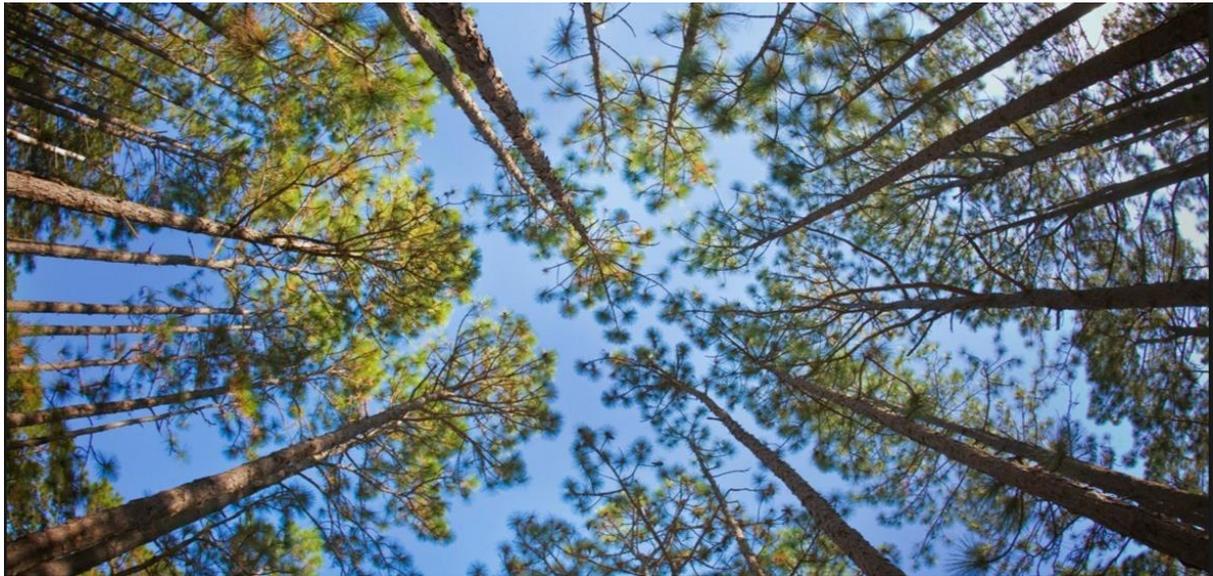


Biomass Boilers

What is Biomass?

Biomass is any grown product and it generally refers to burnable natural material such as woodchips, wheat stalks, or bagasse from sugar refining.



What energy can be generated from biomass?

Biomass can be burned in a biomass boiler to generate hot water or steam. In larger applications, steam can also sometimes be used to spin a steam turbine and generate electricity.

Where is biomass available and what is the cost?

Biomass is available from a range of applications, but if it is a natural waste product, such as forest waste, green trimmings or sawdust and it can be burnt, and is available in large quantities, then it is a good fuel for a biomass boiler. If no biomass waste product is freely available, it can generally be purchased from between \$50-\$100 per tonne from local sawmills or alike. This equates to \$3 to \$6 per GJ, **which is generally less than the cost of natural gas fuel, and much less than the cost of LPG.**

Are they environmentally friendly?

Biomass boilers use materials that extracted carbon out of the atmosphere in order to grow. Burning these materials in an efficient boiler recombines this carbon with oxygen, returning the Carbon dioxide to the atmosphere. In this way, the use of biomass boilers is carbon neutral, with no net greenhouse contribution, apart from fuel movement. If the biomass boiler replaced a gas or coal fired boiler, there will be a carbon dioxide saving by operating the boiler.



What about air pollution?

Burning wood in an open uncontrolled fire produces a huge amount of air pollution, the vast majority of which is particulate emissions. In fact, wood heaters in homes is the main cause of the smog haze in cities in winter. This is in contrast to modern high efficiency biomass boilers, which generally burn biomass at high temperature by turning it into a gas before burning it, and also have exhaust treatment to remove particulate emissions from the exhaust. This still leaves some particulate in the exhaust, but is generally comparable to the diesel exhaust from a car.



What space is required and how does it work?

The space required for a biomass boiler is much larger than a comparable gas boiler, mainly due to fuel storage and management and also space for exhaust treatment. Biomass is generally first chipped or ground into manageable sized pieces and then stored in a hopper or silo ready for use in the boiler. An automated system then moves the fuel into the boiler burner, which dries it, combusts it, and the boiler section generally uses the heat to create hot water or steam. The exhaust then moves

to a multi-cyclone air cleaner, and to a variable speed fan to expel the exhaust through a flue. Boiler waste such as ash and collected particulate carbon is disposed of separately.

What are the applications?

The most common application is for steam generation at sawmills for kiln drying green timber. That said, any facility that has a reasonably dry waste product such as wood chips, nut shells, or grape marc that also requires heat can use a biomass boiler. Additionally, if there is a heat intensive industry close to a sawmill or alike, the industry can purchase waste biomass from the producer to create a mutually beneficial arrangement.

