PM backs local tech to end global plastic waste

TIM DODD

When Scott Morrison addressed the UN General Assembly last month he gave a huge boost, in front of a global audience, to a new technology for recycling plastics that came out of the University of Sydney.

The technology, on the verge of being commercialised, will do more than just recycle plastics. It will help make achievable “a truly circular economy”, in the Prime Minister’s words, in which plastic can be recycled again and again, no longer being discarded in landfill, being burned, or adding to the already massive amount of plastic polluting the world’s oceans.

In his UN speech Mr Morrison cited the catalytic hydrothermal reactor — the fruit of research by Sydney University chemistry professor Thomas Maschmeyer and his colleagues — which can turn any type of plastic back into hydrocarbon feedstock that can then be made into fuel, waxes, lubricants, solvents and new plastics.

The technology — developed by Licella, a company co-founded by Professor Maschmeyer that partners with Sydney University — is commercially viable because it is far more economic than other methods of recycling plastic into oil. It is particularly good for processing mixed plastics that are currently not recycled.

To be successful, it requires more than just heating up and melting the plastic. Commonly, hydrogen needs to be added, which is expensive and makes the chemical recycling of plastic uneconomic. There are no large-scale plants anywhere that do it.

But Professor Maschmeyer (and co-inventor Len Humphreys who is Licella’s chief executive and other co-founder) found a way to mix plastic with high-temperature, high-pressure water in a “supercritical” state, a fourth phase in which the steam can behave like a liquid solvent.

Chemical reactions take place in which the water molecules supply the necessary hydrogen for the plastic to become usable oil, making the process much cheaper.

Licella operates a pilot plant on the NSW central coast using the catalytic hydrothermal reactor technology (known as Cat-HTR) and is seeking to build Australia’s first commercial installation with its partner iQReNew.

Furthermore a British company, ReNew ELP, is setting up the first fully commercial plant on the site of an old ICI chemical plant in Wilton in the north of England.

Now that China has refused to take any more plastic waste from other countries until it is sorted to an exceptional level of purity, interest in his technology is booming. “Money is knocking at our door,” he said from Europe, where he was speaking to potential investors in the technology.

Discussions are well advanced for large plants in Germany and Professor Maschmeyer believes it is realistic for Germany to be processing a half-million tonnes of plastic back into oil each year within three to five years.

He said, at the moment, less than 10 per cent of plastics were recycled. The figure is so low because plastics must be returned for recycling and be well sorted.

For example, the PET bottles used for soft drinks can be reprocessed into new soft drink bottles and HDPE milk bottles can be turned into new milk bottles, but only if they are separated from other types of plastic.

However Professor Maschmeyer said that, when plastic waste was sorted, the Cat-HTR process could produce a higher-quality product with higher value. He estimated that, for a cost of about $1bn, Australia could be 50 per cent plastic neutral and the investment would generate a strong financial return. He produced back-of-the-envelope figures to support this claim.

Half of Australia’s annual plastic waste is 15 million tonnes. When processed using Cat-HTR it would conservatively produce 1.2 million tonnes of oil, or 8.3 million barrels. At more than $60 a barrel, this is worth over $500m.