

Western Australian company perfecting biochar for farms

April 4 2014, by Steven White



From poultry waste to power: a bio kiln in use at Chandala chicken farm in Gingin. Credit: Euan Beamont

A local bio energy company are refining their prototype for turning farming waste products into high value biochar and electricity generation.

The Geraldton-based company, Energy Farmers Australia, was founded four years ago by agriculturalist Euan Beamont and his engineer business partner Tom Vogan to improve [energy efficiency](#) and [waste management](#) on agricultural land.

"We became interested in biochar simply because we think it's a good medium for transporting nutrients," Mr Beamont says.

"For example if you've got feedstock like chicken manure which is high in nitrates, you can potentially recover the energy from that manure and nutrients are left in the char and can be used as a fertiliser."

They have been working with an industrial designer to develop a prototype 'pyrolysis kiln' – used to convert plant and animal materials into biochar – and have built most of the machine themselves.

The pyrolysis kiln has a chamber where combustible material is fed in with an auger (corkscrew tool) and then drops into a drying auger where it moves along slowly and is heated using a diesel burner.

In the bottom chamber the material heats up but doesn't combust. It gets to a point called 'cracking' where the gasses bound up in the material are released, leaving a high carbon material similar to charcoal.

The gasses that are burnt off create a lot of heat, and once the kiln is operating at a certain temperature the burning becomes self-sustaining.

The bottom chamber needs a minimum temperature of 150 to 200oC, while the top chamber reaches up to 800oC.

Mr Beamont says the prototype has been tested according to Australian emissions testing standards.

"[The released gasses] have come in under normal EPA specifications and shows that we have quite a clean burning machine."

"At the moment we are using a generator to power it and have it operating at 40 per cent efficiency and are able to get 40kg an hour of

biochar from it and found it produces 180 kilowatts of thermal energy."

They are also trialling use of an off-the-shelf design called an organic rankine cycle turbine which uses an organic fluid that when heated, builds pressure and drives a turbine generator.

They are currently working with Chandala Poultry in Gingin and hope to sign a contract soon to develop a larger plant in the next 12 months.

Provided by Science Network WA

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