



Southern Oil Refining (SOR) has been turning waste lube oil into good-as-new lube oil since 2001, and its re-refineries at Wagga Wagga and Gladstone receive around 400,000 litres of the stuff a day.

"That base oil is then sold to your major multinational oil companies and they then add their secret herbs and spices and the oil comes back to Australia," says Troy Collings, SOR's Director of Corporate and Regulatory Affairs.

"That is our main business. It is commercially viable, with great environment outcomes... but being in the game of refining waste oil, we started looking at other applications of refining, and we are now established in Gladstone with an advanced biofuels pilot plant."

SOR has commenced testing a variety of waste feedstocks through best of breed technologies to produce biocrude. Waste feedstocks include mining and passenger tyres, agricultural and forestry waste, plastic, green waste and sewage waste. The \$23 million advanced biofuels pilot plant, run by subsidiary Northern Oil, includes a world-class biofuels lab and has ambitions to provide over a million litres of certified renewable fuel in the next 2 years.

If successful, the impact would be vast, trash would be turned into proverbial treasure.

“What is exciting is that this project is entirely scalable – the economics will drive it and it will have wonderful environmental benefits

” said Collings.

Consider that a Hyder Consulting (now part of Arcadis) study¹ found the equivalent of 51 million tyres were discarded in Australia in 2013–14, with 95 per cent of these just dumped. Tyres are by their design hard to break down, have limited

reuse potential, and tend to end their long lives in landfill. Tyres are just one of several waste streams, also including plastics, hardwood, prickly acacia and cane waste, that SOR can refine into usable biocrude and then refined products.

Instead of adding to massive landfills, there is an opportunity to create new industries, believes Collings.

"Regionally, you are going to have waste generators being able to put a price on their waste and be able to have a stable secondary income," he explains.

"Then you have got the actual commissioning of the equipment, of the technology in that region to produce the biocrude. This will bring new direct and indirect jobs – for example, the biocrude has got to be shifted by a truck or train to the refinery."

Collings' company, which is owned by founder Tim Rose and by waste collection firm JJ Richards & Sons, has a team of around 65 chemical and civil engineers and technical staff. In-house expertise is complemented in some 17 joint venture projects, including collaborations with CSIRO, Queensland University of Technology, University of Queensland, Adelaide University, Bangkok University and other research institutes.

This projects also includes the production of affordable biohydrogen, a widely-used industrial commodity, from waste gases. Biodiesel requires three times as much hydrogen as fossil fuel diesel to produce. If you want competitive renewable diesel, you need cheap hydrogen.

“This has generated a lot of interest from the Queensland government, and a number of Japanese companies. Japan has a major focus on hydrogen,

” adds Collings.

"Once we establish an industrial-scale plant that can produce biohydrogen, that will have application across such industries as fertiliser production, production of margarine, edible oils, and paint. There's a number of industries that would benefit if we can reduce the cost of hydrogen it will be a major benefit."

Should the pilot plant be a success, a set of regional waste collection hubs, for example, based around Burdekin, (which burns millions of tonnes of cane waste a year) will need to be established. These will feed a 400 million litre per year, \$180 million commercial scale plant.

As for why Southern Oil has joined the Advanced Manufacturing Growth Centre, Collings says there is an alignment of goals around strengthening the industry and having companies work with each other and with researchers.

"As we expand and commercialise first-generation technologies into mainstream, new industries and new market opportunities will emerge," he adds.



1 <http://www.environment.gov.au/protection/national-waste-policy/tyres>



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