Biomass Boiler Buyers Guide

FURNACES & BOILERS

ACT BIOENERGY, LLC
www.actbioenergy.com
Tel: 518-377-2349, Toll free: 1-877-228-2465

ACT Bioenergy manufactures high-efficiency biomass boilers ranging from 150 to 500 kW thermal. Our underfed grate, gasification-type hot water boilers are user-friendly, with automated ignition, feed control, and ash removal. High efficiency and exceptionally low emissions are achieved by constant monitoring of combustion chamber temperatures, oxygen levels, and pressures, and automatic adjustment of fan speeds and fuel feeding rates to maintain optimal operating conditions. Typical fuels include wood chips, wood pellets, and selected agricultural residues. ACT Boilers are ideal for commercial, institutional, and multi-family residential buildings. An ACT boiler project in New York State was recognized as the North American Bioenergy Project of 2011.

ADVANCED RECYCLING EQUIPMENT, INC. /CHALLENGER ENERGY SYSTEMS, INC.
www.advancedrecyclingequip.com
Tel: 814-834-4470, Toll free: 1-800-611-6599

Advanced Recycling Equipment, Inc., located in St. Mary’s, Pennsylvania, manufactures Challenger Biomass Combustion Systems, ranging from 1-million to 60-million BTU (240 kW to 17.6 MW). The systems are capable of burning a wide variety of biomass materials with up to 50% moisture content for energy recovery through hot air, hot water, steam, and cogeneration. Challenger thermal combustion systems offer advanced controls, full automation, and rugged design to ensure long life. The systems are very clean burning. Challenger systems are an ideal fit for greenhouses, production/manufacturing facilities, or any other commercial, private, or institutional application.

ALTERNATIVE ENERGY SOLUTIONS INTERNATIONAL, INC. (AESI)
www.aesintl.net
Tel: 316-201-4143

AESI delivers commercially proven modular, plug and play biomass energy systems that perform reliably from day one and require low operation and maintenance attention. Using a two-phase process of gasification followed by combustion via a fire-tube boiler, AESI’s scalable applications offer thermal output between 1 million BTU/h (290 kW) and 20 million BTU/h (6 MW) and power generation between 50 kW and 1 MW electric and more through multiunit staging. The systems are suitable for agricultural, municipal, industrial, and institutional applications. They fire various fuel types up to 55% moisture content, including wood, agricultural residue, industrial process waste, sludges, manures, and MSW. Systems feature automation from fuel reception to ash extraction, remote monitoring, and water-cooled grates.

ASI ÉNERGIE
www.falmecboiler.com
Tel: 418-662-3663

ASI Énergie specializes in thermal plants fuelled by biomass or municipal solid waste. It has developed a new concept of small, modular, packaged systems that are built and installed, producing up to 5 MW. Its biomass boilers are designed to burn pellets or woodchips, producing 25 kW to 1 MW (hot water or steam). Hybrid boilers are designed to produce 100 to 2000 BHP. Cogeneration plants are equipped with fluidized bed combustion technology.

BINDER BOILER SALES USA, INC.
www.binder-boiler.com
Toll free: 1-888-475-4858

Binder Boiler Sales USA is the North American distributor for Austrian company Binder GmbH. Binder’s water tube boilers range from 150 kW to 10 MW hot water, all ASME and CS certified. The step-grate furnaces and underfed pellet boilers range from 150 kW to 3 MW thermal. The systems are suitable for a variety of applications, including greenhouses, schools, municipal buildings, sawmills, and others. They are fuel flexible, burning hog fuel or wood chips up to 50% in moisture content, as well as pellets made from wood or agricultural residues. Containerized pellet boiler and wood chip systems ranging from 150 kW to 1 MW are available. Cogeneration capacity is at the research and development stage, with plans for 300 kW thermal and 30 kW electric output from a steam boiler with small-scale steam turbine. Several Binder pellet boilers, 300 kW to 1.5 MW in capacity, have been installed in the Northwest Territories. Binder offers biomass heat and steam contracts in North America with our partner Wood4heating Inc. (see listing).

