

Enthusiastic about waste plastic

Cologne, 08 September 2021

Waste plastic is a complex and often dirty mix of different materials, with little value in today's market. And that is why most of it ends up being incinerated, sent to landfill, or worse still discarded and washed into the world's oceans. Quantafuel is tackling the problem head on, with new technology that can create value out of materials that are unsuitable for existing recycling options. And ISCC PLUS certification provides the

assurance that will help to establish the technology as a model for the transformation of waste plastic into recycled products.



The company's pyrolytic chemical recycling process contains a unique catalytic step, in which the molecular structure of the plastic waste is transformed to create a higher value output. The process also includes integrated purification steps to remove impurities such as sulphur and chlorine. This technology elevates the product from a complex oil into a desirable product. So used plastic can become an important resource rather than a nuisance to

be disposed of. Quantafuel is further developing the technology, together with its strategic partner BASF, to optimise the output for use as a feedstock in chemical production.

The new technology emerged from a research project in 2007 and the first test facility was built in Mexico in 2014. The original intention was to produce recycled carbon fuel, hence the name Quantafuel. But the partnership with BASF changed the focus to circular plastics production. The company is currently starting up a 20,000 tonne plant in Skive, Denmark, and building a plant of similar capacity in Kristiansund, Norway.

The pyrolysis oil will be fed into BASF's chemical production network. In the steam cracker, recycled and conventional raw material become mixed and are split into mainly ethylene and propylene at temperatures of around 850 degrees Celsius. These chemicals in turn form the basis for producing new plastics and other high value chemicals. Since the pyrolysis oil is inserted directly at the beginning of BASF's production network, the final products have exactly the same properties as products based on fossil raw materials, with the advantage that



they have saved fossil resources. The proportion of the recycled raw material can be allocated to the end products using a mass balance approach, which is certified by ISCC.

At a time when scrutiny of plastic recycling has never been higher, the company wants to be known as a trusted actor in the recycling industry. It is working with the Norwegian Institute for Sustainability to quantify the greenhouse gas savings of the process. This will build on an LCA study, commissioned by BASF, which showed that chemical recycling emits about half of the CO₂ when compared with incineration. The independently reviewed study also compares the CO₂ emissions of plastics produced with pyrolysis oil under a mass balance approach with conventional plastics made from fossil naphtha. It concluded that chemically recycled plastics cause significantly lower CO₂ emissions than their fossil counterparts. The lower emissions result from avoiding the incineration of mixed plastic waste.



Quantafuel has big ambitions. Its strategy is to build modular plants, which can be deployed quickly at scale in different locations, with waste received and prepared on site. Quantafuel plans to roll out technology and plants throughout Europe. ISCC PLUS certification will support these aspirations and the company will be displaying the ISCC logo on its website. The company sees its recent certification as key to justifying its process efficiency to customers and the public alike. SVP Strategy & Sustainability Thomas Steenbuch Tharaldsen explains: “Quantafuel aims to become the world’s leading chemical recycling company. With ISCC

PLUS certification, we are one step closer. Certification builds a foundation of trust and transparency that will help us bring more plastic waste into the circular economy.”

“It is becoming clear that the industry must start treating used plastic as a valuable resource by establishing networks for plastic waste collection and then upgrading the collected material to recycled products. Certification has an important role to play in guaranteeing levels of recycled content, ensuring the traceability of waste and enabling credible claims for final products. Quantafuel has embraced this concept wholeheartedly, by enlisting the help of ISCC in its mission to change the world of recycling” says Dr Jan Henke, Director, ISCC.

With these developments, the outlook for creating value from waste plastic and reducing carbon emissions is much brighter, which can only be positive for the environment.

For more information on ISCC PLUS certification please contact ISCC at info@iscc-system.org.