



BlueRidge
Company™

RADIANT HEAT SYSTEMS

Case Study

Northern Minnesota
Lake Cabin

3-Zone Electric Boiler Radiant System

- ▶ DIY New Construction
- ▶ RHT Floor Panel System
- ▶ DIY Installed Mechanical

- PEX installed above subfloor with RHT Floor Panel System
- RHT SS High Flow Stainless Steel manifolds and ball valves
- 15 kW Thermolec 51,000 BTU/hr fully-modulating electric boiler
- 3-Zone RHT Prefabricated Matrix Pump Distribution Panel
- RHT Hydronic Fill & Purge System; closed loop + glycol mix



“I continue to **RAVE** about the in-floor heat. Count me as a forever BlueRidge Company fan.”

As a former developer and general contractor, Joel S. had spent decades building projects for others. But this one was different. This was a two-story lake home for his family in Ely, Minnesota, just 10 miles south of the Canadian border—in a region where winter temperatures are legendary, and nearby locations have recorded lows of -60°F . For Joel, this wasn't just another build. It was a long-held dream finally taking shape.

Joel took on the project himself, drawing on years of hands-on experience. Every decision was made with long-term comfort in mind. In a climate this unforgiving, there was no room for compromise. “I’ve lived with radiant heating in my current and past homes. The comfort is unmatched—and there’s no fan noise.”

Joel’s confidence in radiant heating went back more than twenty years. In 2003, while developing a planned unit development, he specified in-floor radiant heat—and the performance stuck with him. When it came time to design his own home, there was never a question of using forced air.

Working with a mechanical engineer to develop heating load calculations, equipment sizing, and control options, Joel was ultimately referred to BlueRidge Company.

“They stood out immediately. The team was detailed, responsive, and genuinely interested in getting it right. They listened—and then helped shape the right solution.”



Joel’s radiant 3-Zone system is installed in his family’s lake cabin in Ely, Minnesota. Joel used the RHT Floor Panel system with a fully-modulating 15 kW Thermolec Electric Boiler. The panel came prefabricated and ready to install in his mechanical room.

BlueRidge Company designed a custom in-floor radiant heating system, powered by a 15 kW Thermolec electric boiler. While an integrated domestic hot water system was considered, it was ruled out due to cost and equipment layout considerations. One key design decision Joel is especially glad he made was relocating the mechanical room from beneath the stairs to the center of

the second floor, creating a cleaner layout and easier access.

When the prefabricated radiant system arrived on site, Joel didn’t hide his reaction. “In a word—SWEET. Clean, professional, compact. It was obvious this system was built with care.”

The system was installed using RHT Floor Panels over a ¾" OSB subfloor. While highly effective, Joel notes the system is a roll-up-your-sleeves project. He installed the system using ½" PEX-B tubing, but recommends PEX-A for anyone working in cold conditions due to its flexibility and ease of handling.

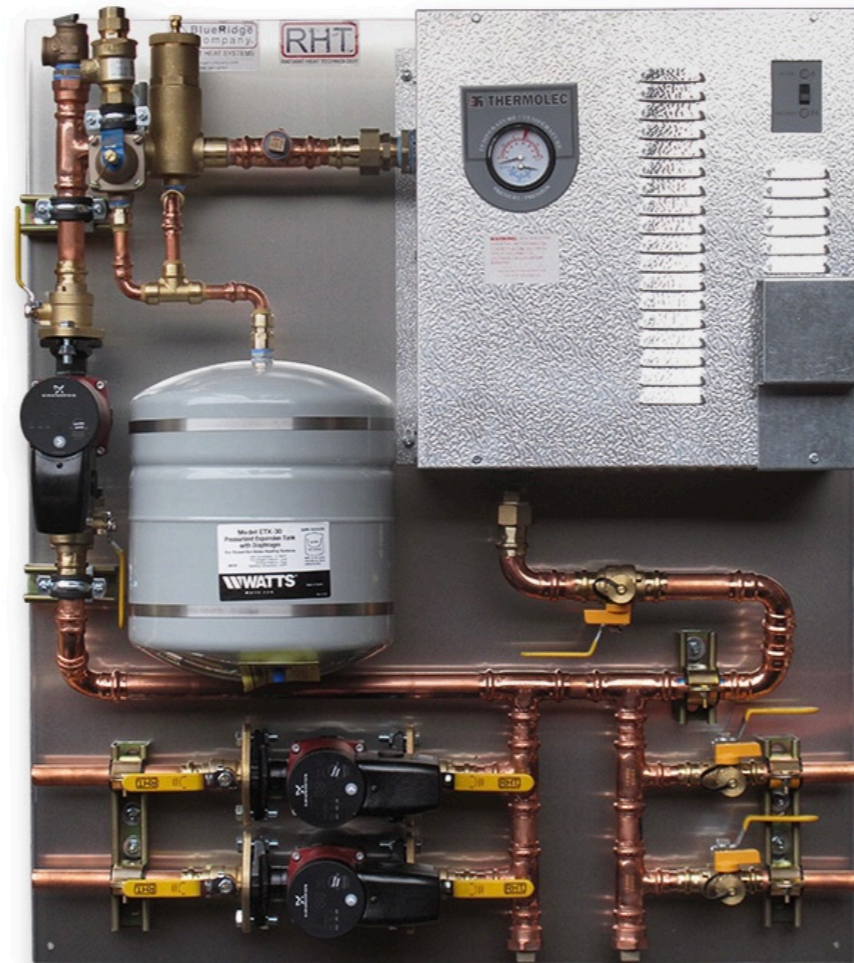
Throughout the install, Joel stayed in close contact with BlueRidge Company's technical support team. "I really appreciate all the advice and troubleshooting the BlueRidge team provided to get me to the finish line."

Once commissioned, the system exceeded expectations. Even during extreme cold, the radiant system maintains remarkably stable temperatures across three distinct zones, each with very different insulation envelope conditions and dimensions.

"I continue to RAVE about the in-floor heat. There's nearly no variation in temperature throughout the three zones. It was -10°F or colder this morning in Ely, and the system keeps up so evenly."

For Joel, the project delivered exactly what he had envisioned: quiet comfort, precise control, and confidence in one of the harshest winter climates in the country.

"Count me as a forever BlueRidge Company fan."



Joel used BlueRidge Company's RHT Prefabricated Matrix Pump Panel for his radiant system. Our 2-pump version is shown above.



THERMOLEC

