Nu-Calgon

INTRODUCING

DATA WORX™

Energy Savings & Corrosion Protection

For Precision Cooling Applications

Transformative Graphene-Based Coating To Expedite Heat Transfer

Powered by

GMG® GRAPHENE

PATENT PENDING

ENERGY SAVINGS

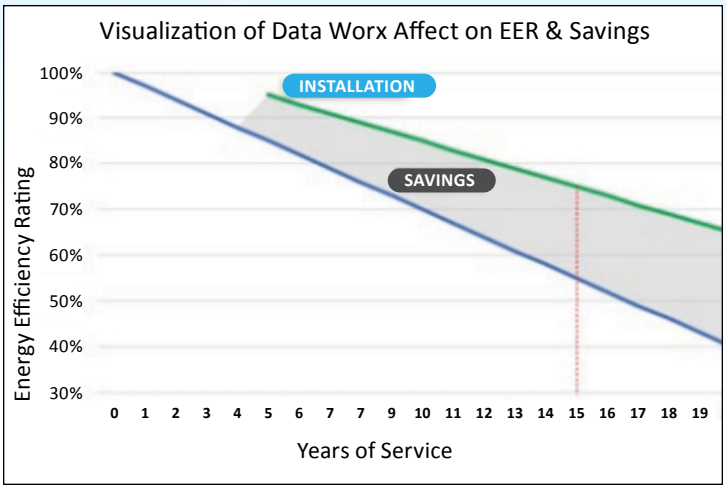
Energy conservation is a global concern and precision cooling represents a major source of energy usage. As a leader in the HVACR industry, Nu-Calgon is proud to introduce a new product designed to reduce energy consumed by data centers.

Data Worx is a new graphene-based technology with a unique ability to expedite heat transfer. When applied to air-cooled heat exchangers, Data Worx enables the system to transfer heat more quickly. This, in turn, shortens the operating time and reduces energy consumption of the system. Experience remarkable efficiency and cost savings with Data 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 Data 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, Data Worx achieved a remarkable 36% improvement in efficiency. (See back page.)

The Data 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.

- Data 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. Data Worx can be applied to copper, aluminum, stainless steel, ferrous metals, and previously painted surfaces if prepared correctly.
- Data Worx is ideal for natural convection (air cooling) or non-convection surfaces with surface temp applications with ideal range between 25-150°C
- Data 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 CO_2 emissions, and potential delays in system replacement expenses.**



DATA WORX

Data Worx is a water-based acrylic coating formulated for air-cooled coils in thermal management applications. Data Worx elevates system performance or improves heat transmission of applicable metal surfaces by natural convection through graphene's superior conductive properties and is easy to apply.

- **Thermal Conductivity:** Integration of graphene into Data Worx enhances heat dissipation across the condenser coil.
- **Increases Surface Area:** Aids in heat dissipation within the thin coating layer of Data 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.

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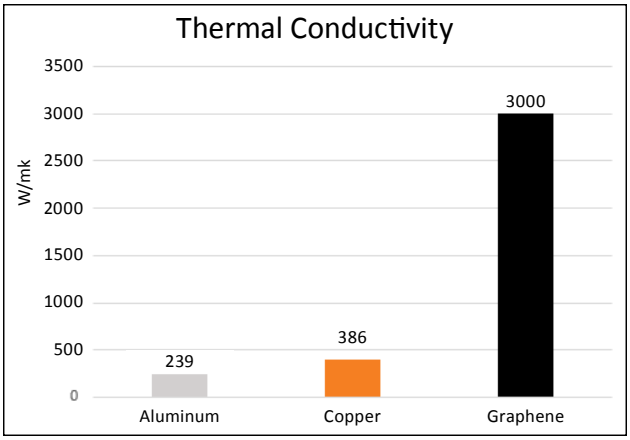


Graph shows graphene used in Data Worx is more conductive than copper and aluminum.

PERFORMANCE PROPERTIES

PROPERTY		TEST METHOD	DATA WORX RESULT
Salt Spray	Marine Air Corrosion Resistance	ASTM B117	Exceeds 20,000 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

DATA WORX PROCESS

STEP 1 COIL CLEANING

Coil surface must be clean and dry before applying Data 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 Data Worx adhesion. Thoroughly rinse coil with plenty of fresh water and allow coil surface to dry.

STEP 2 DATA WORX

Apply Data 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 Data Worx coated coil.

