

GEO CASE STUDIES



HIGHLIGHTS:

Type of Building:
Operations &
Maintenance Facility.

Size of Building:
60,000 Square Feet.

**Total Geothermal
Capacity Required:**
150 Nominal Tons.

GeoSmart Equipment:
GeoSmart EW360
2-stage R410A Hydronic
for Infloor Heating and
Domestic Hotwater.

Loop Type:
Horizontal 0.75"
Closed Loop.

Challenger Motor Freight (CMF) is a freight distribution company that is built on a tradition of continually challenging themselves to achieve new standards of quality and performance.

A reflection of this tradition is their new state-of-the-art operations centre and maintenance facility. The new headquarters is located on 50+ acres of land and incorporates state-of-the-art maintenance facilities, driver amenities, safety lanes, automatic wash and fueling stations as well as a highly advanced administrative centre.

The administration centre more specifically makes extensive use of geothermal energy for the space conditioning and domestic hotwater production. The installation of hydronic infloor tubing in the floors throughout parts of the administration building as well as the need for domestic hotwater means that Challenger requires a large and constant supply of geothermal hotwater.

GeoSmart Energy has facilitated Challengers need for this hotwater by supplying them with an R410A 2-stage Premium EW water to water heat pump.

The source of energy for this 30 ton hydronic heat pump is a horizontal closed loop. The horizontal closed loop in this particular case is installed in an area that measures 200' wide by 500' long, an area big enough to support approximately 150 tons of total capacity. Geothermal energy is transferred between the loop field and the GeoSmart heat pump through the use of several wet rotor Grundfos circulators.





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*Challenger
Motor Freight*

Inside the building, the GeoSmart EW360 extracts energy from the loop and transfers it into two 120 gallon Amtrol storage tanks. These buffer tanks then distribute hotwater directly to the infloor heating zones as well as indirectly to domestic hotwater.

Originally conventional equipment was specified for Challengers new facility. However, some forward thinking by Challengers President Dan Einwechter resulted in a decision to make geothermal energy the choice for conditioning the building.

This decision resulted in a system that requires much less energy than the conventional system originally specified. Challengers added investment in the geothermal system will pay itself back over a period of only a few years and they have significantly reduced their emissions from the new building.

CMF is a leader in their industry. Selecting geothermal energy in their new building is a reflection of this leadership and an example of their environmental awareness.



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