



Prodesa's pelleting line design, with three Promill 355kW pellet mills with room for a fourth.

First wood pellets from Sarawak's largest plant

In mid-December the first pellets came off the production line of Green Pellet Sarawak awaited new wood pellet plant. Located in the Malaysian state of Sarawak on the island of Borneo, the 120 000 tonne-per-annum capacity plant boasts a number of firsts for the region in addition to being one of the largest pellet plants.

AS MANY INDUSTRY OBSERVERS AND PLAYERS have projected for quite some time, South East Asia is rapidly emerging within the biomass to energy space. Interest in biomass- and wood pellet production and consumption is growing. Countries like China, Malaysia, Thailand and Vietnam are pushing production whereas China, Japan and South Korea are driving demand. A recent example of the former is the new 120 000 tonne-per-annum Green Pellet Sarawak (GPS) facility, one of the largest in the region. A joint venture between Sweden-based international forest products trader Cellmark, Sarawak Timber Industries Development Corp., and Derasas Jaya SBD, a private, local investor and wood industry owner it will use residues from neighbouring wood industries. The target is to produce ENplus I2 quality and in the short term the production will be exported to South Korean and Japanese utilities. In the longer term the plant could service the needs of local utilities in Sarawak or mainland Malaysia.

Ambitious challenge

In September 2014, the Spanish company Prodesa Medioambiente, a specialist in supplying turnkey pellet plants with the option of biomass cogeneration using organic rankine cycle (ORC), revealed that it had taken on an EPC role for the GPS pellet plant project. Prodesa's original involvement was that of a technology supplier. However, sometime into the project it was agreed that Prodesa step in to assume an EPC role, illustrating perhaps the lack of local experience and expertise compared to other regions where there are many wood pellet plants. A decision described by José Ignacio Pedrajas, Business Manager North America in September 2014, as an "ambitious challenge" necessary to meet the competitive demands of key Asian biomass markets that "are a long way from home".

– Prodesa is responsible for developing and executing the project, from engineering to commissioning. All the design of the process engineering and detailed engineering, manufacturing and supply of turnkey biomass drying and pelletising facilities from the reception of product in the plant to the pellets store before its delivery, commented Pedrajas.

Once on-site construction was concluded and permitting of the complete installation was achieved, Prodesa set about the commissioning works of the various processes and equipment. In November 2015 it revealed that it was in the final start-up phase of the plant and in mid-December the first pellets came off the production line.

State-of-the-art

According to Prodesa the main differences in comparison to other pellet plants in the region are found in the process philosophy and equipment set-up. The focus is on plant safety, availability and low production costs. The plant is highly automated, designed for round-the-clock operation with minimum scheduled stops to ensure a clean and safe plant that can operate for many years.

The plant receives a variety of feedstock materials from the nearby wood industries. This includes rejected logs, veneer trims and peeler cores, plywood offcuts, log offcuts, slabs and other wood waste generated at sawmills and plywood mills. Two independent chipping lines, each with a screen and hammer mill line, handle different kinds of raw materials and ensure both material in-feed security and correct particle size. This is necessary to obtain an optimal performance in the downstream dryer and pelletising processes.

The heart of the plant, and a core competence for Prodesa, is the dryer island, key to achieve the required pellet quality and production objectives. The GPS plant has a European style low temperature belt-dryer with a second layer recirculation system. A feature of low temperature belt-dryer technology is low thermal and electrical energy consumption and consistent moisture content of the output material. Designed and manufactured by Prodesa under Swiss Combi license, the dryer uses water at 105 °C for the drying process. According to Prodesa it is the



(Left) The first pellets off the production line from Green Pellet Sarawak's new 120 000 tonne-per-annum wood pellet plant currently undergoing commissioning by EPC contractor Prodesa.

first-of-a-kind installation in Asia.

A single dry product hammer mill has been installed post-dryer to reduce the size of the dry product before it is pelletized. This stage is especially important when producing industrial pellets for co-combustion in plants where pellets are pulverized prior combustion. From here the material is transported to an in-feed buffer and homogenization silo for the pelleting line, which currently consists of three 355 kW Promill pellet presses mills with space for a fourth press. The pellets are stored in a large vertical silo from which pellets can be loaded into an automatic jumbo-bag line or directly into containers for sea transport.

Importance of O&M

As has been highlighted in several pellet conferences, compared to other industrial processes it is seemingly few pellet plants that manage ramp up to nameplate capacity within the specified timeframe. Indeed there are plants that have yet to reach their nominal capacity.

One factor is the underestimation of the importance and specific requirements of pellet plant operation and maintenance (O&M), which can lead to long and costly learning curves for plant staff and managers. GPS has anticipated the issue and contracted Prodesa technicians to remain on site during the first two years of plant operation. By sharing their experience and know-how with plant staff, supervising all tasks and operations while also training them, the aim is to reach nameplate production capacity in a short time period while ensuring that local staff will be perfectly capable of running the plant thereafter.

Now that the first pellets have come off the GPS production line, it certainly seems that Prodesa has risen to the challenge and, with a representative office in Malaysia, are now much closer to a home in Asia.

*Text: Alan Sherrard
Photos courtesy Prodesa
PS2/5090/AS*

Stora Enso to integrate pellet production at Ala sawmill



Global forest industry major Finland-based Stora Enso has announced plans to invest in pellet production at its Ala sawmill in Sweden. According to a statement the EUR 16 million investment, which will include a new biomass boiler plant is "in line with the group's strategy to grow in high value added wood products and to focus on integrated production." Located in Ljusne, on the Baltic Sea coast, the Ala sawmill has a production capacity of 380 000 m³ sawn wood and 45 000 m³ planed goods per annum. Using sawdust as feedstock, the 95 000 tonne-per-annum capacity pellet plant will be integrated with the sawmill production. Start-up is estimated during the second quarter of 2017.

In 2009 the company invested around EUR 14.4 million in a new 160 000 tonne-per-annum pellet plant sited at its Kopparfors pulp mill which it had closed in 2008. Commissioned in November 2009 the pellet plant was to use residues from its Kopparfors and Ala sawmills. However in 2011 both the Kopparfors sawmill and pellet plant were closed with some of the equipment from the pellet plant relocated to other Stora Enso plants.

According to sources three of the original six Andritz presses in Kopparfors will be used for the Ala facility. In a separate statement it was revealed that Finnish boiler manufacturer, KPA Unicon Oy, has been awarded the contract to supply the biomass-fired hot water boiler plant. The 15 MWth boiler plant will utilize bark and wood residues from the sawmill to produce hot water for the dry kilns. A turnkey delivery it includes all process equipment, installations other than civil and foundation works, commissioning and training of the operational personnel. The heart of the new biomass-fired boiler plant is its Biograte combustion technology, especially designed for utilization of wet biomass fuels such as bark. The new biomass boiler plant is scheduled to be in operation in November this year.

Currently Stora Enso has own pellet production capacity totalling 320 000 tonnes at 7 facilities in the Czech Republic, Estonia, Finland, Russia and Sweden.

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BORNEO

Covering an area of 743 330 km² Borneo is the third largest island in the world and shared by three countries; Indonesia, Malaysia and Brunei. Forest industries and oil palm are two major industry sectors. Since 2007 some 220 000 km² of forest in the centre of the island is classed as nature reserve by a tri-lateral agreement between the countries. However deforestation remains as a serious issue.