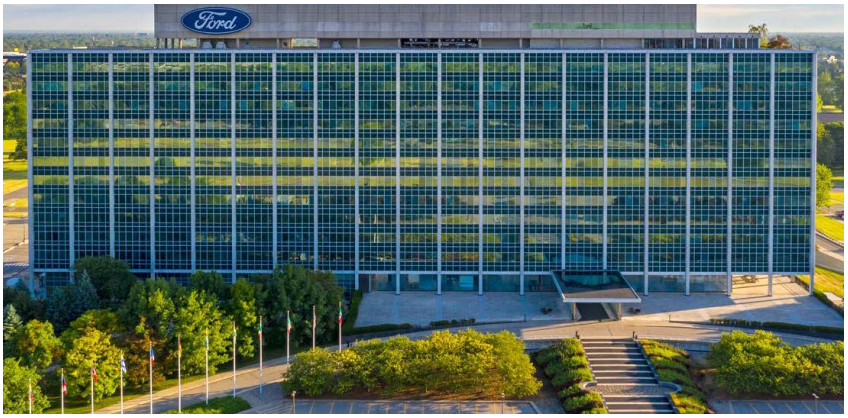
Data Centers

Customer Stories: Ford Motor Company



Project Summary
Implementing an energy efficient, sustainable and reliable chiller plant at Ford's Dearborn campus reduced their energy use by 540,288 kWh per year.

Challenge
Alignment with Ford Motor Company's climate change strategy to reduce global CO2 emissions and energy consumption were key considerations as they initiated the transformation of its Dearborn campus to a modern, high-tech facility designed to foster innovation. As campus renovations were in progress, plans began to take shape for a large, Tier III data center to be housed there. The data center would be one of two new facilities built to support an estimated 100 percent increase in the company's data usage to align with the connectivity, manufacturing and support of electric and driverless cars.

Data centers require substantial amounts of electric power for their IT equipment and infrastructure. It is estimated that cooling consumes ~40 percent of a data center's power consumption and is responsible for ~16 percent of its total operating costs. Ford sought to keep energy use and operating costs down as it outlined objectives for the 24/7/365 facility. The desired LEED® certifiable facility would incorporate a high-performance HVAC solution that would operate efficiently across all operational points. The critical nature of the data center dictated that the HVAC systems adhere to special tolerances and guaranteed chiller capacities to maximize uptime and lower total cost of ownership.

Project Highlights

Location: Dearborn, Michigan

Industry: Automotive

Products Used: Chillers, Low GWP Refrigerants

Services Used: Single-Point Supplier, Refrigerant Management, HVAC System Management, Energy Conservation Measures

540,288 kWh
Annual reduction in energy consumption

Over 330 metric tons
Reduction in CO2 emissions

$35,000
Annual operating cost savings

Solution
Ford evaluated its options as it selected an HVAC system partner for the new data center. Trane offered them a trusted relationship and a single point of responsibility for design, application engineering expertise, in-depth knowledge of energy saving technologies and the ability to deliver reliable solutions for a mission critical application. Selected as the design build partner for the data center's HVAC systems, Trane worked with Ford, the project's general manager, mechanical contractor and engineers to develop premium solutions for the chiller plant design.

Six 670-ton Trane® CenTraVac® centrifugal chillers were selected to handle the cooling needs of the data center. Part of the EcoWise™ portfolio of products designed to lower environmental impact, the data center chillers use low pressure refrigerants, virtually eliminating leaks and enabling near-zero emissions. CenTraVac data center chillers were the first centrifugal chillers in North America to operate with the next generation, low global warming potential (GWP) refrigerant, R-514A, with a GWP of less than two.

The Trane centrifugal chillers are also the first commercial data center chillers in the world to earn product-specific Type III Environmental Product Declaration (EPD) registration.This proves the environmental claims regarding data center chiller performance and documents conformance with the stringent third-party certification requirements.

Ford witnessed the Trane CenTraVac data center chillers in operation at the Trane La Crosse, WI, plant to ensure they met all performance specifications before they were delivered and installed on the Dearborn Campus. The systems met Ford's KW specifications; and offered low power usage effectiveness (PUE) ratio and total cost of ownership. To further increase efficiency, when outdoor temperatures are cold, a free cooling option integrated in the design is used to chill water and can provide up to 45 percent of chiller capacity without running the compressor.

The CenTraVac chiller's simple yet rugged design is reliable and requires little maintenance, effectively minimizing downtime. Should there be a disruption, the data center chiller's rapid restart capability quickly brings the system back online, ensuring that critical operations are not compromised. The chiller's smaller footprint helps optimize data center floor space and its low-speed, direct-drive design offers a vibration-free operation to meet UAW requirements.

Creating a Smooth Transition

"As the Ford Motor Company transitions from an automobile company to a mobility company, we have a continually increasing need for more computing power. Construction of the new data center was an answer to that need. As we outlined project specifications, efficiency, sustainability and the facility's impact on global warming were all major factors."

- Dwayne Atkins,
Ford Land Engineering Manager

Making the Right Choice

"It was the Trane chiller's use of R-514A refrigerant that was the key determining factor for our chiller selection.The refrigerant is stable, meets our greenhouse gas emissions and GWP criteria, and doesn't pose any occupational or fire hazard risks."

- Dwayne Atkins,
Ford Land Engineering Manager

Quietly Powerful

"With the CenTraVac, you get a high-performance level without the complexity. The kW per ton was better and so was the overall operating cost. Plus, the quiet operation is world-class. During our initial walk through, I noticed some of our non-technical people putting their hands on the data center chillers to see if they were even running."

- Dwayne Atkins,
Ford Land Engineering Manager

Get in touch with an expert to understand how much you could save

Contact Us to Get Started Now

Results
Ford Motor Company partnered with Trane to implement an energy efficient, sustainable and reliable chiller plant to ensure uninterrupted operation of the critical mission data center on its Dearborn campus. As a result, the company has reduced its energy use by 540,288 kWh per year and CO2 emissions by more than 330 metric tons. Completion of upgrades that improve Ford's bottom line while simultaneously enhancing sustainability, demonstrates their outstanding commitment to environmental stewardship.

By implanting a sustainable data center cooling system, Ford Motor Company received numerous industry awards.

Project Summary

Challenge

Mission critical application
•
Alignment with climate change strategy
•
Reduced energy use and CO2 emissions
•
LEED certification
•
Guaranteed chiller capacities and special tolerances to maximize uptime
•
Lower cost of ownership

Solutions

Single point of responsibility supplier
•
High-efficiency Trane® CenTraVac® data center chillers
•
Low pressure, low GWP refrigerants

Results

Energy use reduced 540,288 kWh/year
•
CO2 emissions reduced 330+ metric tons
•
Annual operating cost savings of more than $35,000
•
Industry recognition

TRANE

Trane – by Trane Technologies (NYSE: TT), a global climate innovator – creates comfortable, energy efficient indoor environments through a broad portfolio of heating, ventilating and air conditioning systems and controls, services, parts and supply. For more information, please visit trane.com or tranetechnologies.com.

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