SINGAPORE AVIATION IT DATA CENTER CASE STUDY #1

Total Energy: ~15.5% Improvement

Measurement: Regression Calculations/Estimates

Unit: Computer room Aircon Unit (CRAU) 18 units

Estimated Savings: SGD 21,330 Annually

Date: Jan to March 2023

Location: Singapore

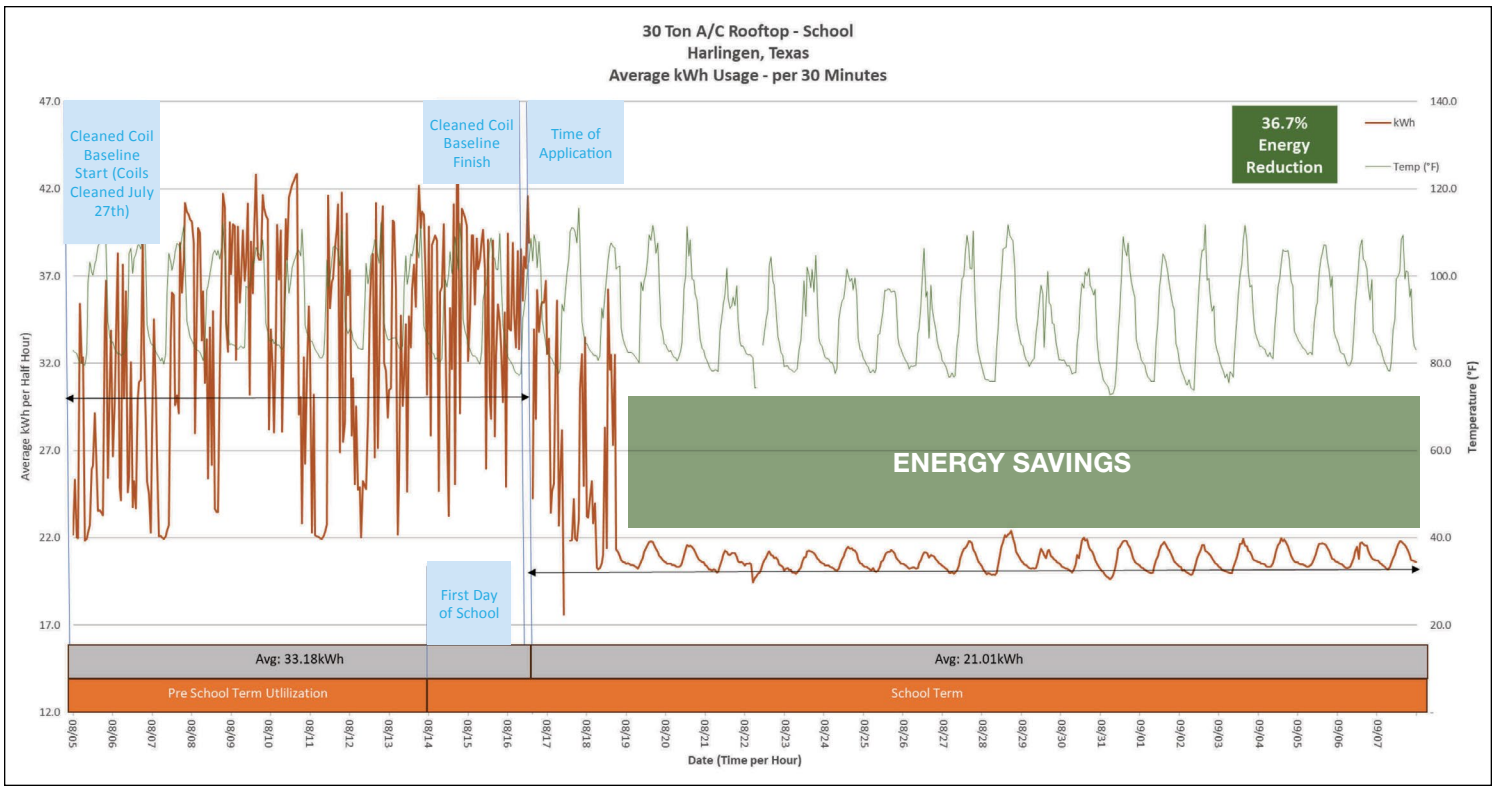
For more information, contact Nu-Calgon or visit www.nucalgon.com.

CASE STUDY #2

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 Data Worx application
- Coil re-cleaned on August 16, 2023 with Nu-Brite, dried overnight
- Data Worx applied on August 17, 2023 on air intake side only - **36% energy reduction realized**

	PRE DATA WORX APPLICATION	POST DATA WORX APPLICATION
Average Outdoor Temperature	93ºF	90ºF
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 Data 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.