



Waste and Recycling Developments

The role of advanced thermal treatment

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In the UK during the past 15 years there has been an ongoing demand and drive to update and change the waste and recycling sectors. With the current target for the recycling rate from all household waste, being set at **50%** by **2020**, the UK is on track to meet this. However, to this day the current recycling rate remains still at **45.2%**¹, leaving space for further improvement and best practice to be applied.

Following the principle of waste hierarchy, with prevention being the preferred option and landfill being the least favourable option since it includes no recovery of either materials or energy, there have been a number of initiatives across a variety of sectors. The impact of these initiatives has

affected not only the waste and recycling sectors but also a number of other areas such as supply chain, research, energy generation, policy, transport /logistics, engineering and manufacturing, as well as alternative sustainable biomaterial production, and has even crossed over fields such as bioenergy that a few years ago would be unthinkable.

The role of advanced thermal technologies, in this aspect sits within tertiary recycling practice as it not only recovers materials, but can also create new products and facilitate ease of handling. Waste materials such as multi-layer packaging, residual mixed waste², waste tyres or mixed waste plastics are not easily separated and in

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most instances not even recycled, but can be converted into gas or liquid fuels, or separated into different material streams eventually allowing material recovery. Pyrolysis and gasification are processes that have the capacity to treat such tricky waste streams, and both can play a part in the waste hierarchy. Although, there is not an abundance of successful commercial examples, there are a number of planned installations that are aiming to recover materials such as aluminium from multi-layer packaging, carbon black from waste tyres, and even convert waste plastics into liquid fuels, to name a few.

At the moment, there are a number of planned gasification plants in the UK, that once operational will contribute to the UK versatile energy generation matrix, making use of support incentives like Contract for Difference (CfD), Renewables Obligation Certificates (ROCs) and most recently the Renewable Transport Fuel Obligation (RTFO) scheme, which incentivises fuel generation from residues. These technologies are perceived to be cleaner in comparison to combustion, but could also hold a dual role, in energy generation and tertiary treatment of non-recyclable waste fractions. Slowly and steadily, the world of waste is

changing into a world of opportunities, whether that is recovering and recycling materials, generating energy, preventing waste generation by raising awareness, or even changing the packaging materials produced and substituting them with sustainable biopolymers. The future landscape will not be the same. Production of sustainable bioproducts from waste materials such as coffee cups made from the waste coffee husk; new packaging materials made from biopolymers extracted from potato starch or shrimp shells; charcoal production from agricultural waste that is incorporated into beauty products and eco-friendly organic fertilisers are only a number of exciting developments that are transforming the way we see waste and its hidden value.

References

¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746642/

[UK Statistics on Waste statistical notice October 2018 FINAL.pdf](#)

² Residual mixed waste refers to the waste that cannot be further separated and in some instances is used to create what is known as Refuse Derived Fuel (RDF) or Solid Recovered Fuel (SRF) which is used in Energy from Waste (EfW) applications like combustion or gasification.

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