As the price of oil continues to rise and enterprises, institutions, and municipalities look for renewable energy options, biomass furnaces and boilers are becoming ever more attractive. Canadian Biomass’ listing of biomass boiler manufacturers and suppliers, as well as companies that offer retrofits and contract biomass heat, is a first stop for those looking to determine what’s available in Canada. Thermal options range from about 150 kW to 100 MW, and electrical capacities range from 250 kW to 25 MW.
Biomass Combustion Systems (BCS) relies on its own horizontal zoned grate combustion system to burn both green and dry wood in boilers from 1 to 8 MW. BCS has been working with this design for over 15 years because it is simple to operate and gives the operator good control over both fuel and air delivery to the firebox. BCS also manufactures a line of wood-fired hot air furnaces from 75 to 250 kW. The 25-year field-tested design, with compact all-steel construction, is ruggedly built to withstand long-term industrial use. BCS fireboxes are engineered with extra thick end-walls, which unlike refractory fireboxes, will not crack and break with repeated hand firing.

Blue Flame Stoker offers multi-fuel boilers ranging from 1.4-million to 17-million BTU/hour (400 kW to 5 MW) system capacity. The chain grate design provides a large grate area and large combustion volume, assuring complete solid fuel combustion. It offers type “C”, three-pass, fire-tube-style boilers designed for hot water and steam applications up to 250 psig. The systems are proven to combust: wood pellets, oat hull pellets, wood shavings, wood chips with up to 55% moisture content, flax straw, demolition wood, and a mixture of turkey manure and wood shavings. Typical applications include central heating systems, greenhouses, schools, kilns, grain dryers, poultry and hog barn heat, and steam generation.

Chiptec Corp. produces Chiptec Wood Energy Systems. These fixed-grate, close-coupled gasifier systems range from 300 kW to 20 MW thermal output. Cogeneration capacity is available at 300 to 900 psig. The gasifiers can fire almost all boiler types, from low-pressure fire-box to high-pressure scotch marine systems. The systems are suitable for many applications, including greenhouses, municipal buildings, and industries, and use biomass fuels 6 to 60% moisture content. The systems have exceptionally clean gasification and combustion and are very carbon efficient, producing minimal emissions. They have long run times and low maintenance requirements.

For over 15 years, Combustion Expert Inc. has manufactured biomass-fired boiler systems from 200 kW to 30 MW and greater. Its expertise in combustion allows it to create systems that use any type of woody biomass as fuel, with up to 55% moisture content. Combustion Expert finds the solution, whatever the need: hybrid boiler, water or fire-tube boiler, low or high pressure, etc. Its goal is to innovate and improve on combustion technology, as well as to satisfy the various needs of commercial, industrial, and institutional clients across Canada and abroad, such as sawmills, pulp and paper industries, hospitals, and municipal buildings.

Compte-Fournier is the biomass boiler technology supplying renewable energy to the London 2012 Olympic Games. Compte-Fournier offers fully automated, high-efficiency biomass boilers with Compte-R technology in North America. Hot water boilers range from 250 kW to 10 MW, steam boilers have output of 2 to 12 t/h at pressure of 10–24 bar, and there are overheated air and water solutions, all using biomass at 5–60% moisture content. Boiler installations range from small and
Deltech offers biomass boilers in the range of 500 kW to 50 MW (1.7 million to 170 million BTU/hour) thermal output, with available cogeneration capacity typically 0.2 to 5 MW electrical. Furnaces are pile, pellet fixed-bed, or step-grate burners, heating low-pressure hot water or thermal oil boilers. Applications include sawmills, wood fibre drying (e.g., pellet plants), and building heating. A variety of biomass can be burned, including hog fuel up to 50% moisture content, wood pellets (typically 8% moisture content), and planer shavings (typically 15% moisture content). Deltech offers a full range of services, including full life cycle, turnkey systems; consulting and needs analysis; engineering and design; and manufacturing and installation.

**EBNER-VYNCKE**

www.ebnervyncke.com
Tel: 330-335-1778

From boiler supply to turnkey solutions, Ebner-Vyncke provides boiler systems from 3 to 100 MW thermal for steam, hot water, thermal oil, or hot gas production, with cogeneration experience up to 12 MW electric. Its furnaces are water-cooled step-grate; boiler types include hot water, steam, superheated steam and hot water, thermal oil, hot gas, combination water-tube/fire-tube, and vertical and horizontal water-tube. Ebner-Vyncke boilers are installed in greenhouses, sawmills, and other industrial and commercial facilities. They use a wide variety of fuel types and moisture contents, from sawdust and hog fuel to rice hulls and empty fruit bunches. Based on nearly 100 years of biomass combustion experience for energy applications and around 4,000 installations worldwide, Ebner-Vyncke is well positioned to support a client’s industrial energy needs.

