

Briquetting has allowed one wood processing firm to optimise its strategy for increasing value and has led to the creation of a new line of business

Wood briquettes with an innovative form

Robeta OHG operates a saw mill in Brandenburg, Germany. The company processes around 280,000m³ of pine wood a year, which is sourced exclusively in the forests of Brandenburg and Mecklenburg-Vorpommern.

Instead of selling on loose woodchips to converters as in the past, this medium-sized company from Uckermark now presses the chips into wood briquettes, which are then sold directly to the end user as well as trading firms.



Robeta can produce roughly 3 tonnes of wood briquettes per hour on the three RUF briquetting presses which it currently owns. Space has already been planned for a possible fourth press

Complete utilisation

The waste wood material from the saw and planing mill was to be completely utilised with an end goal of firing it in a block heat and power plant. This would strengthen the company's position in what is such a competitive market. The biomass would be co-fired with rough residual bark left over from the processing of logs, while pieces smaller than 4cm were processed to bark mulch.

This renewable block plant generates 1.4MW of electricity and 6.9MW of heat. Part of this heat is used in the drying chambers for sawn timber but, more importantly, it became possible to dry woodchips – an important requirement for Robeta as the residual moisture content of the chips exceeded the required 12%. This meant briquetting was out of the question.

'That 12% figure is the be all and end all in briquetting because you cannot have any

damp material if you want to produce solid briquettes with a high heat value and a low ash level,' explains Keven Benthin, department leader of briquetting at Robeta.

USP

In 2010 Robeta acquired three briquetting presses from Zaisertshofen, Germany-based briquetting press manufacturer RUF, which had just developed a new form of briquette called the RUF Triple.

Instead of classic smooth blocks with rounded edges, RUF Triple are larger briquettes with two deep grooves, dividing them into three segments. A characteristic of this form is that straight after the pressing process, the briquette can be divided into three segments with the aid of a breaking device. These parts can then be used in industrial ovens which have mechanical feed systems.

Robeta management, however, chose the RUF Triple format briquettes for a different reason: it wanted to offer customers a renewable fuel immediately identifiable as being different from the normal classic briquette or the round briquettes with holes. With this in mind, Robeta does not break the briquettes on-site but instead sells them whole.

In addition, the unbroken briquettes can be stacked in the stove in such a way that the grooves lay one on top of the other, so creating a chimney effect in the stack and increasing the burning efficiency.

Robeta says demand is high for these unique briquettes, so much so that its three fully automatic briquetting presses often have to operate around the clock in order to meet requirements.

'The briquettes make sense ecologically because

they are CO₂ neutral. They only release the amount of CO₂ which the tree had previously absorbed through photosynthesis,' says Edgar Rockel a founder of Robeta.

Over 2,800kg/hr

The three RUF 1100 briquetting presses were ready for operation in 2010. Each of the three systems can press 940kg of briquettes per hour, giving a total of 2,800kg. The presses operate with a system of two pressing chambers. When a briquette is pressed in one of the chambers the form changes and the finished briquette is ejected while in the second chamber the next briquette is already being pressed.

The system has a motor capacity of 55kW and the specific pressure is 1700kg/cm². This high pressure causes the lignin which is contained in the wood to act as a natural



The wood briquettes are fully automatically transported from the presses to the packaging area on conveyor bands

binding material resulting in no need for additives.

The pine wood briquettes have a density of around 1kg/dm³ and can achieve a heating value of up to 5.22kWh/kg. The heating value of the wood briquettes is comparable to that of brown coal briquettes (5.6kWh/kg).

Automatic process

It is key for the automatic packaging line that the briquettes are lying straight on the conveyor band, allowing for trouble-free stacking and packaging. RUF therefore developed a pneumatic gripper system with which each individual briquette can be brought on to the conveyor band in a controlled manner.

The complete briquetting path at Robeta is fully



The wood briquettes are double stacked, fixed and wrapped with shrinking foil

automatic. The saw chips come to the band dryer with a moisture content between 50 and 60%. The band dryer uses the heat produced by the company's own biomass power plant. The speed of the band dryer is controlled by a moisture content measurement taken at the end of the drying path; if the target of 8% is exceeded the drying band will be slowed down, less

than 8% and the band will be slightly accelerated.

This process uses not only the saw chips but also the heat produced by the power plant. A 500m³ tower silo is connected so that the chips can be 'called' to the briquetting presses as required. The chips are transported to the presses by

Expansion

On average Robeta's three presses operate 12 hours daily, and in winter they normally operate around the clock. The amount produced is naturally dependent on the demand for briquettes which depends on how long and hard the winter has been. Robeta

can exploit price fluctuations for loose chips; if the price falls, more chips are used in the company's briquette production. If the price rises then a larger amount will be sold on to converters who use the chips to produce plywood or cellulose. Robeta therefore utilises the chips to its best commercial advantage.

At the moment

the capacity is between 10,000 and 15,000 tonnes of wood briquettes per year. But there is no need to set a limit as during the planning and installation phase of the existing systems a possible expansion was kept deliberately in mind. The briquetting hall and the chip drying area as well as the chip silos and the conveyor belts all possess the required capacity for expansion. ●

augers from a distributor silo.

Conveyor bands bring the briquettes from the presses to the packaging area where they are double stacked as a first step. The shrinking foil is then applied to wrap each packet of six briquettes. The only manual step in the process is when the stacks of 96 of these 10kg packages are placed on a pallet which is then transported using a fork lift.

Robeta Holz - a guide

ROBETA HOLZ is a medium-sized sawmill with its headquarters and two production plants located in and around Milmersdorf in the region of Uckermark, Brandenburg.

The wood processed by the company mirrors the mix of pine wood found in the forests of Brandenburg and

Mecklenburg-Vorpommern: 70% mark pine and the rest made up of Douglas fir, fir and larch. Most of its customers come from the region, but a third of its products are delivered to Poland, France, Denmark and some even go further afield.

In order to utilise the logs to their optimum, up

to 280,000m³ per year are electronically measured, debarked and separated according to orders. And in order to be able to react quickly and flexibly to customer demand, an additional 6,000-10,000m³ of logs are kept permanently on stock.

The range of products

varies from simple lumber such as boards, slats and planks from 3 to 5m in length, timber beams, log length timber and shuttering, to high quality construction timber. Robeta's services also include chemical penetration in enclosed chambers and wood drying.