and direct reduction of carbon emissions.

ArmaFlex was an integral part of the 2009 renovation project, and it still is today. "ArmaFlex is a no-brainer," says Dailey. "It doesn't fail, it performs great, and it looks good. The aesthetic of our plant is really important to me, and when installed properly, ArmaFlex is clean and tight." The ESRT engineers still specify ArmaFlex for not only the Empire State Building, but also for all of its other buildings in the trust.

Today you'll find ArmaFlex on the chiller, chilled water piping, condensate piping, and ducts. And it's been performing as well as the day it was first installed. According to Jim Rose, Chief Engineer who has worked at the building for 42 years, ArmaFlex that was installed on piping and equipment in the 1990's is still performing and has never needed to be replaced! When a valve needs repair, they simply cut it out and patch it with new ArmaFlex for a seamless application. Proof that when properly installed and maintained, long-lasting ArmaFlex can last the life of the system, in this case performing for three decades.

### AND INTO THE FUTURE

At 93-years-old, the award-winning Empire State Building is now one of the most energy efficient buildings (of any age) in the world. The organization did it by making ambitious decisions that drive their admirable sustainability goals that pay back dividends year after year. Proving their leadership in sustainability, the Empire Building Playbook, now in version 2.0, has been updated with the latest resources needed to help other buildings develop long-term, cost-effective building decarbonization plans. The publication is available for free to any commercial building owner starting on their journey to be carbon neutral. To demonstrate that they continue to strive, the ESRT is on track to be Net Zero by 2035. Armacell will check back in another 30 years and see how ArmaFlex is performing in this iconic national treasure. ■

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## ABOUT ARMACELL

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As the inventor of flexible foam for equipment insulation and a leading provider of engineered foams, Armacell develops innovative and safe thermal and mechanical solutions that create sustainable value for its customers. Armacell's products significantly contribute to global energy efficiency making a difference around the world every day. With more than 3,300 employees and 27 production plants in 19 countries, the company operates two main businesses, Advanced Insulation and Engineered Foams. Armacell focuses on insulation materials for technical equipment, high-performance foams for acoustic and lightweight applications, recycled PET products, next-generation aerogel technology and passive fire protection systems.



For more information, visit:  
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