**ENERGY PRODUCTS OF IDAHO (EPI)**

www.energyproducts.com
Tel: 208-765-1611

EPI’s fluidized bed boiler systems convert renewable biomass and other solid or liquid fuels into steam energy and range from 5 to 60 MW thermal output. From major superheated utility power boilers to small heat recovery boilers, EPI systems feature a state-of-the-art fluidized bed thermal oxidizer combined with advanced heat transfer technologies to cleanly and efficiently generate steam energy. With more than 100 EPI fluidized bed boilers burning over 200 different varieties of fuels, EPI has vast fluidized boiler experience on a wide variety of fuels. EPI systems handle fuels ranging from 5 to 65% moisture content and over 50% ash content.
ENSIGHT BIOENERGY
www.ensightbioenergy.com
Tel: 902-621-2254, Toll free: 1-800-742-4256
Ensight Bioenergy distributes Woodpecker boilers in the Atlantic region. The new Thermon series pellet boilers come in 150, 200, and 300 kW thermal output, suitable for commercial-scale heating. The boilers are manufactured in Ontario to ASME standards and assembled in Vermont, south of Montreal. All Thermon boilers can be monitored by computer or smart phone.

EVERGREEN BIOHEAT LTD.
www.evergreenbioheat.com
Tel: 604-943-4671
Evergreen BioHeat Ltd. provides full-service engineering and is a supplier of Austria’s high-efficiency boilers by Fröling. It offers a wide range of fully automated, hydronic, low-pressure boilers, including the P4, FHG, TX, Tubomat, and the Lambdamat, which accommodate pellets, chips, or logs as fuel while providing output capacities up to 1 MW. Over the past 50 years, Fröling has developed wood-heating technology featuring Lambdatronic control optimization, facilitating varying fuel moisture contents, minimizing emissions, and maintaining high output levels.

FINK MACHINE INC.
www.finkmachine.com
Tel: 250-838-0077
Fink Machine is an authorized sales and service agent for Viessmann-KOB commercial boilers from Austria. The Pyrot and Pyrotec lines range from 100 kW to 1.25 MW thermal, offer 4:1 turndown ratios, and use both wood pellets and wood chips with 50% moisture content with a thermal efficiency of 90%. Recirculation flue gas technology, lambda (oxygen) sensors, temperature sensors, and walking floors controlled in unison by an automated panel allow for this range of fuel types. They offer numerous fail-safe features on a safety chain program. These are 100°C boilers with optional ASME vessels from 30 to 60 psi. Over the past 10 years, Fink Machine has installed more than 40 boilers for district heating loops, hospitals, greenhouses, schools, municipal buildings, waste facilities, universities, and other facilities across Canada and the USA.

HURST BOILER AND WELDING CO., INC.
www.hurstboiler.com
Tel: 229-346-3545, Toll free: 1-877-994-8778
Hurst Boiler Co. specializes in the manufacturing of modular biomass boiler systems with outputs ranging from 28 kW to 52 MW thermal. Boiler vessel designs (CRN registered) include firebox, vertical tubeless, hybrid water/fire-tube, and water-tube. Operating pressures range from 15 to 900 psi, with steam superheat available. Modular biomass thermal to electric cogeneration systems are offered in 250 kW, 500 kW, 1 MW, 3 MW, and 5 MW packages. Hurst manufactures seven different types of biomass stokers/gasifiers, which have used almost 2,000 different types of biomass fuels over the last 40 years. Hurst has grown with >350 employees, becoming an experienced, reliable, and stable biomass thermal system supplier.

