
enPact®
Chillers
Unique technology for carbon, cost and energy reduction with guaranteed energy savings
PAUL
INDUSTRIES
INNOVATIVE ENERGY AND CARBON REDUCTION SOLUTIONS

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ABOUT US

Engineering energy efficiency that pays off. Paul Industries, LLC is based in Delaware at 251 Little Falls Drive, Wilmington, DE, 19808. With over 20 years of experience in delivering high-performance mechanical and electrical solutions, we provide independent, critical power and cooling services tailored to industrial and commercial environments across the US. Being independent means we're not tied to specific products - we choose the right technologies to meet your site's exact needs. Backed by a skilled in-house engineering team, we're known for our technical rigor, compliance expertise, and project efficiency.

Our Mission
To help clients reduce energy costs, extend asset lifespan, and accelerate carbon reduction - without disrupting operations.

Our Core Technology: enPact We deliver a suite of globally patented energy-saving solutions, designed to optimize energy use across key systems:

- Refrigeration & Cooling
- Chillers
- Electrical Optimization
- Energy & Carbon Management enPact
- Engineered Solutions

We serve a wide range of sectors including:

- Kitchens, Bars & Restaurants
- Food Retail & Production
- Heavy Industry & Manufacturing
- Hospitality & Built Environment

From initial survey through to installation, monitoring, and payback verification - we deliver full-service energy optimization that reduces cost and carbon for some of the US's most recognized businesses.

enPact® Chillers

BOOST THERMAL TRANSFER IN CHILLED WATER SYSTEMS AND SAVE UP TO 15% ON COMPRESSOR AND PUMP ENERGY.

enPact Chillers is a next-generation nanofluid engineered to boost the performance of chilled water and hydronic systems. Designed as a drop-in additive, it enhances thermal energy transfer in heating and cooling systems - reducing compressor load, cutting energy costs, and lowering carbon emissions across a wide range of HVAC applications. At the core of enPact Chillers is a patented suspension of sub-micron aluminum oxide particles in a water or water/glycol base fluid, delivering consistent improvements in heat transfer without altering system infrastructure.

HOW IT WORKS:

By improving thermal conductivity, enPact Chillers reduces the "lift" required by compressors, enabling systems to operate more efficiently. In practical terms, this means:

- 12.5–15% improvement in heat transfer
- Lower electrical energy consumption
- Enhanced system output and reliability

Whether in chillers, heat pumps, or energy recovery loops, enPact Chillers optimizes how heat is exchanged throughout your system - unlocking better performancewith less input.

IDEAL FOR:

- Chiller-based HVACsystems (evaporator side)
- Heat pumps and air-to-water systems
- Energy recovery loops with AHUs
- Fan coil units, pumps, and terminal units
- Retrofitting existing buildings or designing high-efficiency new builds

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THE PROCESS:

Step 1: Assessment & Site Review

Step 2: Proposal & Performance Forecast

Step 3: Fluid Integration

Step 4: Monitoring & Performance Verification

Step 1: Assessment & Site Review

We begin with a review ofyour system's layout, operating conditions, and load profiles to assess the suitability and potential performance gains from enPact Chillers. This may include:

- Reviewing system schematics and glycol concentrations
- Evaluating equipment type and operational cycles
- Estimating ROI and energy/carbon savings

Step 2: Proposal & Performance Forecast

Based on the findings, we provide a tailored proposal including:

- Expected improvements in heat transfer and energy consumption
- Estimated payback period (typically 1–2 years)
- Implementation strategy and fluid compatibility checks

Step 3: Fluid Integration

enPact Chillers is added directly into the closed-loop HVAC system - typically through a dosing point or filling station:

- No system redesign or mechanical changes required
- Standard integration typically completed in less than a day
- No operational downtime for most installations

Step 4: Monitoring & Performance Verification

After circulation, the system is rebalanced and recommissioned as needed. Performance is then monitored to verify:

- Reduced compressor load (lift)
- Increased chilled water set points
- Decreased energy use across pumps, fans, and compressors

Ongoing Support:

We provide guidance on long-term maintenance practices and system checks to ensure fluid integrity and ongoing performance. enPact Chillers maintains its performance for 10+ years, with no recurring service requirements.

Product Characteristics:

- Base fluid: Water or water/glycol mix
- Additive: Sub-micron aluminum oxide (Al_2O_3) nanoparticles
- Non-corrosive, non-toxic, and environmentally stable
- Operating temperature range: Wide, suitable for both heating and cooling
- Expected life: 10+ years with proper maintenance
- Recyclable after use

Operational Compatibility

- Designed for closed-loop chilled water systems, including:
- Air-cooled and water-cooled chillers
- Heat pumps (air-to-water and water-to-water)
- Fan coil units and AHUs
- Energy recovery loops (e.g., run-around systems)
- Not compatible with open cooling towers or systems with evaporative losses

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TECHNICAL OVERVIEW

How enPactChillers ImprovesHVAC

Performance at the Core:

enPact Chillers is a nanofluid engineered to improve heat exchange efficiency in closed-loop HVAC systems. It enhances the thermal performance of chilled water and hydronic systems by increasing the rate of heat transfer - reducing energy consumption and improving system capacity.

