

Wood Pellet/Cord Wood Boiler

Arctic Energy Alliance Office - Yellowknife, NT

System Overview:

The Arctic Energy Alliance (AEA) installed a containerized 30 kW WoodMaster Flex Fuel Boiler for the Urbania Building in Yellowknife. The system will run using wood pellets or cord wood, and is interconnected with the existing oil fired boiler system. The new system is expected to cover 95% of the heating load, and have a 20 year lifespan.

The WoodMaster Flex Fuel boiler uses wood gasification technology, where the pellets are cooked in a low-oxygen environment to produce syngas, which is burned like natural gas in a high temperature fire. This results in a clean burn with a high efficiency. A thermal storage tank is also part of the system, which allows the boiler to run at full capacity and store excess heat to be used as required.

The design and installation of the containerized unit was by Arctic Green Energy. It includes four tonnes of pellet storage, designed for bulk pellet delivery. The container measures 2.6 x 3.7 metres (8.5 x 12 feet), about the same space as one parking stall.



**Figure 1: Arctic Energy Alliance's
Wood Pellet/Cord Wood**

AEA received a funding contribution for this project from the GNWT - Environment and Natural Resources's Alternative Energy Technology Program.

Performance Data:

Boiler Rated Output:	30 kW (100 MBH)
Annual Oil Usage¹:	15,625 L
Estimated Annual Pellet Usage¹:	30 tonnes
Estimated Annual GHG Reduction¹:	40 tCO₂e
Estimated Annual Savings²:	\$9,555

¹ From 2010 Urbania Building Yardstick Energy Audit

² Based on February 2012 fuel/pellet prices