ICM, INC.
www.icminc.com
Tel: 316-796-0900, Toll free: 1-877-456-8588
ICM has commercial gasification equipment available in three unit sizes capable of processing 150, 300, or 450 tons/day of biomass and producing 5, 10, or 15 MW, respectively. Cogeneration can be readily integrated into the process. ICM’s gasifier can use either low- or high-pressure heat recovery steam generators based on water tube design, depending on customer needs. The technology is suited to a wide range of applications, with current focus on waste-to-energy and biomass-to-energy products. ICM expects to serve industrial applications, municipalities, sawmills, etc., and can customize the equipment to fit a variety of applications. Feedstocks with 20–50% moisture content have been successfully tested, including refuse-derived fuel (RDF) from MSW, RDF blended with tire-derived fuel, wood chips, bark, trimmings, construction and demolition waste, agricultural residues, energy crops, poultry litter, paper sludge, and plastics.

IDEAL COMBUSTION
www.ideal-combustion.com
Tel: 819-566-5696, Toll free: 1-888-656-5472
Ideal Combustion offers biomass gasification combustion technology with horizontal reciprocating grate furnaces in the range of 150 kW to 30 MW thermal and cogeneration capacity from 1 to 5 MW.
The systems are suited for greenhouses, schools, hospitals, sawmills, and more. They accept any type of fuel, and up to 60% moisture content. The systems feature hydraulic ram biomass feeders for trouble-free operation, double combustion chambers, automatic boiler tube cleaning and ash removal systems, and fully computerized controls with VFD. Low headroom space is required. The systems use biomass gasification technology for cleaner combustion gases, and have high overall efficiency due to the cleanliness of the exchanger. The systems are compatible with any type of heat exchanger, including steam, hot water, thermal fluid, and hot air.

KMW Energy Inc. offers heat energy only or combined heat and power (CHP) plants complete with power generating equipment. Thermal-only systems range from 150 boiler hp (1.5 MW thermal) to over 4,000 boiler hp (40 MW thermal); CHP plants range from 1 to 25 MW electric.

Krann offers biomass boiler systems in the 1 to 10 MW range for both hot water and steam, heated by Krann gasification furnaces. Typically, no filters are needed for flue gas handling because of the low emission levels. These systems can be used to generate electrical power through either a steam turbine or an organic Rankine cycle module. Fuels include hog fuel, shavings, recycled wood waste, and others, with up to 55% moisture content. Applications include sawmills, greenhouses, drying facilities, municipal buildings, hospitals, and others. These turnkey systems are fully automated from fuel storage to exhaust and require minimal supervision. Krann also offers the conversion of existing fossil fuel boilers to biomass.

Messersmith Manufacturing provides design, fabrication, installation, and startup of biomass boiler systems with thermal outputs ranging from 600 kW to 6 MW. The systems can use fire-tube or water-tube boilers, providing hot water or high-pressure steam for electricity generation. A fixed, sloping grate system combines with preheated combustion air to provide clean, efficient combustion with less than
Moss builds waste-to-energy systems ranging in size from 75 kW to 120 MW. In addition to thermal energy, Moss can provide co-generation with turbines ranging in size from 50 kW to 25 MW electrical. The company offers a variety of combustion designs, including suspension burners and gasifiers with fixed-hearth, gravel-grate, reciprocating/step-grate, and fluidized bed design. Its combustor can fire into rotary dryers or produce steam in fire-tube, water-tube, and hybrid boilers. Typical installations include sawmills, textile plants, and any facility with high steam demands (low-pressure or high-pressure/superheated). Moss has experience with a wide variety of fuels, including wood chips, coal, various biomass types, MSW, etc. Moss strives to build lasting business relationships positively impacting both the environment and its clients’ bottom line.

Nexterra supplies fixed-bed updraft gasification systems ranging from 2 to 30 MW thermal output. Cogeneration capacity is available, depending on the application. Applications include “inside the fence” biomass heat and power systems for industrial facilities, universities, hospitals, municipalities, and government institutions; direct firing of syngas into limekilns, boilers, or dryers; and gasification to internal combustion engine biomass combined heat and power systems. The systems run on clean wood fuels 3 inches or less in particle size, including hog fuel, bark, wood chips, construction debris, and pellets, and can handle 6 to 60% moisture content in a single vessel. The systems have ultra low emissions, suitable for urban environments, and high fuel flexibility.

