



RETRO-COMMISSIONING

Low Cost, Fast Payback, Strong ROI

2016 Excellence in Engineering Award • ASHRAE Illinois Chapter Grace Lake Corporate Center

Grace Lake Corporate Center, originally constructed in 2004, is a 10-building office, research, and lab complex located in Van Buren Township, Michigan. Visteon Corporation and General Electric occupy the 882,000–square-foot complex, which includes a data center, fitness center, document center, and café. Sovereign Partners owns and manages Grace Lake Corporate Center.

Sieben Energy Associates, together with Grace Lake Corporate Center staff and building engineers, and DTE Energy’s energy efficiency incentive program administrator Nexant, performed retro-commissioning.

<i>Implemented Measures</i>	11
<i>Annual Electricity Savings</i>	1,951,000 kWh
<i>Annual Natural Gas Savings</i>	24,300 Ccf
<i>Annual Energy Cost Savings</i>	\$144,000
<i>Implementation Cost</i>	\$3,000
<i>Simple Payback</i>	< 1 Month

What is Retro-Commissioning?

Retro-commissioning (RCx) is the well-established practice of investigating a building’s operations to identify opportunities to optimize performance of energy-consuming HVAC and lighting systems. RCx reduces annual energy use by 5–10%, and sometimes up to 20%, with minimal expense and negligible disruption. Many utilities offer incentive programs that help underwrite RCx project costs.

Project Summary

The team collaborated on an 8-month RCx project, reducing electricity and natural gas use through the implementation of low-cost, rapid-payback energy-saving measures.

Sieben Energy Associates (SEA) discovered that the BAS, although well-maintained, did not utilize optimized control sequences. SEA evaluated operational data and designed strategies to reduce energy use of air-handling units (AHUs), cooling and heating plant equipment, air compressors, terminal units, and lighting. The most significant measures maximized the effectiveness of ventilation by reducing fan use throughout the year, gas use for heating in winter, and chilled water use in summer.

Verified electricity savings totaled nearly 2 million kilowatt-hours—more than double the original target. The project was honored as one of three finalists for the 2016 Michigan Governor’s Energy Excellence Award. The 11 implemented measures included:

- Adjusting AHU schedules during unoccupied hours.
- Controlling dynamo-area AHUs based upon space temperature.
- Lowering required outside air percentages and cooling set-points for certain AHUs.
- Turning off excessive air conditioning serving the data center and excessive chilled water pumps.

The graphic below illustrates how Chilled Water Pump (CHWP) 1 continued to idle instead of dropping to zero.

