Lakefront Residence Designed for Comfort and Savings
Case Study

**Comfort with Multiple Geothermal Units**
in Orono, Minnesota

**Project Goals:**
- Energy Efficiency and Reliability
- Abundant Heating and Cooling
- Pool Heating

**Background**
Lake Minnetonka is a 14,000-acre inland lake in Minnesota, located southwest of the Twin Cities of Minneapolis–Saint Paul. The owner of a 6,500 sq ft custom built lakeshore home chose to install a geothermal system for home heating, cooling and pool heating.

**Installation Summary**
According to Jim Ingle at Bosch Manufacturer’s Sales Representative FourMation Sales, the family-owned contractor at Heating & Cooling Two in Maple Grove, Minnesota, installed a total of four Bosch geothermal heat pumps with a total of 16 tons capacity. Installer Al Hebing explained that the units occupy two separate mechanical rooms and include:

- Bosch 3-ton and 2-ton split units connected to Bosch air handlers with hot water coils for backup heat located on the second floor to supply heating and cooling to the upper level and a “bonus” room above the garage
- One six-ton water-to-water unit with in-floor radiant heat and pool heating. A gas boiler provides backup heat (required by local utility)

- The fourth heat pump is a Bosch 5-ton packaged unit supplying the main floor with multiple forced air zones

In this application, a flat plate heat exchanger supplements pool heating. Sixteen wells were drilled to 215 ft and loops in concrete basement and main level provide 16 heat zones.

The ENERGY STAR rated Bosch Greensource TW Model is equipped with an exclusive sound package. When employed as the heat source for radiant floor systems, the unit is extremely efficient and is one of the quietest systems available for residential applications. The Bosch TW 5-ton high efficiency water to water unit meets current ENERGY STAR Tier 3 efficiency standards. It offers all the features and comfort of a high end residential appliance with the durability of a premier industrial unit.
Benefits and Conclusion

Al Hebing commented “The Bosch units installed without a hitch. The homeowner is very pleased with this summer’s cooling performance, and is looking forward to comfortable heating through the coming winter.”

Four Bosch heat pumps deliver 16 tons of cooling supplying 16 heat zones