

The High Mowing School in Wilton, NH IS NOW HEATED WITH BIOMASS!



By Jim VanValkenburg, Froling Energy

High Mowing School had a strong desire to eliminate its use of fossil fuels by switching to a local green fuel. However their dream of installing biomass boilers would take a big investment with lots of ongoing maintenance. Then Xylogen, a Keene-based company, gave them an exciting "turn-key" proposal. Opportunity was knocking!

The solution was fairly simple: The school agreed to a 20-year service agreement for a set annual fee where Xylogen promised to provide, install and maintain a central biomass boiler system that would heat all nine of the core campus buildings. Even though Xylogen provides all fuel needed on campus for the duration, the agreement encourages conservation. Should the campus or Xylogen find ways to cut back on their use of heat, their annual fee is also reduced. That made sense to everyone.

Most of the school's many oil boilers were of less-than-average efficiency and nearing the end of their useful lives. It was calculated that nearly \$250,000 would

need to be spent in order to bring all of these boilers up to date. So it was a good time for the school administration to act on an arrangement where all capital expenses for heating equipment would be financed by Xylogen.

Froling Energy was contracted by Xylogen to build a central boiler house and the new district heating system. This included constructing the fuel silos, installing underground pipes to each building, removing old oil boilers and installing heat exchangers in each building.

Two Froling TX-150 fully automatic biomass boilers (one million BTU total output) were installed with a 3000-gallon insulated buffer tank. They are able to burn either wood pellets precision dry wood chips. PDCs are a new alternative fuel, wood chips with no bark, that are about the size of a common match book, and with a moisture content of 30% or less. Two HTP ModCon condensing propane boilers were also installed (1.7 million BTU total output) to provide dual-fuel redundancy. High ef-

iciency pumps were installed to circulate hot water from the boiler house to the entire campus. The main goal is to provide 180-degree water to every building in the district, mainly from the biomass boilers. The propane boilers will turn on at times of very high demand.

PDCs, the new main fuel on campus, are manufactured at Froling Energy's production facility in Peterborough. High quality hardwood chips from a number of local sources are screened, then re-chipped down to be no bigger than matchbook size and dried to 25% moisture. Two deliveries a week are brought to the school during the coldest part of winter.

All of the main buildings on campus are completely reliant on the new central boiler system for heat and hot water so Froling Energy Service crews are diligent about maintaining the system to make sure everything is working well. A control and

monitoring system, Boiler Maestro by DCM Logic, monitors boiler operations, alerts them to problems and precisely calculates the heat output of the biomass boilers, which enables HMS to qualify for receiving New Hampshire Thermal Renewable Energy Credits.

Impressive Results: The High Mowing School campus is now no longer burning 31,000 gallons of oil. With the new system they expect to burn 500 tons of PDCs and 4,000 gallons of propane. So they will have reduced fossil fuel use by over 90%—equal to cutting 28,000 gallons of oil! This is a carbon dioxide reduction of over 330 tons per average year—and a very good example for the students at HMS.



BURN PELLETS WITHOUT ELECTRICITY

By Pablo Fleischmann, owner of GEO

The Wiseway gravity-feed pellet stove is a wonderful new invention which burns pellets without requiring electricity. Many people who have been shied away from a conventional pellet stove's dependency on electricity are finding these to be great alternatives. The stove will put out 55,000 BTUS on high which is comparable to that of a medium-sized wood stove. They are simple to operate and lightweight enough to be semi-portable, making them ideal for camps, cottages, or workshops.

Gary Wisener, the inventor, made the first one in 1999 in Medford, Oregon for his own personal use, from his experience as a machine shop foreman. He would bring it up to his hunting cabin, use it on his porch, and heat his home with it. Word spread and soon he was building them for neighbors, friends, and family. Now he has a fledgling distributor network across the US. Green Energy Options (GEO) in Keene, NH has sold more than a dozen stoves to customers for various uses. One heats a home from the basement, one heats a yurt, and another a greenhouse. "Because of its unusual shape, it's one of the first things people comment on when they come to our store," says manager, Owen Travers. "Many of our customers are concerned with energy consumption or have outbuildings with no utilities, so it's a natural fit."

"The one thing we stress when we have customers considering the stoves is ensuring the proper draft." Since the stove has no fan or auger, the natural draft is essential for the stove's functioning. Too little draft and the stove will back-puff into the house. Too much draft and the stove cannot be burned on low. "We use a 4" pellet vent pipe, barometric dampers, Vaccu-StacksTM,



The Wiseway gravity-feed pellet stove

and fresh air kits to fine-tune the draft. Each application is slightly different. The stove works best when vented straight up. Ninety-degree bends can't be used and horizontal runs must be minimized." For 2014/15, Wiseway has released a new version of their stove that produces more heat and requires a conventional 6" stove pipe and chimney. A new feature is also a window to view the flame!

"I think we are seeing the tip of the iceberg with these first gravity-feed stoves. There is a lot of room for experimentation and diversity with a stove like this." Ice-storms, watch out! Your days of disabling heating devices may be numbered!

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