Simons Green Energy can help you with any of your biomass boiler requirements. Please contact us on 02 8338 8660 or info@simonsgreenenergy.com.au.



Biomass Hot Water Boilers

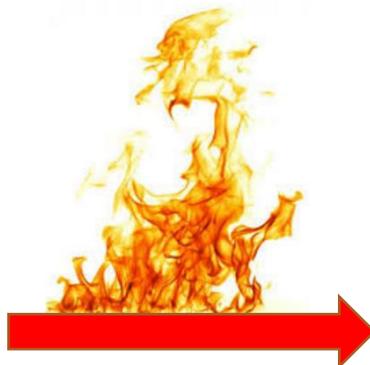
Any organic waste product can be a fuel for hot water, this is known as biomass. This can be anything from woodchips, nut shells, sawdust, even waste (and dried) fruit skins.

The easiest and most cost effective use of biomass is for heating water, generally replacing a gas fired boiler for a heating system. Cost effective solutions exist for facilities where hot water gas boilers are accruing gas bills of \$50,000 or more per year.

The biomass boiler burns the biomass cleanly, the heat is transferred to the hot water for heating and the flue gas is cleaned of particulate.

Simons Green Energy can offer Biomass boiler systems from 100kW in size upwards. Expected payback periods can be as low as 2 years and a 500kW boiler can reduce carbon dioxide emissions by up to 1,000 Tonnes per year.

Many customers may not have a direct source of biomass on property, however waste wood chip and shavings can generally be sourced for very low cost or even free of charge from local sawmills in your area.

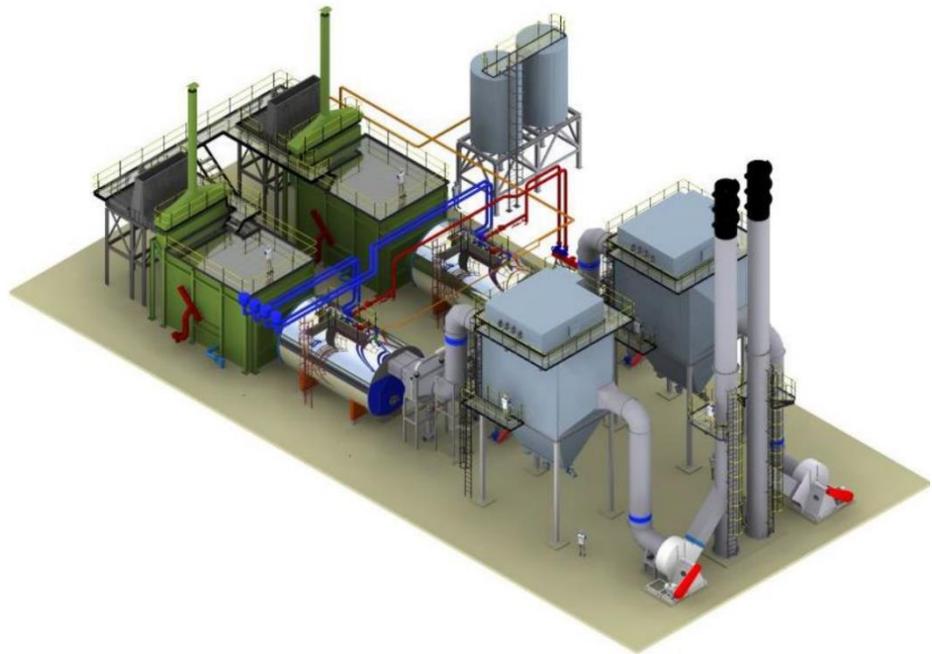


The Simons Group have been leaders in thermal Engineering solutions in Australia for over 80 years. Biomass boilers are another intelligent and green product in our portfolio. Call or email Simons Green Energy to look at your biomass energy project on 02 8338 8660 or info@simonsgreenenergy.com.au

Biomass Steam Boilers

Any organic waste product can be a fuel for a biomass steam boiler, but generally it is usually wood waste from sawmills that is used for large scale steam boilers.

The most used source of heat for sawmills and processing plants is steam. Biomass steam boilers are significantly larger and more complex than standard gas fired boilers, however the fuel for the system can be essentially free. Cost effective solutions exist for facilities where steam gas boilers are accruing gas bills of \$200,000 or more per year.



The biomass boiler burns the biomass cleanly, the heat utilised to generate steam at a high pressure and the flue gas is cleaned of particulate.

The steam is generally used for heating directly, however larger systems can also generate electricity by placing a steam turbine between the boiler and the heat load.



Simons Green Energy can offer Biomass boiler systems from 1MW in size upwards. Expected payback periods can be as low as 3 years and a 1MW boiler can reduce carbon dioxide emissions by up to 2,000 Tonnes per year.

Many customers may not have a direct source of biomass on property, however wood waste can generally be sourced for very low cost or even free of charge from local sawmills in your area.

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