



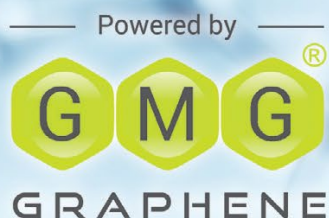
INTRODUCING

COOL WORX™

Energy Savings & Corrosion Protection

For HVAC/R Systems

**Transformative Graphene-Based Coating
To Expedite Heat Transfer**



**PATENT
PENDING**

ENERGY SAVINGS

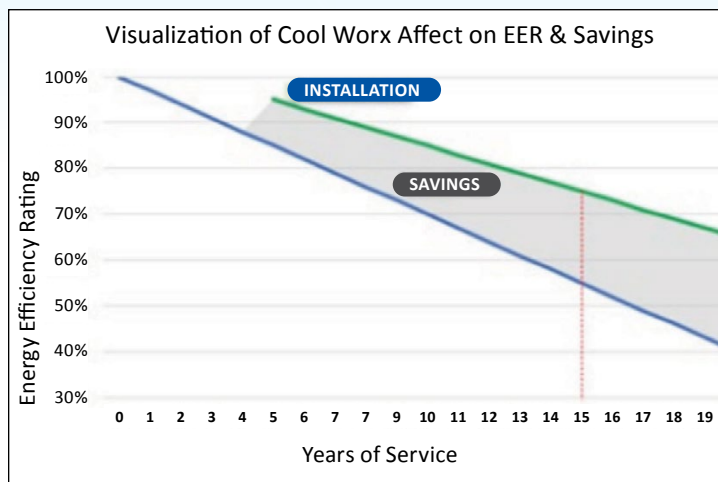
Energy conservation is a global concern and HVACR systems represent a major source of energy usage. As a leader in the HVACR industry, Nu-Calgon is proud to introduce a new product designed to reduce energy consumed by HVACR systems.

Cool Worx™ is a new graphene-based technology with a unique ability to expedite heat transfer. When applied to the condenser coil of an HVACR system, Cool Worx enables the system to transfer heat more quickly. This, in turn, shortens the compressor operating time and reduces energy consumption of the system. Experience remarkable efficiency and cost savings with Cool Worx!

Independent testing has demonstrated energy savings of up to 10% or more, depending on variables such as coil condition, weather load, and equipment health. These rigorous test results emphasize the substantial potential of Cool Worx to deliver a return on investment within 1-3 years, often accomplishing impressive outcomes in as little as 18 months. Notably, in a recent case study, Cool Worx achieved a remarkable 36% improvement in efficiency. (See back page.)

The Cool Worx coating ensures continual corrosion resistance, effectively halting further degradation of the coil. In instances where coil deterioration has occurred, the coating exhibits remarkable coil-restoring capabilities.

- In heat pump and refrigeration applications, its properties may reduce the time required in the defrost cycle.
- Cool Worx is formulated for air-cooled round tube perforated fin (RTPF) and microchannel (MC) coil designs, can be easily applied over non-coated or previously coated air-cooled coils.
- Cool Worx stands out for its one-time application, leveraging graphene's unique properties. It not only enhances coil performance, improving the pull-down rate, but also offers corrosion protection to alleviate ongoing coil degradation. **Improved performance translates to energy savings, reduced CO₂ emissions, and potential delays in system replacement expenses.**



