

Wood briquettes are emerging as a close contender to their smaller relative - the wood pellet

# Putting pellets through their paces

**W**ood pellets and briquettes share many similarities: they are both made by compressing dry sawdust or wood scraps, are bound together with the pressurised and softened lignin; both comprise a low moisture content (below 10%) are high density (typically three to four times that of woodchips); and are clean-burning, free flowing fuels suitable for industrial and domestic applications.

But as standards and regulations continue to encourage and push the consumption of heat and power derived from renewables, briquettes are showing some distinct advantages against wood pellets. For example, they offer greater feedstock flexibility (briquettes can be made from a variety of feedstocks other than wood, including straw, peanut shells, coconut shells, rice husk and miscanthus) and lower manufacturing costs.

## Mechanical versus hydraulic

Briquettes can be made using either mechanical or hydraulic machines. Mechanical briquetting presses, working at around 220-270 rounds/min, are fast and can produce more than 200kg/hr of high quality, high density (between 1.1-1.2kg/l) briquettes. Their speed, combined with quality output material, makes these machines suitable for both industrial and domestic

applications. Hydraulic briquetting presses, on the other hand, are better suited to smaller output applications as they are slow (less than 200kg/hr) and produce lower density briquettes (<0.9kg/l).

The shape and size of the briquettes is another factor that varies depending on the end use. If this wood fuel is manufactured with a view to be burnt in biomass-fired power plants, short disc-like 'pucks' of ranging diameters are to be used as these are easier to feed to the boiler. Larger cylindrical or rectangular fire logs of around 25-30cm are suitable for residential applications.

## A no-brainer

For manufacturers of briquetting press machines today, Europe is an obvious target market; it is the largest, most established market with an existing mentality of recycling biomass for use in energy applications. Other potentially interesting markets are North America and Russia.

More commonly known for its presence in the fossil-based oil and gas sectors, Russia has huge potential to become a key player in the biomass industry due to its sheer size and overwhelming volumes of renewable energy resources. The nation's government has been upping the role of biomass in recent years and at the end of 2009 approved a 2030 energy strategy that aims to reduce the nation's dependence on fossil fuels

by increasing the utilisation of renewable materials.

Africa also offers future potential thanks to a lot of biomass in the non-desert areas. Nevertheless, a lack of funding means the country is more likely to buy its equipment from Indian or Chinese manufacturers as it is cheaper than from Europe-based suppliers.

## Case study

In mid-2010, a sawmill and woodworking company based in Mont Guyon near Bordeaux in France decided to start up a briquetting facility to recycle all wood waste coming from its existing operations. In the end it opted for three MB90 briquetting systems from Italy-based briquette machinery manufacturer Di Più.

The three machines produce a total of 3.3-3.5 tonnes per hour (1.1-1.2t/hr each) of briquettes that are all the same in length and weight. Today the plant runs depending on market demand and the season but is designed to work 24/7. With three competitors present in the European space, Di Più says it was selected due to its 'high value in terms of quality:price ratio' compared to other companies in the market.

Describing this project as a large system, Enrico Benetti of Di Più says the company supplied a small chipper, hammermill, 300m<sup>3</sup> storage silo for the storage of 50 tonnes of sawdust and refined wood, and transportation

infrastructure, in addition to the three briquetting presses. The system was ordered in May 2010 and delivered at the beginning of last year. Benetti explains delivery times from his company can be much shorter than this; average delivery time for one machine and a less complex system is 60 days, with installation taking around one week.

Manufactured using mechanical machines, the company's consistently-sized briquettes are destined for domestic users. EU norms state residential-based briquettes must be of premium quality with a density higher than 1kg/l. This is very common in parts of central Europe such as Germany, France, Switzerland and Austria, but not yet established in places such as the UK.

Benetti explains: 'When you produce industrial briquettes, you don't look at the quality of the briquettes. You improve the capacity of the machine. Residential briquettes require strict quality monitoring because they are sold to the market and because of that the output of the machine is lower.'

While these particular briquettes manufactured using Di Più's equipment will wind up in supermarkets and petrol stations, Di Più's customers also include those using this wood fuel to power their own operations and those selling briquettes for use in large-scale biomass boilers for the generation of renewable heat and power. ●