

BIOTHERMIC IS CLEANING UP THE IMAGE OF WOOD HEAT PROJECT AT-A-GLANCE

Location:

Salt Spring Island, British Columbia; Ottawa, Ontario; and Cape Breton Island, Nova Scotia, Canada

Contractor:

Biothermic Wood Energy Systems

Lead:

Mike and Vince Rutter

Product Focus:

QuickSetter™ and ThermoBloc™ for heating system balancing and condensation prevention

Challenge:

Modernize wood heating systems with proper hydronic control strategies

“SYSTEMS ARE RARELY BALANCED PROPERLY ON THE BOILER SIDE OR THE DISTRIBUTION SIDE.” MIKE CONTINUES, “OVERLOOKING BALANCING ISSUES CAN CAUSE A LOT OF PROBLEMS.” ”

~MIKE RUTTER~



Overview:

Biothermic Wood Energy Systems is on a mission to bring modern wood heating technology to the masses. Across Canada, they design cutting-edge wood fired boiler systems for residential, commercial and district energy systems. Brothers Mike and Vince Rutter have a passion for responsible forestry, which utilizes low-value forest products for renewable, carbon neutral fuel. They are rewriting the script for firewood, wood pellet and wood chip powered heating plants.

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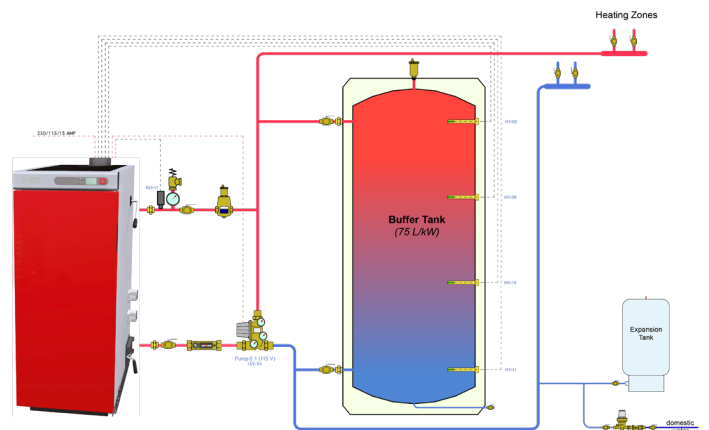
BIOMASS POTENTIAL IN CANADA

Canada is to wood resources what Saudi Arabia is to oil resources; and just as Saudi Arabia can be hot, Canada can be cold. Canadians have the opportunity to harvest their vast forests in a sustainable way while simultaneously keeping warm with hydronic systems. However, in the past poorly designed wood energy systems have sometimes given the technology a bad name. Using biomass to generate electricity is

“With our designs, we have to set up installers for success because modern wood heating systems are a newer technology in Canada. If they don’t succeed, everybody blames the boiler,”

- Mike Rutter

roughly 25% efficient. However, well-designed thermal systems are 80-90% efficient. If customers can provide the emission regulations for a city or province, Biothermic can design a system to meet those standards. Simply selling an efficient wood boiler doesn't fix everything. “Solving that problem made us decide to package entire the boiler system.



You really have to control everything from the boiler to the buffer tank and the distribution side so you don't short cycle the system.”



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MODERN WOOD BOILER DESIGN

A Biothermic system is far from a cold, smoldering fireplace in a 100-year-old home. They design many Fröling firewood, wood chip and wood pellet boiler systems. Mike elaborates, “With these systems, we want to load it, light it and run it down to ash.” Wood pellet and wood chip boiler systems are completely automatic.

Buffer tank stratification is key for the systems they design. In order to avoid short-cycling the boiler, they design the systems to draw the hottest water off of the top of the buffer tank. An improperly balanced system, on the boiler or system side of the buffer, can ruin the stratification by unnecessarily mixing the tank temperature. One of the solutions they utilize is

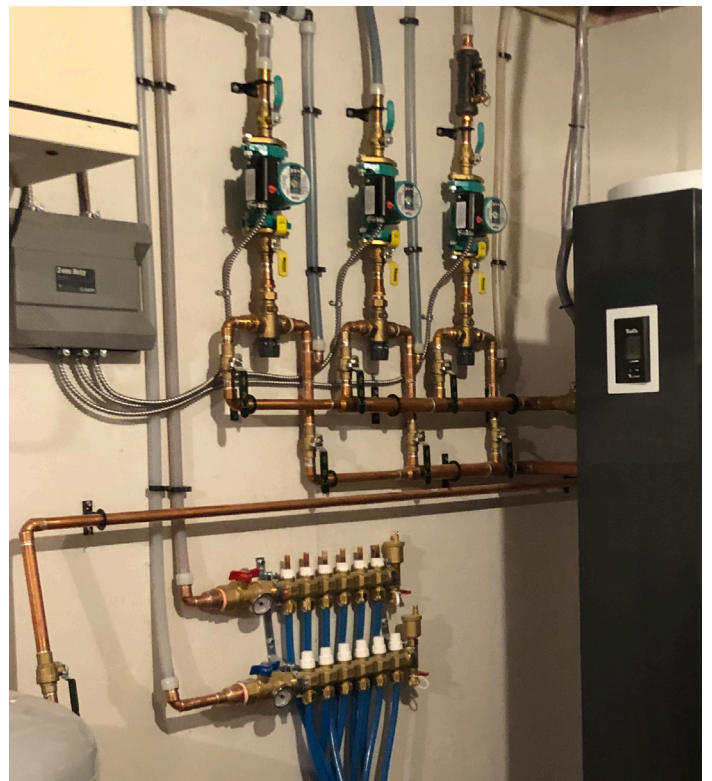
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the Caleffi QuickSetter™ balancing valve. The QuickSetter has a built in flow meter, housed in a bypass circuit on the valve body. The flow meter permits fast and easy circuit balancing without balancing tools. Since Biothermic works on existing systems also, they install QuickSetters on the system side and can rebalance to optimize performance as they commission.

Mike learned more about balancing valves and buffer tanks during Coffee with Caleffi webinars. This knowledge helped him design and troubleshoot these systems. “We try to empower

our broad umbrella of customers. Teaching the installers to balance is key for installation. We try to be generous with information to help our customers to be successful.”

Condensation prevention is another aspect of these systems that they keep a close eye on. Utilizing the Caleffi ThermoBloc™ boiler protection high-flow thermostatic mixing valve, they protect the equipment from flue gas condensation by ensuring return water temperature to the boiler stays above the dew point. This valve mixes by-pass flow from the boiler with return flow from the system, sending a fixed temperature flow to the boiler which protects against corrosion.



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BENEFITS FOR THE END-USERS

Sustainable, locally sourced fuel is hard to find in most areas of the world. Canadians have the opportunity to shift an enormous amount of buildings over to modern wood fuel systems. When designed properly, these wood systems can provide the thermal comfort occupants are accustomed to, powered by the

literal or figurative resources in their backyards. Biothermic hopes to expand more residential and commercial buildings into district energy systems in the years to come. Centralized wood boiler plants can service multiple buildings and pave the way for a new energy future in Canada.



WANT TO LEARN MORE?

We are committed to your success and are here to help. Check out our website [CALEFFI.US](https://www.caleffi.us) to explore an expansive collection of product information, training webinars, BIM objects, as well as our expansive library of educational idronics™ journals.

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