

RESOURCE RECOVERY

Ben Sawley, ResourceCo, discusses the company's joint venture plant with Cleanaway, located in Wetherill Park, Sydney.

Introduction

ResourceCo, an Australian leader in resource recovery and alternative fuels, has opened a new multi-million dollar resource recovery and process engineered fuel (PEF) plant in Wetherill Park, Sydney. This project is helping the company to facilitate the fuel diversification of both local and Southeast Asian cement kilns.



The state-of-the-art facility was unveiled in July 2018 and is a joint venture between ResourceCo and Cleanaway, Asia Pacific's largest waste management, industrial, and environmental services company. It is the largest of its kind in Australia and adds another leading, high-tech facility to ResourceCo's existing plants in Adelaide, south Australia, and Ipoh, Malaysia, the latter of which produces some of the highest quality PEF in the world.



Cleanaway ResourceCo manufacturing facility.



Ballistic feed conveyor.

Licensed to receive up to 250 000 tpy of dry commercial, industrial, mixed construction and demolition waste, the Wetherill Park plant is already making a significant contribution in shifting the industry to a more sustainable energy model.

The facility will divert up to 50 000 truckloads of waste from landfill, while also reducing reliance on fossil fuels, such as coal and gas. It will replace over 100 000 tpy of coal usage alone and will take the equivalent of 20 000 cars annually off the road in terms of greenhouse gas emissions reductions.

ResourceCo is committed to playing a key role in Australia and Southeast Asia's future sustainable energy mix by reducing waste and lowering carbon emissions. This will be done through the production of a commercially viable sustainable energy product. The plant will transform waste from selected non-recyclable waste streams, which would otherwise go into landfill, into a baseload energy source known as PEF.

PEF

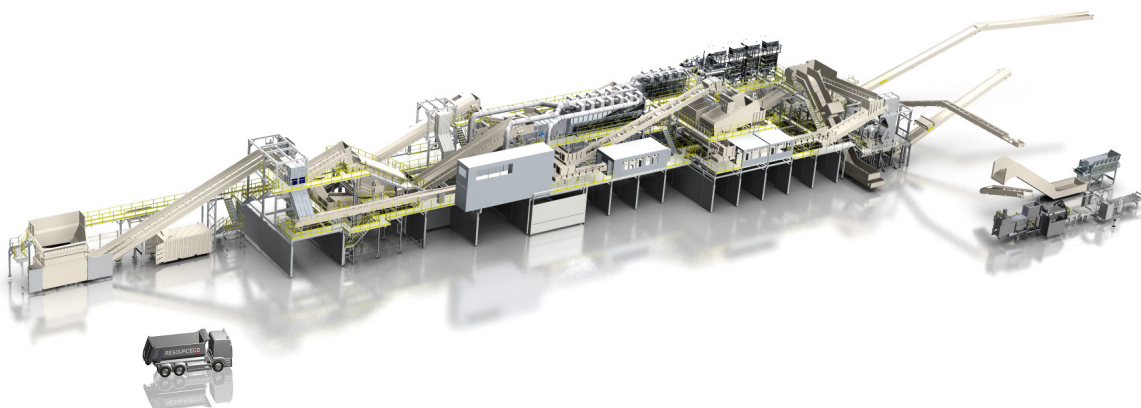
PEF is an environmentally-friendly substitute for fossil fuels in the production of cement. It is produced at Wetherill Park and will not only supply Australia's largest construction material company, Boral, but will also be exported to ResourceCo's partners in Asia, for use in other major cement companies.

This is a vital contribution to the industry, as cement kilns on the continent have significant potential for fuel diversification.

Globally, cement kilns are currently using about 40 million tpy of PEF-type fuels, with some kilns in northern Europe achieving a 90% energy substitution. However, in Southeast Asia the substitution rate of alternative fuels is estimated to be less than 10%, so the opportunity is huge for what can be done there to turn relevant waste streams into PEF. Up to 30% is definitely achievable in the short to medium term.

Waste to fuel

There has been great interest in both the PEF production component of the plant and the diversion of waste that would have previously gone



Rendered image of the manufacturing facility.

to landfill. Waste delivery customers are pleased with the tipping service that ResourceCo offers for them to unload their waste and get back out on the road collecting more bins.

People are interested in the concept that waste previously destined for landfill gets re-purposed into an energy material that has the double benefit of offsetting fossil fuel usage. ResourceCo has a team that is very excited and motivated to be doing something special in the market.

