

Asia is set to become a prolific producer and consumer of wood pellets. In Malaysia, the country's largest pellet production plant is nearing completion

Spanish technology in Asia

In Sarawak, on the Malaysian island of Borneo, the construction of a 120,000 tonne per year wood pellet production plant is nearing completion. Spanish company Prodesa is supplying the turnkey project for this installation. When it comes online in Q1 2015, the facility will be one of the largest in the region, supplying high quality pellet fuel to renewable power plants in South Korea. A diverse mix of locally sourced biomass residues will be used to manufacture the pellets.

The plant, known as Green Pellet Sarawak (GPS), is being

developed and funded by a joint venture comprising Cellmark AB, a Swedish multidisciplinary company with its main activity in the trading of different products; Sarawak Timber Industries, an important local timber organisation in the region; and Derasas Jaya SBD, a Malaysian machinery trading company.

Spanish engineering firm Prodesa designed and is building the plant, work on which began at the beginning of last year. This is the company's first project in southeast Asia. During the planning phase of the project, Prodesa concluded that the

best approach would be to manufacture the plant's main technology in Europe. Some additional equipment would be built in local workshops.

Features of the plant include:

Wood yard

The GPS facility receives a variety of biomass for its pellets, such as logs, veneer, plywood cut, log offcuts, and log ends. To cater for these different feedstocks, the plant features several types of equipment. Each one is designed to process and treat different raw materials and achieves the

required particle size for optimal performance during the drying and pelletising processes. Two independent lines will reduce the particle size of the different raw materials below 15mm.

Drying island

The drying island is the 'heart' of the plant and the key to achieving the required pellet quality and production objectives. Three options were presented by Prodesa for this purpose: ecoDry, an indirect high temperature dryer; a drum dryer, a direct high temperature dryer; and a belt dryer, an indirect low temperature dryer.

In the case of the GPS facility, a low temperature belt dryer was selected. The belt dryer will use water heated to 105°C in a boiler. The hot water generates hot air, which is needed for the drying process.

The plant's hot water boiler supplies most of the thermal energy required in the dryer. It is a biomass boiler with a mobile grate, which can use chips, bark or other biomass residues as fuel. Some extra thermal energy is also produced by an existing thermal oil boiler.

During the drying process, the properties of the raw material will change. It is necessary to treat the biomass with care in order to maintain the right conditions and ensure the best pellet quality. Moisture, colour and chemical parameters of the biomass all affect the drying



The plant has been designed to handle a variety of biomass materials



Prodesa's low temperature belt dryer under the Swiss Combi license was chosen for the GPS pellet plant

process and these must be properly managed to ensure compliance with pellet quality standards (e.g. mechanical durability, size, fines, moisture, LHV, etc.). Controlling these parameters results in improved drying, which in turn creates a better quality pellet.

Prodesa's belt dryers, under the Swiss Combi license, demonstrate the following benefits:

- Low energy consumption
- Low level of emissions
- Lower risks of fire in the dryer
- Use of low temperature energy
- Careful drying for optimal product quality
- Automated operation
- Modular design which allows a future enlargement of the dryer.

Dry product intermediate storage

The drying process reduces moisture content to 8-10% and the woodchips are then transported via chain conveyors to dry product storage.

Dry product milling line

Before the biomass is pelletised, it is first treated with a hammer mill that reduces the size of the dried product.

This stage is especially important when producing industrial pellets for co-

combustion in power plants because here the pellets are pulverised before being burned. The size of this powder, therefore, must meet with requirements of the customer.

Pelletising

At the GPS pellet plant, three 355kW pellet mills have been installed, which will produce a combined 120,000 tonnes per year of pellets. The end product will meet all the required quality standards so it can be sold as industrial pellets

When co-fired in power plants, pellets are pulverised before being burned

for co-combustion. However, it will also be able to produce pellets which comply with the European ENPlus specifications for domestic consumption.

Pellet storage

A single large silo will be used to store the produced pellets. An automatic bagging station has also been installed as the majority of the pellets will be sold in large bags.

A growing market

As it works to finalise the GPS pellet plant in Malaysia, Prodesa is also beginning a new project in Asia, this time in Vietnam. This production plant will also have a capacity of 120,000 tonnes per year. And, as Asia's potential as both a prolific pellet producer and consumer grows, Prodesa will soon open a new commercial office in the region.

Asia's booming biomass

market can be attributed to two key factors:

- Industrial development across the region generating a noticeable increase in electrical consumption
- The vast volume of available biomass due to the existing tropical forestry areas.

South Korea, Japan and China have been identified as Asia's largest bioenergy economies. Governments in these countries are supporting renewable energy and in particular the development of the bioenergy sector, with large-scale power stations now being redesigned and modified in order to be able to co-fire coal and wood pellets.

These efforts point to a significant growth in the production of and demand for wood pellets in Asia, in the short and medium terms. ●

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Three pellet mills at GPS