

THAYER R-II SCHOOLS INCORPORATED HYDRO-TEMP EARTH COUPLED HEAT PUMPS IN NEW BUILDING



The Thayer School district had a common problem, the need for a new school building and a shortage of funds to build it. Another concern was the cost of heating and cooling this new structure. Fortunately, the school superintendent, Bill Garrison, had experienced the comfort and utility savings of a Hydro-Temp Earth Coupled Heat Pump in his home since the summer of 1995. The school board elected to build a very well insulated 60,000 square foot pre-cast concrete building and use Hydro-Temp Earth Coupled Heat Pumps. As a cost savings measure, three water wells were

drilled and utilized for heat exchange instead of ground loops. Well water is pumped through one side of a large stainless steel plate and frame heat exchanger. The other side of the heat exchanger is a closed (sealed) loop that pumps water through the Earth Coupled Heat Pumps. It's important to mention that well water is pumped through the plate and frame heat exchanger only when it's temperature gets above 82 degrees or below 52 degrees. Normally only one well will need to operate to condition the building.



Stainless Steel Plate and Frame Heat Exchanger connected to closed loop system.

Each class room is individually heated/cooled by a Hydro-Temp corner console. This unique unit is self contained with diffusers mounted on the face of the unit, no costly ductwork is needed. It is installed in the corner of the room (normally a wasted space) and takes up only 4-1/2 square feet of floor area. The teachers have total control of the temperature during the school day. At night and on weekends the class room units go to a temperature "set back" mode. The heating and cooling usage of one of the larger 1250 square foot class rooms was metered from 8-04-05 until 05-10-06. This room used 1,193 KWH for heating and cooling. This equates to only \$7.78 per month for heating/cooling at the school's 5.9 cents KWH electric rate.



Hydro-Temp Corner Console Unit in the Classroom



10 Ton Stand –Alone Hydro-Temp System in Gym

The gymnasium is heated and cooled by two Hydro-Temp 10-ton "stand-alone" units. These self contained units cool the gymnasium from the floor up to the twelve foot level, allowing the upper sixteen feet near the roof to stratify. By cooling only the area where people are, less cooling capacity is needed. 20 tons of equipment has no problem cooling this 8,000 square foot area even with crowds in excess of 400 people.

In addition to the savings to heat and cool the building. A large portion of the hot water used in the kitchen is produced free as a by-product of cooling the kitchen using Hydro-Temp's patented "priority" hot water recovery system.

School Superintendent: Bill Garrison Thayer, MO	Maintenance Director Bill Pitchford Thayer, MO	Architect: Richard Werner, ARCH Springfield, MO	Engineer: Charles Tharp, PE Springfield, MO	Mechanical Contractor Air Flo Company Pocahontas, AR
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