

Densified Biomass Wood Pelleting Factory

PROJECT REPORT

CLIENT: PLANTATION ENERGY LIMITED, AUSTRALIA



CONCEPT DESIGN MANUFACTURE INSTALL COMMISSION OPERATE

INNOVATIVE SOLUTIONS TO INDUSTRY



The Situation

Plantation Energy Australia had secured significant plantation forest resources in the Albany region of Western Australia, with the objective of developing an international wood pelletising and export business.

Wood pellets are a renewable form of energy, used as alternative fuel in coal fired boilers. They can replace up to 20% of the energy equivalent of coal, thus substantially reducing greenhouse gas emissions.

The crude biomass is sourced from forest residues, which traditionally are left behind in the forest from tree harvesting operations for the export wood-chip business. This biomass is used as feedstock for the production of the pellets, which are exported into the European Market.

The Solution

Brightwater Engineering was contracted to engineer, design, procure and construct two wood pellet production facilities in the Mirambena Industrial Estate near Albany. Each of these facilities operates 24 hours per day and is designed to produce 125,000 tonnes of pellets per annum.

The process includes raw materials handling, size reduction, drying, pressing and storage.

The crude biomass enters the process through a Brightwater designed pull-floor and is then conveyed into a green hammermill. This mill accepts 32 tonnes per hour of green biomass and reduces it to a particle size of 20 x 10 x 2mm. This size-reduced material is then dried in a Brightwater manufactured rotary dryer to achieve a moisture content of 10%.



The 15Mw dryer heat plant is itself fuelled by biomass, thus reducing the requirement for non-renewable energy in the production process.

The dried biomass is then conveyed to a Brightwater designed surge bin. The surge bin discharges up to 20 TPH of biomass via an Enmasse Conveyor, elevating the biomass into the Kahl Pelleting process.

The pellets are produced in four pellet presses, each with a 5 TPH capacity, then conveyed to a pellet cooler. The pellets exit the cooler and are then conveyed into a Brightwater designed overhead storage bin with a capacity of 480 tonnes, which is equivalent to 12 hours production. The pellets are then trucked to a bulk storage facility at the Albany Port for export.

The Benefits

Brightwater Engineering completed this project in conjunction with Plantation Energy Australia under a project management contract.

Plantation Energy were involved in every step of the process and were able to fast-track the construction of the project as a result. Brightwater managed the global procurement of all materials and equipment, engaged the required skills and facilitated all local council and environment requirements. On completion of construction Brightwater provided a full commissioning service which included start-up of the plant, operator training, setting up a CMMS system and procurement of spares.



The Specifications

Annual plant capacity:	125,000 TPA wood pellets per Train	Presses:	Amandus - Kahl
Raw Material species:	Plantation forest residues – pine and eucalyptus	Pellet density:	680kg/m ³ at 10% MC
Raw material size:	Pieces up to 200mm reduced to 20x10x2mm	Pellet Storage:	480 tonnes in an overhead bin for truck load out
Moisture content:	Inbound material 40%, dried down to 10%	Thermal consumption:	15Mwt
		Electrical consumption:	3.5 Mw



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