



From by-product to fuel

CASE STUDY

✓ Key features

- Installation of Danish-built BP 3200 briquette press to turn MDF waste into fuel
- Press makes more than 400 kg of briquettes per hour
- Briquettes sold to Moffatts Flower Company as high-energy boiler fuel

✓ Key benefits

- \$180,000 a year projected saving in disposal costs
- \$25,000 a year extra revenue generated by briquette sales
- Estimated payback time of 1.3 years

Southern Pine Products in Canterbury is turning MDF dust into valuable boiler fuel, which it sells to a local flower producer. By installing a briquette press it has cut waste disposal costs by more than \$180,000 a year and created a new revenue stream – and it sees scope to get even more value from its investment.

By-product, and how to deal with it, was one of the first considerations for Southern Pine Products when it started manufacturing MDF (medium density fibreboard) products.

“The business already had a commitment to continuous environmental improvement. That, coupled with the high cost of disposing of MDF waste in landfill, prompted us to actively seek out the best solution,” says managing director Michael Taylor.

Christchurch-based Southern Pine Products bills itself as a ‘green building solutions company’. It provides a range of timber products, including mouldings, weatherboards, door jambs and timber finishing products, for internal and external use. And it does so with an ethos of sustainability, sourcing timber from Forest Stewardship Council (FSC) certified forest and being FSC Chain of Custody Certified. The company entered the MDF business when it purchased Plyco Select in 2007.



The BP 3200 briquette press, which turns MDF dust into fuel.



The press makes more than 400 kg of briquettes an hour.



Southern Pine's MDF product.

Exploring the options

"We had a fallback position because we knew that the company we sourced the MDF board from, Dongwha, would accept the MDF dust back from us as furnace fuel for their energy centre," says Mr Taylor. "But the clear preferred option from the start was to turn the dust into some sort of biofuel and sell it locally."

The company was no stranger to wood as a renewable energy source, already selling its non-treated timber residue to Solid Energy for the manufacture of pellets for clean-burning pellet fires, and using wood fuel in its Greymouth sawmill to fire boilers for the kilns.

Although MDF is safe in building use, the dust produced during the manufacturing process needs careful – and costly – disposal.

Initially Southern Pine was disposing of the dust in sealed plastic sacks in the landfill, which cost on average \$15,000 per month. Various alternative options were looked at and a cost / benefit analysis carried out. The company considered producing pellets for domestic use, but that was ruled out because MDF waste has to be burnt at extremely high temperatures to destroy any residual formaldehyde – meaning industrial boilers

are needed. This is the case, even though Southern Pine uses low-formaldehyde MDF board – E0 – which contains very low levels of formaldehyde, similar to that found naturally in radiata pine.

Installing a briquette press

Having completed its research, the company opted to install a briquette press, a machine which turns MDF dust into combustible briquettes for boiler fuel.

The Danish-manufactured BP 3200 briquette press was installed in 2008. The press and its installation cost the company \$262,000, with EECA contributing \$76,000 in the form of a wood energy grant. It now produces more than 400 kg of briquettes an hour, and thanks to the high level of automation, no additional staff are required to run it.

The installation itself was remarkably trouble-free. The company was able to purchase a turn-key installation, meaning the press was brought up to full functionality by the supplier, saving Southern Pine the time and trouble of having to learn the build and assembly itself. It was delivered on time and budget, with the first briquettes produced in July 2008.



The briquettes are used in Moffatts Flower Company's boiler, to help heat the greenhouses.

Developing a win-win relationship

It didn't take the company long to find a customer for its newest product. Moffatts Flower Company, a greenhouse complex based only 5 km from Southern Pine, now buys the briquettes and uses them as one of its staple fuels.

"Straight away we were getting a \$14,000 to \$18,000 per month saving in disposal costs. But then to implement this and turn it into a revenue stream has been fantastic – it's a textbook win-win situation," says Mr Taylor.

Moffatts Flower Company managing director Steve Moffatt says the briquettes make excellent fuel, being bone dry and with a high energy content. "It's improved our carbon footprint dramatically," he says.

Moffatts Flowers has 2 ha of greenhouse complex to heat. The company buys all the briquettes Southern Pine produces, which provides around 10% of its total fuel needs.

Ideally they would like more – Mr Moffatt says he can't imagine a time when they wouldn't buy as much briquette fuel as Southern Pine can supply.

There's nothing to stop other small wood processors setting up similar relationships with greenhouse businesses says Mr Moffatt – provided the fuel produced is made from low-formaldehyde MDF.

The benefits

The saving in Southern Pine's waste disposal costs is projected to be \$180,000 a year, and annual revenue from the briquettes is projected to be in the region of \$25,000 at current production levels. This means the press will be paying for itself in less than two years.

Another important, albeit less tangible, benefit is in brand value. Already positioned as a 'green' industry player, Mr Taylor believes the scrutiny Southern Pine applies to every aspect of its business is helping to differentiate it from competitors.

"I think that consciousness is growing in the market, for green products and processes. If we can produce something that's eco-friendly, with no cost differential, people are increasingly inclined to go for the product with better environmental credentials."



Moffatts Flower Company's Steve Moffatt says the briquettes make excellent fuel, being bone dry and with a high energy content.



Southern Pine's products carry the Environmental Choice label.



Opportunities for growth

The company's ethos of continuous improvement means it's scouting for further options to gain value from its asset. "There's plenty of excess capacity in the machine we've got. We're looking at other options which could involve increasing our use of MDF waste, or producing other products."

One potential avenue is to forge relationships with kitchen or other furniture manufacturers, who use large quantities of MDF but have no means of disposing of the dust other than landfill (with all the associated costs).

Southern Pine could potentially contract process MDF dust from such companies to produce more briquettes, helping suppliers to reduce costs, increase revenue and lessen their environmental impact in one fell swoop.

Finding synergies essential

As far as Mr Taylor is concerned, keeping an eye out for potential efficiencies and the all-important 'win-win' scenario, is at the heart of being an environmentally aware operator.

"Our view as a company is that it needs to be end to end. And the only way to do that is to look out for those synergies and build those relationships." With increasing awareness of the cost and fragility of energy supply, Mr Taylor sees the demand for wood energy among commercial and industrial users increasing.

"Nationally there's far more awareness amongst businesses about energy use, both from an environmental and a pure cost perspective. Renewable options like wood energy have to be looked at and I think will be on the table as a viable option far more than has traditionally been the case."

EECA enables organisations to increase their domestic and international competitiveness by adopting energy efficiency and renewable energy practices.


We work with businesses to identify the opportunities for energy management that are available to them and help them develop energy management action plans to make the most of these opportunities.

Good energy management has many benefits for businesses, including lower costs, increased productivity, reduced greenhouse gas emissions and a positive effect on the brand.

We have a particular interest in:

- encouraging new or under-used technology that can make processes more efficient
- projects that reduce greenhouse gas emissions, and
- developing the wood fuel industry.

For more information, contact us directly – see details below.

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