APPLICATIONS

Cool Worx™ can lower HVAC/R energy costs across all facility types



Office Buildings



Hotels



Restaurants



Data Centers



Industrial



Schools



Energy and Power



Retail Outlets



Supermarkets



Food Storage and Processing



Transport Cooling



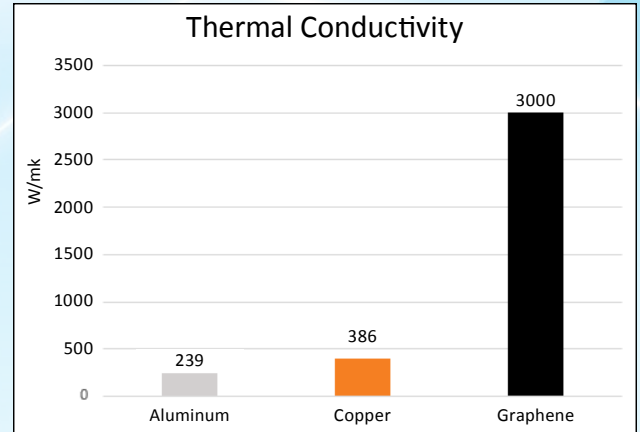
Medical Facilities

* Payback for Cool Worx is a function of system size, run time, and local energy cost—including the particular condition of the air-cooled coil. Results will vary. Larger systems that consume more energy and have average or more run time in areas with average or more energy rate costs will see a quicker payback.

COOL WORX

Cool Worx is a water-based acrylic coating formulated for air-cooled coils in stationary and transport HVAC/R, thermal management, and industrial process cooling applications. Specifically formulated for outdoor coils, it is equally suitable for indoor coils. Cool Worx elevates system performance through graphene's superior conductive properties and is easy to apply.

- **Thermal Conductivity:** Integration of graphene into Cool Worx enhances heat dissipation across the condenser coil.
- **Increases Surface Area:** Aids in heat dissipation within the thin coating layer of Cool Worx, with one gram of graphene nanoplatelets offering up to 300 square meters of surface area.
- **Resists Corrosion:** Graphene forms an impermeable barrier, preventing corrosion. The properties of graphene may reduce the time required in defrost cycles for applicable equipment.



Graph shows graphene used in Cool Worx is more conductive than copper and aluminum.

PERFORMANCE PROPERTIES

PROPERTY		TEST METHOD	COOL WORX RESULT
Salt Spray	Marine Air Corrosion Resistance	ASTM B117	30,000 hours
Salt Spray, Acidic		ASTM G85 A1	Exceeds 3000 hours
Water Immersion		ASTM D870	500 hrs minimum
Cross Hatch		ASTM 3359	5B
UV Resistance		ASTM D4587	Exceeds 1000 hours
Flexibility		ASTM D522M	PASS

COOL WORX PROCESS

STEP 1 COIL CLEANING

Coil surface must be clean and dry before applying Cool Worx. For most situations, use Nu-Calgon's Tri-Pow'r HD per label instructions, a detergent-based cleaner to remove grime off the coil, rinse coil with fresh water and allow coil surface to dry.

For situations where corrosion exists on the coil or a previous coating is on the coil, use Nu-Calgon's Nu-Brite™ per label instructions to best prep the surface for long-term Cool Worx adhesion. Thoroughly rinse coil with plenty of fresh water and allow coil surface to dry.

STEP 2 COOL WORX

Apply Cool Worx by using any market-available HVLP sprayer. This two-in-one coating enhances the heat transfer rate and provides ongoing corrosion resistance preventing further coil performance degradation during service.

STEP 3 COIL MAINTENANCE

Sustain peak coil efficiency with regular cleaning. Nu-Calgon's Cal-Green is recommended for effective maintenance of the Cool Worx coated coil.

For more information, contact Nu-Calgon or visit www.coolworxhvacr.com.



