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Mercedes-Benz

Infrastructure upgrades help ensure employee comfort, increase energy efficiency Montvale, NJ

For more than a century, Mercedes-Benz has been committed to extraordinary engineering, visionary design and standard-setting innovation. This holds true for Mercedes-Benz USA (MBUSA) founded in 1965. Part of Daimler AG, MBUSA is responsible for the distribution and marketing of Mercedes-Benz, Maybach, smart, and Sprinter products in the United States. The organization strives to make its workplace one in which individuals feel challenged, fulfilled and able to reach their full potential, and has been named one of Fortune magazine's 100 Best Companies to Work For.

Challenge

Evidence of MBUSA's goal to deliver the best can be seen in the company's innovative designs, high-performance vehicles and drive to outperform customer expectations. It can also be seen in its workplace, where providing the best environment for its employees is a priority. When one of the chillers failed at its three-story North American headquarters, MBUSA took action to enhance the comfort of its employees. A rental chiller was employed as a temporary fix to provide additional capacity, while financing arrangements were being worked out for a permanent solution. MBUSA facility managers sought new technologies that would provide reliability, a long service life and energy savings. The company wished to act quickly to minimize dollars spent for rental equipment.

Solution

Based on a collaborative relationship that has spanned thirty years, Mercedes-Benz called on Trane to be the single-source supplier for its turnkey upgrade project. Working together, Trane, MBUSA and their engineering firm, CM Engineers, outlined project details, adhering to MBUSA purchasing parameters and the requirement that occupants could not be disturbed during the construction.

Increasing reliability and efficiency

The forty-year-old chillers at the headquarters facility had a full-load efficiency rating of approximately 1.0 kW/ton. The



Their founder's promise to deliver "the best or nothing" remains a priority for MBUSA today.

aging systems were replaced with two 290-ton Trane water-cooled hermetic CenTraVac™ centrifugal chillers. The chillers have a .54 kW/ton full-load efficiency rating and a .37 kW/ton part-load rating. With only one moving part--a rotating shaft supported by two aircraft-turbine-rated bearings--the Trane chillers are among the most reliable and efficient in the industry. New chiller, condenser and swing pumps, and a cooling tower were installed. The ventilation systems were also redesigned to meet ASHRAE 15 standards for safety.

Reducing energy usage and costs

Variable frequency drives (VFDs) replaced the constant flow drives on the chillers. Motor speed and load are continually monitored to maximize energy savings, extend motor life and enhance occupant comfort. Converting the chilled water pumps from a constant volume pumping arrangement to a variable volume pumping design reduced installation cost and lowers future operating costs. Efficiency upgrades also included the replacement of the single speed fan cooling tower with a VFD fan speed controlled tower.

Optimizing performance, ensuring comfort

A Trane Tracer Summit® building automation system (BAS) was installed to optimize the performance and energy usage of the chiller plant, and ensure the comfort of employees. The BAS provides integrated building control from a dedicated computer workstation. It allows facility managers to perform daily tasks, such as responding to alarms, viewing reports and trends, changing area and equipment controls, and custom programming. Facilities managers employ chiller tower optimization through the use of the Trane Tracer Summit Chiller Plant Manager™ system, sequencing chiller set points to reduce energy consumption.

Results

Mercedes-Benz received a \$78,000 Smart Buildings energy rebate from the State of New Jersey for infrastructure upgrades at its North American headquarters facility. And while energy savings was not the driving force, the company saw an immediate and significant drop in its energy demand.



Water-cooled CenTraVac™ chillers with variable frequency drives increase reliability and energy efficiency.

The upgrades also improved system reliability and occupant comfort. "The new system is fully automated and integrated into our building management system so we can 'see' the system performance and know exactly how it is performing at any given moment," said David Lee, facilities maintenance supervisor, Mercedes-Benz USA, LLC.

"The entire project went as smoothly as can be expected since we were doing major surgery on a forty-year-old building," Lee added. "The experience and planning that Trane possessed from previous projects of this scope and size definitely showed."



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