System Integration:

- Drop-in additive—no mechanical modifications required
- Easily introduced via chemical dosing point or service connection
- Begins improving heat transfer immediately upon full circulation
- Ideal for both retrofit and new build designs

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APPLICATIONS & BENEFITS

Versatile Integration. Lasting Performance.

enPact Chillers is engineered to deliver high-impact performance improvements across a wide range of HVAC systems. Whether installed in an existing building or integrated into a new design, it offers a smart and sustainable way to reduce energy consumption, cut costs, and boost system efficiency.

Where enPact Chillers Works Best:

✓ Hydronic Heating & Cooling Systems
Increases overall thermal transfer, allowing pumps and fans to run at lower power while maintaining comfort.

✓ Air Handling Units (AHUs) & Fan Coil Units
Reduces the energy required to deliver conditioned air, enabling higher chilled water set points and lower flow rates.

✓ Energy Recovery Systems
Maximizes heat exchange performance in run-around loops and similar energy recovery setups - ideal for ventilation-heavy systems.

✓ Systems with Glycol-Based Fluids
Offsets the thermal efficiency loss caused by glycol (the “glycol penalty”), restoring performance in cold climate systems.

The Benefits:

- Up to 15% better heattransfer - reduces compressor and pump workload
- Lower energy use & carbon emissions - improves HVAC efficiency site-wide
- 1–2 year payback - fast ROI in most commercial and industrial applications
- Extends equipment life - reduces wear on key components
- Non-toxic, non-corrosive, recyclable - long-lasting and environmentally safe
- Supports system downsizing in new builds - improves design flexibility

Typical Payback Range

Application Type	Estimated Payback
High-load commercial chillers	12–18 months
Mixed-use buildings & offices	18–24 months
Industrial & manufacturing sites	12–20 months

Lasting Value

- 10+ yearlifespan with no degradation
- Fully recyclable at end of use
- Zero maintenance once installed

Smart investment. Sustainable impact.

enPact Chillers delivers long-term financial and environmental value - with minimal risk and maximum efficiency.

enPact® Chillers PAYBACK

High-Impact Savings. Fast Return.

With enPactChillers,the performance gains start immediately - reducing system workload, cutting energy consumption, and extending equipment lifespan. Most installations achieve full payback within 1 to 2 years, making it one of the fastest-returning efficiency upgrades available for HVAC systems.

What Drives the Payback?

- **12.5%-15% improvement in heat transfer efficiency**

Direct reduction in compressor energy use

- **Lower pump and fan energy consumption**

Reduced operational costs across the hydronic loop

- **Offset of glycol performance loss**

Restores system efficiency in cold climates or where freeze protection is required

- **Extended equipment lifespan**

Fewer breakdowns, lower maintenance costs, and deferred capital expenditure

enPact® Energy & Carbon Management

Our EnOS platform integrates on-site operational technology with cloud-based intelligence to provide real-time energy data, along with data-driven carbon monitoring, reporting, and abatement solutions.

Energy Monitoring

- Monitor your energy consumption in real-time with our advanced IoT technology.
- Identify energy conservation measures utilizing the capabilities of artificial intelligence.
- Receive alerts in the event of overconsumption in any of your showrooms.

Carbon Reporting

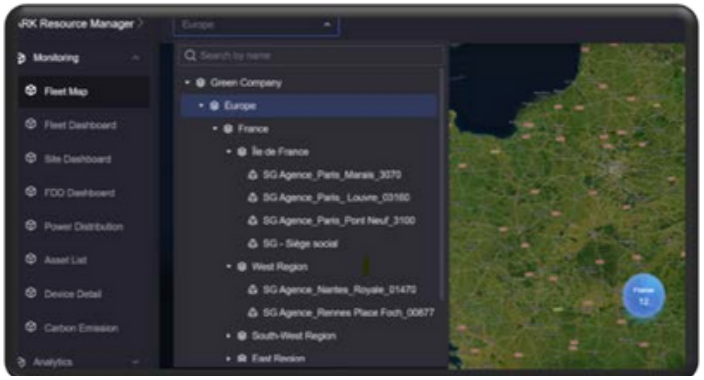
- Utilize real-time data to assess, benchmark, and report CO2 emissions both at individual sites and across the entire portfolio.
- Strategically plan and prioritize abatement initiatives based on these assessments.

Savings Identification

- Analyze actual consumption data in comparison to your established energy baseline to identify discrepancies.
- Integrate a real-time AI module to monitor and report on energy savings.
- Analyzes site-level performance to detect inefficiencies and deliver data-driven optimization strategies to reduce energy—generating on average an additional potential saving of 25%.

Track Performance Against Targets

- Establish energy andcarbon targets in alignment with the Science Based Targets initiative (SBTi) and monitor the performance of each facility relative to these objectives.



Site by Site View
Portfolio View
Asset View

Customisable site dashboard: aggregated energy consumption data

Set up energy performance KPI's based on the site's specifics

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