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BIOTECHNOLOGY INNOVATION



Licella commercial demonstration plant.

LICELLA FROM PLANT WASTE TO BIOFUELS

THE UNMET NEED

Declining traditional oil supplies, increasing fuel prices, global warming and higher prices for commodities are driving a worldwide rethink of our dependence on fossil fuels. Biofuels - fuels made from renewable, biological materials - are increasingly seen as a viable alternative to traditional sources of energy.

In a world first, Licella Pty Ltd has developed a unique one-step process to convert readily available, low cost, non-food plant material into stable, low carbon footprint, high-value biocrude oil. The biocrude can be further refined into fuel for the transport and aviation industries. Producing a true alternative to fossil fuel, Licella's process is quick, clean and cost effective.

THE TECHNOLOGY

Licella's technology currently uses non-food, sustainable plant material such as radiata pine sawdust. It is mixed with water to form a slurry, and injected into a continuous

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flow, catalytic hydrothermal reactor (Cat-HTR). The heat and pressure in the reactor rapidly transform the feedstock into refinery ready, 'drop-in' biocrude oil.

Since 2008, Licella's proprietary technology has been trialled at a pilot plant in Somersby, NSW, where radiata pine sawdust has successfully been converted into biocrude oil.

Licella plans to test many other non-food feedstocks including algae, corn stalks, sugar cane trash, grasses and farm waste.

THE BENEFITS

Many biofuels are made from food crops, or other crops grown on land where food could be produced. As the world's population grows, it is increasingly important that agricultural land is used to produce food, not crops for biofuels.

Licella's process uses non-food raw materials, resulting in a more environmentally friendly second generation biofuel that does not compete with food production.

Licella's biocrude oil can be dropped into existing petrochemical refining and distribution infrastructure. There is no need to construct additional refinery capability in order to process Licella's biocrude, or double-up on distribution costs and incur the related greenhouse gas emissions when delivering the final fuel products to customers.

As a result, the production of biofuels using Licella's technology can reduce greenhouse gas emissions by over 50% compared to traditional fossil fuels.

THE DEVELOPER

Licella was incorporated in Australia in 2008. It is a wholly owned subsidiary of Ignite Energy Resources Ltd and is planned to be spun out as a separate entity during 2012.

The Cat-HTR technology was first developed by Licella's Chairman, Dr Len Humphreys, with Professor Thomas Maschmeyer from Sydney University's Department of Chemistry. Licella's business model involves investigating where waste is aggregated in large quantities, such as at timber and paper mills, and setting up a facility on location. The biocrude can then be shipped to a central refinery.

Licella's commercial demonstration plant in Somersby was

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Licella's biocrude can be further refined to transport fuels.

officially opened by the Hon Martin Ferguson, Minister for Resources, Energy and Tourism, in December 2011. The facility was funded in part by the Australian Government's Second Generation Biofuels Research and Development Program. Licella has also benefitted from a Business Review conducted as part of the Australian Government's Enterprise Connect program. In March 2012 the company received an Early Stage Commercialisation grant through Commercialisation Australia.

Recent company milestones include forming a new joint venture company with Norske Skog Australasia called Licella Fibre Fuels, which has an exclusive global licence to Cat-HTR technology for multiple feedstocks. In addition, Virgin Airlines Australia and Air New Zealand have separate agreements with Licella to explore the potential of Cat-HTR to create sustainable aviation fuels.

Based on information from Licella.

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