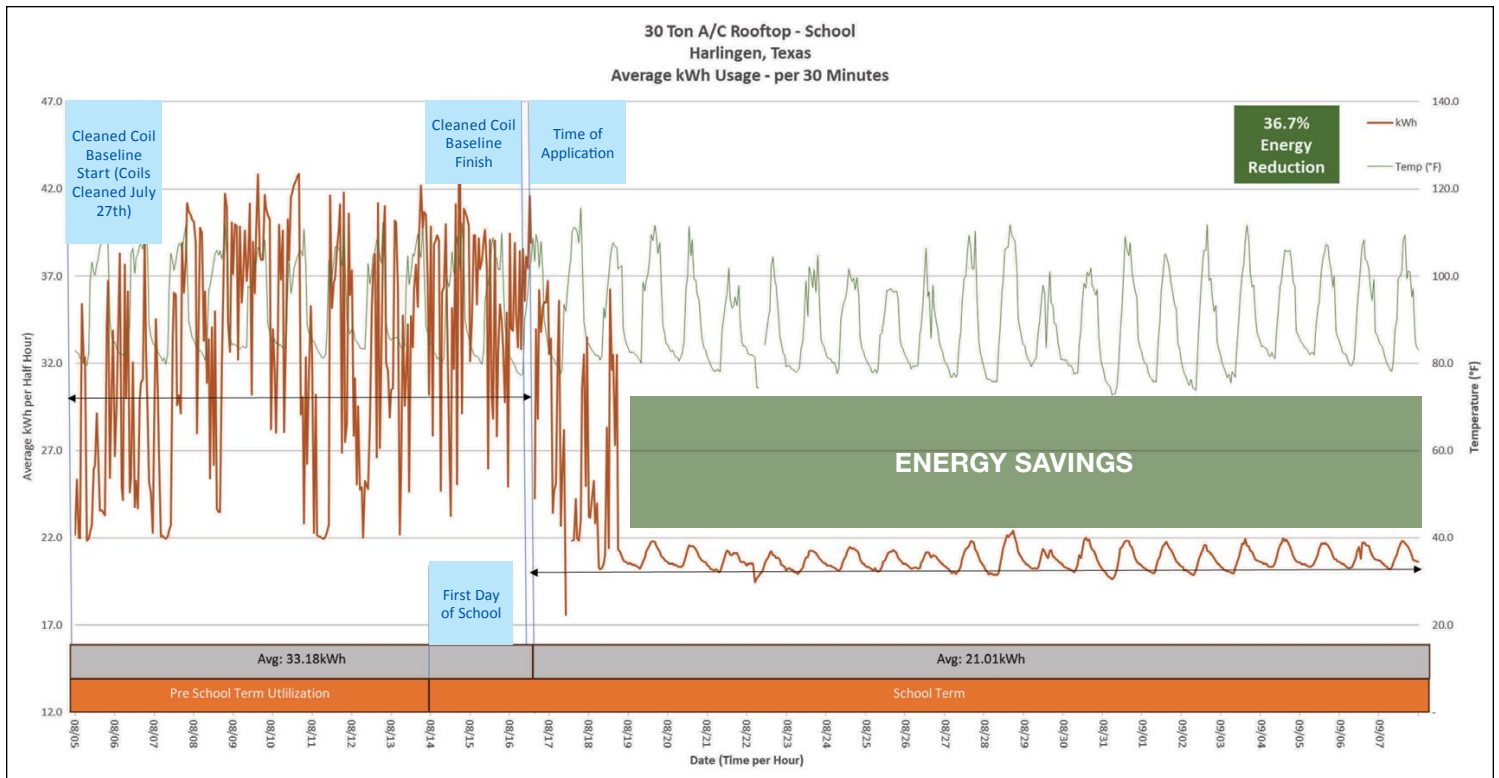
CASE STUDY

30 TON ROOFTOP AIR CONDITIONER – HIGH SCHOOL, HARLINGEN, TX

- Coil cleaned on July 27, 2023 for baseline monitoring
- Power, temperature, and humidity data collected pre and post Cool Worx application
- Coil re-cleaned on August 16, 2023 with Nu-Brite, dried overnight
- Cool Worx applied on August 17, 2023 on air intake side only - **36% energy reduction realized**



	PRE COOL WORX APPLICATION	POST COOL WORX APPLICATION
Average Outdoor Temperature	93°F	90°F
Average Power Consumption	33.18 kWh	21.01 kWh
Energy Savings, Percent		36.7%
Targeted payback based on 10% energy savings, Texas commercial rate of 8.98 cents/kWh with 65% run time.		18 months
Actual payback based on actual findings, Texas commercial rate of 8.98 cents/kWh with 65% run time.		< 12 months



Savings in this case study are illustrative of Cool Worx capability. Energy savings will vary based on age of equipment, run time and local kW/hr cost. Independent studies have shown 10% energy savings on new coils, better savings with coils already in service can occur since there is more opportunity to restore as shown in this study.