

Biomass energy – Trending Technology



Sohum Gandhi
General Manager
ENERGENCE

BIO MASS ENERGY systems are slowly but surely increasing their share in worldwide renewable energy production. State of the art plants pave the way for greater uptake as they successfully prove the reliability, safety, performance, and positive environmental impact of the technology. In Australia the perception still remains a little cloudy with some disbelievers strongly supporting the tried tested and true fossil fuel energy players. With 85% of the Australian power generation share from coal and gas, these big players will be around for a long time to come. However, biomass from waste and sustainably managed sources is making an impact and will inevitably become a major player in reaching the renewable energy targets in this country and abroad.

In this brief article we take you to four different biomass energy plants comprising of equipment and services from Energence (Australia) and Polytechnik (Austria). These energy plants are all success stories from the point of view of financial return, performance, reliability, carbon reductions and cleanliness of emissions.

L'Oreal in Burgos, Spain

25 September, 2014, L'Oreal opened a new biomass plant at their haircare product manufacturing facility. This trigeneration plant supplies the factory with thermal energy, cooling capacity and electricity. In conjunction with investment in photovoltaic panels, this project will make their site carbon neutral from 2015 into the future. Biomass fuel in the form of forestry and sawmill residue is sourced in the nearby Castile and Leon region.

System at a glance:

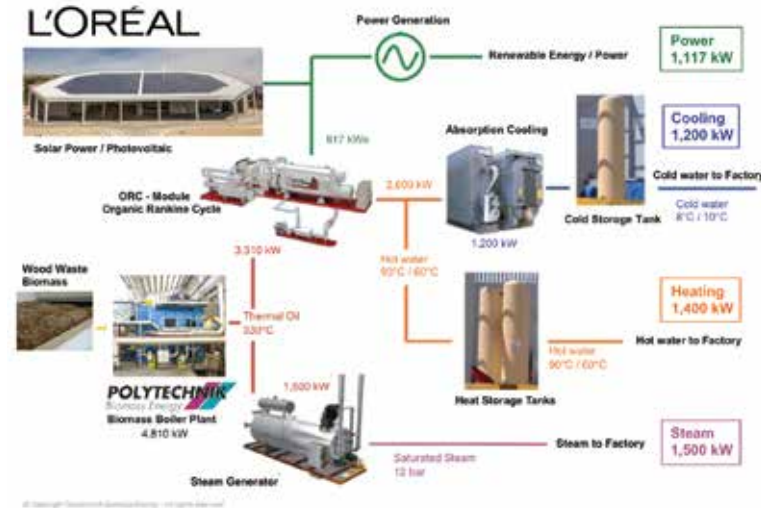
- 4.8 MW Polytechnik thermal oil boiler with moving grate
- 600kWe/2600kWh ORC Turboden 6 CHP
- 20,000 MWhrs thermal energy production per annum
- 12,000 tonnes annual biomass consumption
- Factory consumes 70% of this energy / 30% sold to neighbouring businesses

Airbus Industries in Toulouse, France

At this Airbus site over 10,000 employees manufacture and assemble a wide range of planes from the A320 to the A380 and including the A350 assembly line and paint shop. In 2010, a more environmentally conscious management decided to investigate alternatives to their existing fossil fuel gas boilers. The fuel is a mixture of local forestry residue and sawmill waste ranging from 20 – 55% moisture content.

System at a glance:

- 13.5 MW Polytechnik saturated steam boiler plant
- 22,000 tonnes annual biomass consumption
- 12,000 tonnes CO2e reduction per annum
- Emission limit for particulates is 20 mg/m3 (guarantee) and during normal operation the plant achieves 2 to 8 mg/m3
- CO levels, which is the main indicator for complete and efficient combustion is practically zero and the plant efficiency is over 90%



◀▲ L'Oreal, Spain



■ Airbus Industries, France

- Ash used by local farmers as fertiliser
- Cost savings in comparison to gas on the order of 50%

Zealandia Horticulture in Christchurch, NZ

Zealandia are specialist wholesale growers of annuals, houseplants, and commercial seedlings. Currently they have 2.5 hectares under glass and are set to expand. The plant is running on hogged wood pallets from a local supplier, although the system can accept hog fuel, bark and sawdust with up to 60% moisture content. Zealandia also has a 1000m3 insulated heat storage tank to buffer the load swings. The primary reason for this investment was because their old wood fuelled system had high emissions and couldn't meet the EPA requirements. Furthermore it did not have the output capacity to manage their future expansion plans nor did it have the fuel flexibility of the current system.

System at a glance:

- 1.6 + 2.5 MW hot water plant
- Regional emission limit for particulates is 230 mg/m3. During normal operation this plant achieves 50 mg/m3
- Efficiency > 90%

Gippsland Greenhouse Produce near Warragul, Australia

This glasshouse grower produces top quality eggplants year round within their 2 hectare protected cropping facility. Originally this business used brown coal briquettes to heat the environment but installed a biomass system in 2014 to accommodate a 1 hectare expansion and the state government's

ban on coal briquettes. Now their thermal energy needs are fully independent from fossil fuels and they economically source renewable forestry and sawmill residue from around the local area.

System at a glance:

- 2.0 MW hot water plant
- 3500 tonnes annual biomass consumption
- 80,000 tonnes CO2e reduction lifetime (based on 25 years)
- Production of one million kilograms of eggplant per annum

These four plants are just a few of the great renewable energy systems that are being implemented around the globe and within Australia. There are many more examples like this where biomass systems are beating emissions standards, reducing CO2 pollution, providing financial incentive and last but not least exceeding performance criteria for the business purposes that they serve.

About the Author:

Sohum Gandhi has a Bachelor of Engineering degree from the University of Victoria, Canada. Since 2004, he has been working within the Australian energy industry. As the General Manager of Energence, Sohum has partnered with Polytechnik Biomass Energy to bring Australian Industry international standard biomass energy systems. Energence installed projects to date offset many thousands of tonnes of CO2 emission annually, and save clients millions of dollars in fossil fuel costs. You can contact Sohum Gandhi – email: sohum@energence.com.au or website: www.energence.com.au



■ Zealandia Horticulture, NZ



■ Gippsland Greenhouse Produce.