

# Circular Economy in Action in South Australia



## Holla-Fresh Herbs – a carbon negative energy solution



Government  
of South Australia  
Green Industries SA



# Investment in renewable energy brings new opportunities to the South East



## The driver

The need to replace an old, inefficient, fossil-fuelled boiler used to heat glasshouses.



## The catalyst

Green Industries SA support and encouragement to investigate bioenergy options.



## The outcomes

A low-cost, reliable, carbon negative source of energy with an expected simple payback of 4-6 years.

The option to enhance Holla-Fresh herb production in the future.

A new partnership with local composter BioGro enabling it to explore potentially lucrative biochar production.

Horticulture company Holla-Fresh is determined to become even more efficient and sustainable, and the impact is being felt beyond the boundaries of its Tantanoola property in the state's temperate South East.

**In a great example of the circular economy in action, it has embraced innovation, created opportunities for two other companies (one local), provided a boost for the regional economy, inspired new research, and laid the groundwork to massively reduce its carbon footprint and bring tangible results for its business.**

“There will be two benefits for us when things are fully commissioned,” said Managing Director Ian Lines. “There will be a very large financial benefit, a big cut in our costs, and we will actually be carbon negative –taking more carbon out of the atmosphere than we produce.

“That will be a big selling point for us. For every 12 months of the new energy source up and going, not only will we be carbon neutral in that year but we will actually be a carbon-sink by also replacing two years of carbon that we had previously put into the atmosphere under our old normal operations.”

Over the past 25 years, family-owned Holla-Fresh has grown to become a leading supplier of culinary herbs to the nation's supermarkets, all of them grown hydroponically under glass.



**This latest chapter in its story involves a new and improved version of the renewable energy technology known as pyrolysis, and a high-quality and potentially lucrative by-product called biochar.**

**It all began when the company asked the State Government agency Green Industries SA (GISA) for help in sourcing an alternative to its oil-fired boiler for heating its glasshouses.**

Heat was one of its most important inputs, but it was also one of its most expensive and greenhouse gas intensive.

GISA co-ordinated a national expression of interest process for potential providers then discussed with Holla-Fresh which proposal it considered to be its best option. One stood out above the rest.

Victorian company Rainbow Bee Eater (RBE) was looking for an established commercial entity to embrace its ECHO2 technology, which produces baseload, low-cost, renewable energy from organic residues such as crop and timber wastes that are often disposed of by burning or sending them to landfill.

RBE believes its approach is suitable for any business or community that uses a few hundred kW or more of heat and/or electricity on a regular basis, and GISA funded a detailed feasibility assessment to determine whether that would be the case for Holla-Fresh. The numbers suggested it would.

RBE's approach not only offered an exceptionally low-cost and low-carbon heat source (with an option for on-site electricity production), it could potentially improve herb production yields without increasing glasshouse areas. This is very significant to any future plans to expand the business production.

What was needed, however, was a reliable and affordable source of biomass residue material. So GISA linked Holla-Fresh with Bio Gro, a supplier of garden and landscaping products based nearby in Mt Gambier, and it quickly became obvious that there was a good fit.



**Bio Gro has significant quantities of wood residue that it is happy to process into feedstock ready for use with the ECHO2 technology and to transport to Holla Fresh at no cost. In return, it will take away the biochar that is produced as a natural part of the pyrolysis process.**

Biochar is charcoal that is high in carbon, making it an ideal, long-lasting soil additive and water retention medium for some soils. It also has potential application in animal feed supplement, concrete strengthening, water filtration, road surfaces and other areas.



Federal Government to test the value of using flue gas produced during pyrolysis to provide additional CO<sub>2</sub> to the herbs by pumping it through the greenhouses.

“The value of doing this for plants such as tomatoes and capsicums has been proven, but not yet with herbs,” Lines said.

**Everything is now in place. RBE has installed a new LPG-fired boiler as back-up heat, an on-site electrical generator and the pyrolysis system at Tantanoola.**

The ECHO2 module will provide 800kW of hot water, 100kW of electricity and 250kg/hr of horticultural CO<sub>2</sub>. The system is fully automated, adding another level of value for Holla-Fresh.

“It will require 10-15 hours a week of our time to monitor it, compared with five under the old system, but the savings in terms of cost will be substantial,” Lines said. “We anticipate a payback period of four to six years.”

Commonly used in Europe, its downside is that it is expensive to produce in its own right, which makes its availability as a by-product invaluable.

While Bio Gro explores the potential to market biochar in Australia, Holla-Fresh has been introduced by GISA to AusIndustry, which has provided R&D funding from the



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