



Since 1968, Campbell, Inc. has been helping building owners and managers with design, engineering, installation, maintenance and repair of their HVAC systems. Our experience tracking energy usage patterns and implementing the latest technologies for heating, ventilation and air conditioning systems means you will achieve maximum efficiency from your HVAC investment. Campbell, Inc. provides energy saving solutions for all types of heating, ventilation and air conditioning systems. We specialize in Commercial, Industrial, Institutional and Large Retail Facilities.

Geothermal HVAC systems use the environment as a heat exchanger within a closed loop system made of coils. These coils contain a mix of water and propylene glycol which can cool the water to 17 degrees. They can be installed in the ground or in a pond where the temperature is consistent and a large surface area is provided. In the summer, heat is taken out of the building and absorbed by the cooler environment surrounding the coils. The returning water is used to deliver cool, dehumidified air into the building. In the winter, heat is absorbed from the 40 degree environment, concentrated by heat pumps and distributed back into the building. Campbell will determine the size of the system and coils needed based on the square feet of the building, heating and cooling needs, geology, land availability, and soil.

CHALLENGE

A company installed a geothermal system for a commercial property using a pond for the location of the coils. In winter months, the system could not keep up with the heating needs of the building. And it did not provide enough air conditioning in the summer. Since the system was not working properly Campbell was called in to troubleshoot the problem.

SOLUTION

Campbell technicians determined the coil calculations were incorrect resulting in an undersized loop that could not meet the heating and cooling needs of the building. Proper sizing of the ground loop is crucial to the performance and efficiency of the system. The pond had to be drained and the pond loop rebuilt with the proper sizing of coils. Campbell also ensured the condenser and heat pumps would be the correct size to match the larger coils.

BENEFIT

According to the U.S. Environmental Protection Agency (EPA), geothermal heat pumps are the most energy-efficient, environmentally clean, and cost-effective systems for heating and cooling buildings. It uses less electricity and energy than other systems. The initial investment of geothermal is costly but companies will recoup their investment back in about 10 years. The lifespan of the coils is guaranteed for 25 years. If pipes break, the propylene glycol mixture in them is food grade quality so there is no harm to the environment. People can still swim and fish in the pond. Geothermal is considered the most cost-effective, energy efficient option for new construction or to replace an aging system.