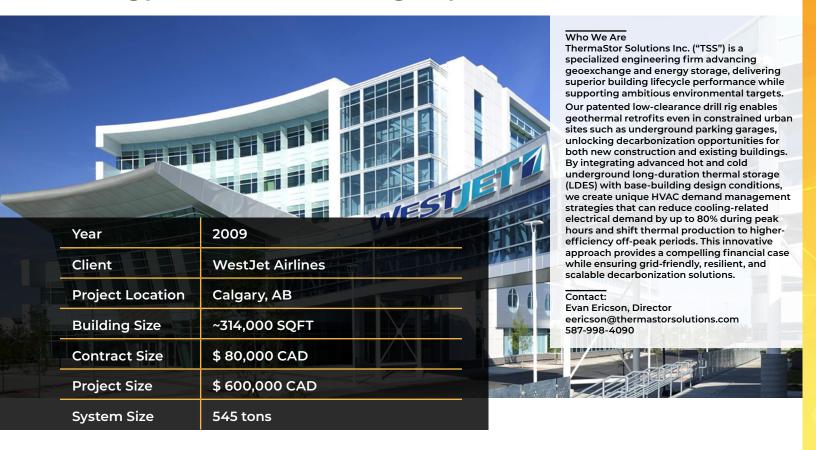


WestJet Corporate Campus

Energy Pile GeoExchange System





Lead mechanical engineer and piling contractor reviewing how the caisson piles are having geoexchange piping attached to the rebar. Photo taken by the lead geoexchange engineer.

ThermaStor Solutions' founding team (with previous firm) led the geothermal system design for WestJet's iconic head office campus, delivering the first-ever implementation of energy piles in Western Canada. The system used structural caissons as dual-purpose thermal piles, embedding heat exchange piping directly into concrete foundations.

This innovative approach eliminated the need for conventional boreholes, reduced capital costs, and maximized heat transfer via the thermal mass of the building's deep foundation.

A hybrid geoexchange system was engineered to provide up to 545 tons of heating and cooling capacity, enabling year-round thermal balance through heat pump integration and on-site energy storage. The project achieved high energy savings and carbon reduction, contributing to the facility's LEED Gold certification and delivering long-term

operational resilience. TRNSYS modeling informed lifecycle cost projections and validated energy performance, while the system's integrated controls optimized efficiency.

This pioneering design showcases the durability and effectiveness of energy pile-based thermal infrastructure.

Lessons Learned

The concrete caissons must be filled from the bottom up to avoid damaging embedded borefield piping. Early coordination between structural and MEP disciplines is critical when integrating energy piles into foundation design.