The company takes in non-recyclable plastics and timber, as well as non-recyclable paper, cardboard, and synthetic fibres. This serves a diverse range of industries and a whole host of suppliers, such as flexible packaging manufacturers, who are looking at sending plastic packaging to ResourceCo rather than to landfill, for example.

Moreover, the ability to divert a larger volume of waste materials from landfill means the environmental benefits extend well beyond the fuel diversification objective of the operation.



Cleanaway ResourceCo control room.



Aerial image of the Cleanaway ResourceCo property.

When organic waste materials end up in landfill, they begin to anaerobically decompose. This process produces methane, a significant proportion of which leaks through the soil and into the atmosphere, even when a landfill has a gas extraction system. Methane is more than 20 times worse than carbon dioxide from a greenhouse gas perspective. The company's operation avoids that, as well as reducing the need to mine fossil fuels from virgin ground. So it is a win on many fronts and a strong story for the environment.

The nitty-gritty of the waste to fuel process that is being utilised by the company in its facilities involves the shredding, screening, and separation of waste materials using magnets, mechanical screens, and air, before the materials are again shredded into 50 mm or smaller pieces of fuel. Following this, the PEF can be transported in walking floor trailers to local kilns, or, if for export, it is baled into 1 t compressed bales and wrapped in film to ensure they are air and water tight. This is in line with processes being followed in other parts of the world.

Export customers can store the product outside in the weather and this does not impact on the fuel quality. That is not anything new – the company has learned from decades of experience in Europe, where millions of tonnes of this material is traded continuously.

The fuel is then used in the same manner by all of the cement kilns supplied by ResourceCo – it is put into a specifically-designed PEF feed system, which carries the fuel into the kiln to be dosed into the production process at the required rate and in place of coal or other fossil fuels.

Wetherill Park plant

Since opening just over six months ago in Wetherill Park, the Cleanaway ResourceCo facility has been met with much enthusiasm. It has already been able to add a second daily production shift to its operation, ahead of the initial plan. ResourceCo, which began as a one-person operation in 1992 and now employs over 800 staff, has taken the overwhelmingly positive response in its stride.

The company has been doing this for many years in other markets and had a good understanding of the Sydney market from the beginning. But it has definitely been stronger than was anticipated.

Due to it being a new concept in New South Wales, there was a degree of scepticism initially. But now that the plant is up and running, and people can see it is a high-quality operation and product, it has given a broader range of players in the market the impetus to deal with ResourceCo.

The company had always planned to start on one shift, but there has been enough demand for the

finished fuel product, as well as the waste disposal component, for production to basically double. As a result, an afternoon shift has been added to the initial day shift ahead of original plans.

A major advantage of the Wetherill Park plant is its ability to process a more diverse range of waste materials, which translates into a broader market offering than that offered by the company's existing facilities in South Australia and Malaysia. It is the sheer size of the new operation – about four times the size of the Malaysian plant – that allows this increased offering and scale of production, as well as an even wider ranging positive impact on the environment.


Conclusion

In comparison to the Wetherill Park plant, ResourceCo's facility in Ipoh – a city in Malaysia where many cement kilns are located due to the high availability of limestone – focuses solely on processing plastic materials that have a high calorific content, which were previously sent to landfill.

The types of customers that deliver their waste streams to the Ipoh plant are forward-thinking Asian manufacturers, often in the packaging or fast-moving consumer goods industries, that want to find a better way of disposing of their waste. It is still quite diverse – the largest customer is in the laminated packaging industry, but there are a whole host of other suppliers as well. The product made in Wetherill Park is also very high quality

but has some different characteristics to Ipoh PEF, due to the broader range of materials processed in Sydney. The results of using high-calorific plastic to produce the PEF speak for themselves.

With forward-thinking companies from a variety of industries on board, expansion into both new and existing areas of operation is almost always front of mind for ResourceCo. Ipoh is running 24 hours a day, 7 days a week at maximum capacity. The company is looking at expanding the capacity of that operation. It does not know what exactly this will look like, but there is certainly enough demand there and the company is satisfied that it will justify expansion.

As to the interest from its Australian partners, without giving too much away, ResourceCo expects to be building more of these plants in the near future to meet the demand in the market. 

About the author

Ben Sawley is the CEO of ResourceCo Sustainable Energy. Before working for ResourceCo, Sawley was the National General Manager for Transpacific's Post Collections business, held a number of general management roles with Boral, was a consultant at the Boston Consulting Group, and started his career with Unilever. He has worked across Australasia, the US, and Europe. He holds degrees in mechanical engineering and business marketing, as well as an MBA from Melbourne Business School. Sawley is passionate about sustainable energy and resource recovery.