Pratt & Whitney Power Systems (PWPS), a division of United Technologies, is committed to providing clean, efficient, and reliable power within the renewable energy market. PWPS’ organic Rankine cycle (ORC) power plants provide heat to electric power generation for geothermal, biomass, heat recovery, and concentrated solar applications. Its biomass ORC systems for cogeneration allow simple and highly efficient production generation of electric power and heat with sizes ranging from 250 kW to 3 MW. PWPS’ ORC products include benefits such as 24/7/365 remote control and monitoring, 195 to 660°F (90 to 350°C) temperature range, and standardized components and assembly processes.
to 1.25 MW, has an underfeed combustion system with moving grates and gasified wood with up to 50% moisture content.

WELLONS
Eastern North America: www.wellonsfei.ca, Tel: 604-888-0122
Western North America: www.wellons.ca, Tel: 450-699-6767

The Wellons group of companies has supplied the North American market with wood-fired energy systems and dry kilns for the past 40 years. Furnace output capacity ranges from 2 to 60 MW thermal. The systems are step-grate with hydraulic fuel ram in-feed and automatic hydraulic rake ash extraction system or Wellons cylindrical over-feed wet fuel cell with water cooled grates and automatic ash removal. Boilers range from 15 to 30 MW electric. Applications include industrial and space heating using hot water, steam, or thermal fluid; some units are used as gasifiers to send hot gases to a rotary dryer for pellet mills or OSB plants. Equipment is appropriately sized for sawmills and medium-sized and large district heating systems such as hospitals and university campuses. Fuels include bark, sawdust, wood chips, forestry biomass, and agricultural biomass.

BOILER RETROPTS

JANSEN COMBUSTION AND BOILER TECHNOLOGIES, INC.
www.jansenboiler.com
Tel: 425-825-0500

For over 35 years, Jansen has assisted plants in better using their existing large industrial boilers in burning difficult fuels such as biomass, spent chemical liquors, TDF, RDF, and MSW. Upgrades and retrofits are design/supplied to increase the boilers’ waste fuel burning capacity and/or improve the economy of operation, emissions performance, and availability. Boiler capacities are in the 10- to 50-MW output range and are typically stoker grate-fired. Besides conducting specialized process evaluations (e.g., boiler circulation and CFD modelling analyses), Jansen supplies high-performance combustion system upgrades (fuel and air delivery) and superheater capacity and performance upgrades to increase in-house power generation.

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CONTRACT HEAT/BOILER RENTAL

LOCATION BIOÉNERGIE INC.
www.locationbioenergie.com
Tel: 819-379-3939, Toll free: 1-888-379-2954 ext. 222 or 229

Location Bioénergie provides biomass-fired boiler systems for rental. They range from 1.5 to 9 MW, with water- or fire-tube boilers, and low or high pressure, for process or heating. The fleet of mobile units of different power meets the various needs of commercial, industrial, or institutional clients. Short-term leasing is possible, but long-term leasing is the best option for clients who want to save money quickly without having to invest in a permanent installation. Each unit is equipped with the most recent technology for optimal performance.

WOOD4HEATING PEI, INC.
www.wood4heating.com

PEI-based Wood4heating offers contract heat provided from Austrian Binder biomass boilers fired by wood chips, pellets, or other biomass. Ranging from 150 kW hot water to 10 MW hot water or steam, the customer pays only for the BTU/kWh consumed based on biomass input. Wood4heating sizes and purchases the boiler, installs and runs it, and procures the fuel, providing heat to the customer through a long-term, heat off-take agreement. The customer gets a no-worries package without the upfront capital investment required to purchase a new system.

For Sale

Wood Pellet Manufacturing Facility
(Particleboard Plant Conversion)

Almost complete
300,000T/Yr Wood Pellet Manufacturing Plant near Bancroft, Ontario.
175 acres, Buildings, material receiving, handling storage, conveying, drying, screening, equipment already in place.
See details at : www.blplant.ca
Excellent fiber availability in the area.
Only items still required are Hammermills, Pellet Presses & finished pellet handling Equipment.
Price: CAD $10,000,000

Contact Owner: FireLogic Inc.
Attn George Hasenberger
Tel: 613 332 4200 ext 212 • Cell: 613 242 1612
Email: info@firelogic.ca