



# River Lodge Residence Designed for Comfort and Savings

## Case Study



**BOSCH**

Invented for life

### **Bosch Geothermal Comfort with Gold LEED® Certification**

in Central Pennsylvania

#### **Background**

River Lodge is a private residence in central Pennsylvania along the Susquehanna River built by Mr. and Mrs. Jens Damgaard. Situated 10 miles from the state capital of Harrisburg, it is the first and only LEED Gold certified green certified residence in central PA.

River Lodge's HVAC contractor, Morrison, Inc., has sold and installed over 4,800 geothermal systems throughout central Pennsylvania over 30 years, but this is the first LEED certified residential project the firm has been involved with. Morrison's installations have included residential homes from 800 to over 20,000 square feet. Morrison maintains its own drilling operation and equipment for wells and geothermal ground loops.

#### **Installation Summary**

According to Mike Armstrong from geothermal contractor Morrison, the Damgaards installed a Bosch 4-ton model TW-049 series two-stage water-to-water open loop geothermal system, fed by a 500 ft deep open loop standing well. The system provides radiant heat on the first floor, and floor-zoned air conditioning throughout the 3000 sq ft home via hydronic fan coil. The second floor is supplied with hot water from the same system. A buffer tank provides heated or cooled water to

the radiant coil embedded in the first floor or to the fan coil. A desuperheater in the geothermal unit provides preheated water for the domestic hot water system.

To assure quiet comfort, the ENERGY STAR rated TW Series is equipped with an exclusive sound package. The two-stage compressor is surrounded by a multi-density sound blanket and the unit comes standard with a floating base pan, which separates the compressor from the exterior cabinet to further reduce unwanted sound.

"Our installation challenge was locating the geothermal unit inside a small mechanical area under a stairwell," according to Armstrong. "The homeowner can choose heating or cooling by flipping a switch on the thermostat control."



Bosch TW-049 water-to-water geothermal heat pump

## Benefits and Conclusion

“We save a lot of money on energy costs, and the home seems to always be maintained at the perfect temperature,” says Mr. Jens Damgaard. Armstrong adds “This is very inexpensive to operate...it’s renewable energy. You’re paying 30 cents to get every unit of heat. Air conditioning is about half the regular cost. So about 70 percent of the energy consumed from the ground is free. The rest is electricity for pumping water and circulating air.”



Source for this article includes PA Media Group, The Patriot News, Mechanicsburg, PA



### Project Name:

- ▶ River Lodge Residence, near Harrisburg, PA

### Homeowners:

- ▶ Mr. and Mrs. Jens Damgaard

### Application:

- ▶ Hydronic heating and air conditioning with Bosch geothermal unit

### Equipment

- ▶ Bosch 4-ton model TW-049 two-stage water-to-water

### System Installer:

- ▶ Morrison, Inc., Duncannon, PA

### Project Completion:

- ▶ 2013