

# HYBRID SOLAR/GEOTHERMAL HEAT PUMP SYSTEMS FOR POOLS

Indoor swimming pools can be a challenge for the application of geothermal heat pumps due to their heating dominated load characteristics (they need much more heating than cooling during the year). **GMB ARCHITECTURE + ENGINEERING** has addressed this challenge by creating a geothermal heat pump system concept that captures free solar thermal energy during the summer and stores it for use in the winter months. This system can also provide cooling for free to other parts of a facility.

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**CASE STUDY PROJECT:**

Zeeland Community Recreation Facility, Zeeland, Michigan

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**PROJECT COMPONENTS:**

Cardio Vascular Room, Aerobics Room, Weight Room, Locker Areas, Indoor Swimming Pool, Recreation Program Offices

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**PROJECT SIZE:**

40,085 square feet

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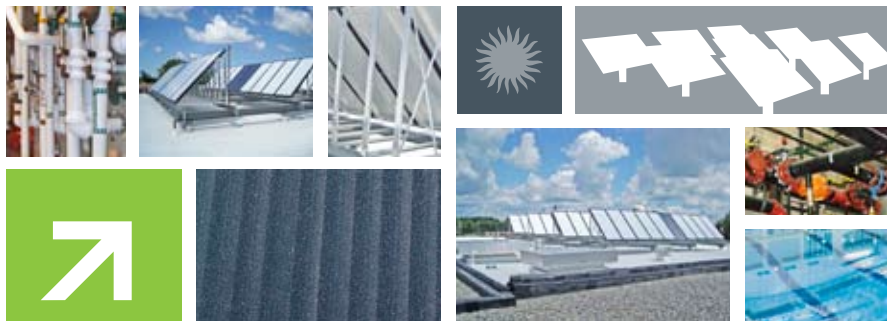
**PROJECT COST:**

4,363,000 million

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**PROJECT COMPLETED:**

October 2008

**The innovative mechanical system design includes:**

- Forty (40) roof-mounted flat plate solar collectors
- Closed loop geothermal earth coupled heat exchanger
- Geothermal heat pump for pool heating and “free” chilled water for building air conditioning
- Geothermal heat pump energy recovery system for capturing waste heat from locker room exhaust and building ventilation
- Unitary geothermal heat pumps for heating and cooling recreation spaces and offices