

LONG LAKE CONSERVATION CENTER, PALISADE, MINNESOTA

A Simple System with a Quarter-Century Service Record

Cordwood Heating System

Heating Capacity (output): 500 kW (1.8 MMBtu/hr)

Annual Cordwood Use: 120 cords

Year Installed: 1984

Thermal Output: Hot water

The five GARN cordwood burners that power the campus heating system at Long Lake Conservation Center are robust exemplars of a key transition in the story of biomass energy. Three of the units have been working for a quarter century—and they embody the shift from old-fashioned woodstoves to far more powerful, clean-emission central units.

In its east-central Minnesota town of Palisade, Long Lake has been providing environmental education and outdoor learning experiences to its region’s young people and adults since 1963. A public entity owned and operated by Aitkin County, Long Lake heated its campus with individual-building woodstoves until 1984, when it installed three GARN boilers. The system was developed and installed by the St. Anthony, Minnesota firm Dectra Corporation, which has been providing GARN wood heating systems for 30 years.

“Long Lake at that time looked at this as an opportunity to provide a commercial application of wood energy, and an opportunity to bring all our heating together under one roof,” says Todd Rogenkamp, the center’s current executive director. During a major expansion in 1998-99, the center installed two more GARN units, along with two large additional buildings.

The system heats seven buildings: a dining room, administration center, learning center, cross country ski hut, laboratory, lecture hall, and two dorms. Maintenance staff members stoke each boiler every three hours during peak heating season.



“Typically I fill all five boilers in about 15 minutes,” says maintenance coordinator Dave Conway. “The last time we stoke is 10 pm when the our night guy takes off. There’s enough water to stay hot until I come in the next morning.”

“We burn about 100 cords in a winter, to heat 48,000 square feet,” says Rogenkamp. “It’s a very efficient way to heat. We’ve saved hundreds of thousands of dollars over the years by heating with wood.”

The center pays \$107 per cord for its fuel, split and delivered. Aitkin County’s land department oversees and manages the center’s 760 acres of county-owned woodland. “All our wood comes off Aitkin County lands—our own or other lands,” Rogenkamp says.

“All the county woodlands are Forest Stewardship Council certified,” he adds. “So not only are we burning wood that’s a sustainable product, we’re also burning wood that comes off appropriately and meticulously managed woodland.”

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Pictured on front: Maintenance Coordinator Dave Conway typically fills five boilers (with cordwood) in about 15 minutes. Right: Four of the five GARN cordwood boilers in Long Lake's wood heating plant.



“We contract with someone to come cut wood for us at our center. It provides employment to the local economy, a lot of which is forest-product driven, here in east central Minnesota.”

‘A Proof of the Pudding’

Long Lake’s wood system continues to meet all of its heating needs—and those can be extreme needs. “We have long stretches of days where we don’t get temperatures above zero,” Rogenkamp says. “Our lows get down to 30 or 35 below.”

Housed in a single-building Energy Center, the Long Lake system heats a total of 12,500 gallons of water that are piped underground throughout the campus.

Within the buildings around the campus, “our heat is supplied by a variety of different methods,” Rogenkamp says. “That’s one of the unique things about the GARNs: they’re very adaptable to different heating uses. If you have radiant baseboard heating, the GARNs work with that. You can match them up with forced-air and with in-floor heating. We have all three: one building with forced air, two buildings with in-floor, and the rest with radiant baseboard.

“We use our wood system as part of our education here. Whether we’re talking with students or adults, we show them how they can be sustainable, how they can live a sustainable life by using a renewable-energy resource.

“Part of Long Lake’s mission is to promote the wise use of natural resources—so having the GARN system here is a proof of the pudding, so to speak. These units show that we’re taking advantage of a renewable resource, we’re using it wisely, we’re using a system that is efficient. And the GARN units meet EPA standards for particulates, etc., with regard to heating with wood.

“As far as lifespan, these units have been outstanding,” Rogenkamp concludes. “People are asking, ‘How am I going to get the best bang for my buck?’ With these units, you’re not talking about a huge cost to get started. And you’re looking at a pretty good return on your dollar.”

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