

DATA CENTER

PROJECT NAME: Cass County Electric Cooperative

LOCATION: Fargo, ND

TYPE: Data Center

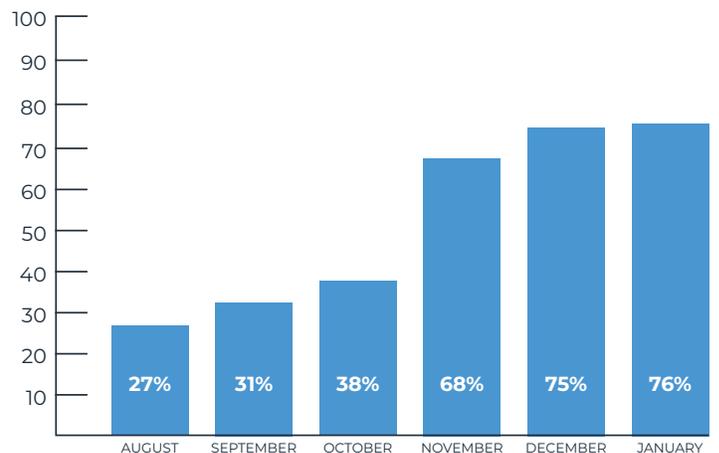
BACKGROUND

The Cass County Electric Cooperative building in Fargo, North Dakota houses a large co-location server room that requires 60 tons of continuous cooling. Cass County serves nearly 60,000 electric meters in a 10-county area in south eastern North Dakota.

Three 30-ton CRAC units with a N+1 design were selected. Two units carry the required cooling load and one unit remains in standby, only used if one of the two primary units fail. Each CRAC unit is glycol cooled with its own fluid cooler, hydronic cooling loop, redundant pumps and free cooling coils to reduce the load of the mechanical cooling when the ambient temperature is low enough to allow partial or complete free cooling.

CHALLENGE

Data centers are known to consume massive amounts of energy per square foot. Cass County Electric Cooperative prides itself on being energy efficient. After the discovery of Hydromx's heat transfer fluid, Cass County was eager to put it to the test and reduce energy consumption.



Hydromx resulted in savings ranging from 27% in August to 76% in January 2017.

SOLUTION

The heat transfer fluid was replaced in one of the three units, from 35% ethylene to 50% Hydromx. The second operational unit remained the “control” with 35% ethylene and the third unit remained untouched as backup. A continuous measurement and verification analysis software was added to monitor the identical units. The software monitored multiple points of BACnet data which included: compressor amps, stage-1/stage-2 cooling, free cooling valve position, and entering and exiting fluid temperature. Since the Hydromx installation, data was collected at 5-minute intervals on the two operating units that serve identical loads.

RESULTS

The results of the first six months of performance are shown on the side chart. The savings in compressor amps range from 27% in August to 76% in January. Even with August’s impressive 27% reduction in energy consumption, the savings continued to climb thanks to increased free cooling hours as a result of Hydromx’s improved thermal diffusivity (the rate at which the fluid absorbs and releases heat) which is greater than glycol and water.

ABOUT HYDROMX®

Hydromx® is a nanotechnology heat transfer fluid that saves a significant amount of energy. Hydromx® ethylene-based or propylene-based fluid outperforms not only other glycols, but also outperforms water. Hydromx® has been proven in multiple installations to save 20–35% energy in heating and cooling systems around the world.

FOR MORE INFORMATION, VISIT HYDROMX.COM.

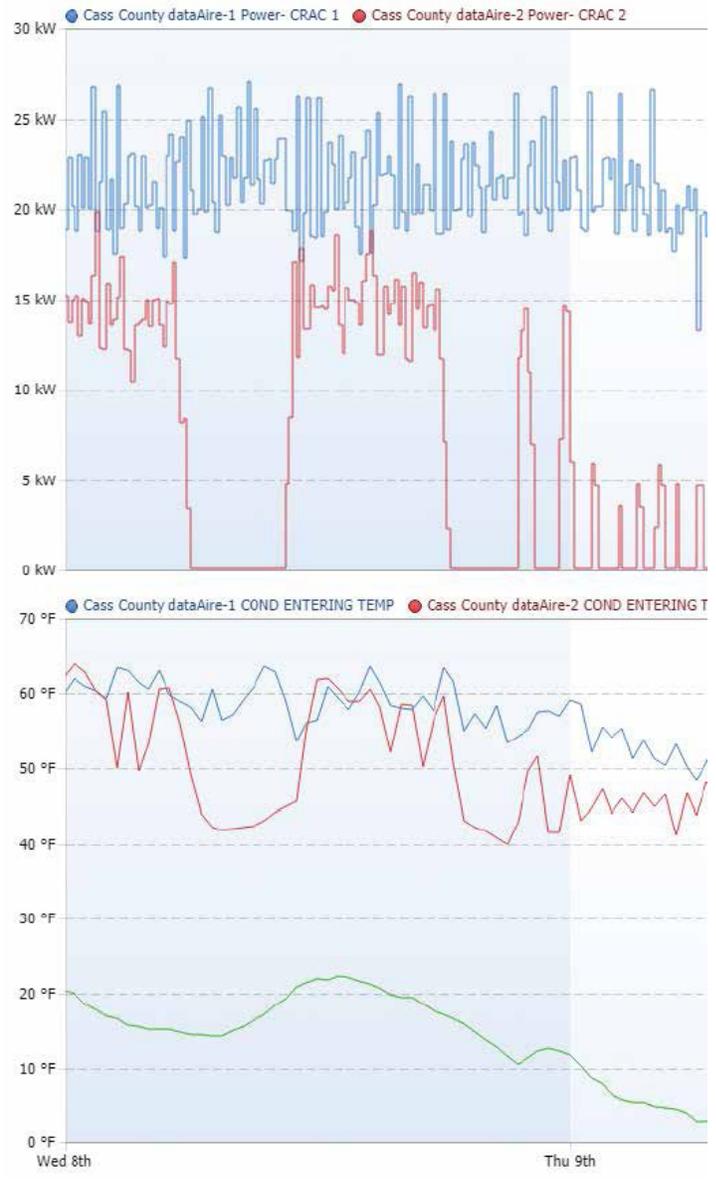


HEADQUARTERS

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As a result, Hydromx improves the efficiency of the equipment it is exchanging heat with. With the above performance savings and a blended kWh rate of \$0.10 per kWh, the payback has been calculated to be nine months for a retrofit installation (and approximately six months for a new installation). The new installation payback assumes the cost reduction of the original 35% ethylene glycol along with the initial glycol installation labor.