

Cat-HTR Tech Makes Unrecyclable Plastics Recyclable

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Middlesbrough-based ReNew ELP has won a \$5.7 million Innovate UK grant to build the world's first commercial-scale plastic recycling plant using Cat-HTR technology.

The plant, which will be built in the UK, can recycle up to 80,000 tonnes of waste plastic annually when complete.

As of now, approximately 350 million tonnes of plastic is being produced annually.

This figure is bound to jump up to around 12 billion tonnes of plastic waste finding its way into landfills and the environment by 2050 – if current trends in production and disposal continue.

The grant from Innovate UK should help ReNew combat this, as the company has been developing a patented hydrothermal upgrading platform.

According to ReNew, the Cat-HTR (Catalytic Hydrothermal Reactor) technology uses supercritical water, heat and pressure to convert waste plastic considered 'unrecyclable' through mechanical means back into chemicals and oils that can be used by the petrochemical industry to produce new plastic and other materials.

The Cat-HTR can even recycle multi-layer, flexible plastic materials such as films, and pots, tubs and trays (PTT).

Moreover, the new materials made from ReNew's feedstock are suitable for use in food-contact packaging.

The recycling process begins by shredding end-of-life plastic and removing contaminants such as glass, metals, grit and stones.

The shredded plastic, which does not need to be dried, is then heated and compressed, combined with supercritical water and further heated.

It then enters the Cat-HTR where the supercritical water breaks down the polymeric bonds, releasing hydrogen to create short-chain, stable hydrocarbons, which are separated and stored.

According to the company, up to 85% of the mass of plastic is converted to hydrocarbon products and further environmental benefits include minimal waste, as impurities such as colourants and additives in the plastic feedstock fall out into the heavier hydrocarbon feedstocks, which can be used in construction.

Another plus: Cat-HTR does not produce toxic by-products such as dioxins due to its non-combustible process – pointing to significant overall environmental benefits.

According to initial independent studies, advanced recycling can reduce CO2 emissions by 1.5 tonnes for every tonne of plastic waste processed when compared to incineration.

This means, once completed, the ReNew site at Wilton will be able to save approximately 120,000 tonnes of CO2 annually – when compared to incineration.

See also <https://renewelp.co.uk/news/renew-elp-receive-4-42million-grant-from-innovate-uk/>