The Next Generation of Advanced Recycling

Mura Technology aims to become the world's leading producer of circular hydrocarbons made from waste plastic using our breakthrough technology **Hydro-PRT®**.

MURA TECHNOLOGY

Contents

Challenges Posed by Plastic Waste

If current trends continue, annual global plastic use is on course to reach 1.32 billion tonnes per year by 2060.[1]

It is estimated that humans consume roughly 5g of microplastics per week – about the size of a credit card.[2]

The global recycling rate is estimated to be 9%. The remainder is sent to landfill, incineration or leaks into the environment.[3]

Packaging is estimated to account for 42% of plastic waste generation worldwide.[4]

Annual worldwide plastic production created 1.8billion tonnes of CO_2 in 2019, set to rise to 4.3 billion tonnes by 2060.[5]

The world is on course to see 12 billion tonnes of plastic in landfills and the environment by 2050.[6]

Plastic has not been recognised as a valuable, reusable material, which has led to environmental pollution. Today, most of the plastic produced worldwide is either sent to incineration or landfill, or leaks into the environment after a short single use.

Traditional mechanical recycling methods cannot effectively process all types of plastics, meaning many types, such as post-consumer, multi-layered flexible and rigid packaging is sent to incineration, landfill or exported overseas.

Society urgently needs new solutions to recycle a wider range of plastic waste.

1. OECD (2022), Global Plastics Outlook: Policy Scenarios to 2060
2. WWF (2019), No Plastic in Nature: Assessing Plastic Ingestion from Nature to People
3. R. Geyer, J.R. Jambeck, K.L Law (2017), Production, Use and Fate of All Plastics Ever Made. Science Advances Research Article. Asci. Adv.
4. OECD (2022), Global Plastics Outlook: Policy Scenarios to 2060
5. OECD (2022), Global Plastics Outlook: Policy Scenarios to 2060
6. R. Geyer, J.R. Jambeck, K.L Law (2017), Production, Use and Fate of All Plastics Ever Made. Science Advances Research Article. Asci. Adv.

The Economic Opportunity

The **market value of global plastics** is estimated to reach greater than

$1.05 trillion

per year by 2033[7]

Oil demand for plastic production is

3.3 billion

barrels per year, rising to **8.4 billion by 2060**[8]

The value of feedstock supplied for the **manufacture of new plastic** is approximately

$180 billion per year[9]

Only

5%

of material value from **plastic packaging collected globally** for recycling is retained in subsequent use[10]

$120 billion

is lost through plastic waste annually[11]

Rather than continuing to extract fossil resources to fulfil demand for new plastics, Mura's focus is on recycling a broader scope of waste plastics, converting them back into fossil replacement products for the manufacture of new plastics, helping to create a circular economy.

7. Statista (2025)
8. Global Naphtha Market 2025 – 2031 (2025), 6WResearch
9. Mura Technology (2021), based on Oil Demand for Plastics Production Worldwide - Statista (2019)
10. The New Plastics Economy: Catalysing Action - The Ellen McArthur Foundation (2017)
11. The New Plastics Economy: Rethinking the Future of Plastics (2017), World Economic Forum and the Ellen MacArthur Foundation

Our Vision

To create a net zero circular economy for plastic, where plastic pollution is eliminated and where no plastic is burned or buried.

Our Mission

To become the world's leading producer of circular hydrocarbons made from waste plastic using our breakthrough technology **Hydro-PRT®**.

Our ambition is to have 1,500,000 tonnes of annual global advanced recycling capacity in operation or development by 2032.

Our Action

Mura Technology is:

Producing **circular hydrocarbons made from Recovered Plastic Feedstock (RPF)*** for use in the manufacture of new plastics and other materials.

Contributing to a circular economy by providing a viable recycling solution for **'unrecyclable' waste plastics**.

Offering an **alternative to incineration**, reducing CO_2 emissions and diverting plastic away from landfill.

Providing a **scalable solution** that drives demand for lower value plastic waste, enabling its elimination from the environment.

Decoupling the manufacture of plastic from fossil resources and providing a **sustainable alternative.**

Offering our commercially viable process to a worldwide market via our **exclusive Global Licensing Agreement with KBR.**

Pioneering research into CO_2 reduction efforts through **academic partnerships**.

Creating a global network across the **entire plastics recycling value chain** to further scale the **Hydro-PRT®** technology.

***Recovered Plastic Feedstock (RPF) is densified material that has been prepared for use in the Hydro-PRT® process from polyolefin rich mixed plastics, such as post-consumer flexible and rigid food packaging.**

Mura's Solution

Mura's proprietary process, **Hydro-PRT®** (Hydrothermal Plastic Recycling Technology) is an end-to-end hydrothermal liquefaction (HTL) advanced recycling process. It uses supercritical water to convert Recovered Plastic Feedstock (RPF) into circular hydrocarbon products.

These products can be used as fossil replacements in the manufacture of new plastics.

3 Key Hydro-PRT® Process Advantages

1. Scalability

Hydro-PRT® is inherently scalable as the use of supercritical water offers highly efficient, homogenous heat transfer. During the process, the supercritical water surrounds the plastic rather than heating from an external source, making significant scale-up viable. The use of supercritical water offers a source of hydrogen to saturate the broken chemical chains, with hydrogen transferring into the end products.

2. Feedstock Flexibility

Hydro-PRT® offers a much broader scope for recycling many types of plastic, including flexible and rigid multi-layered materials, currently considered 'unrecyclable' via traditional mechanical methods. It can process mixed, post-consumer plastics as the process can tolerate a limited amount of organic contaminants.

3. High Product Yields

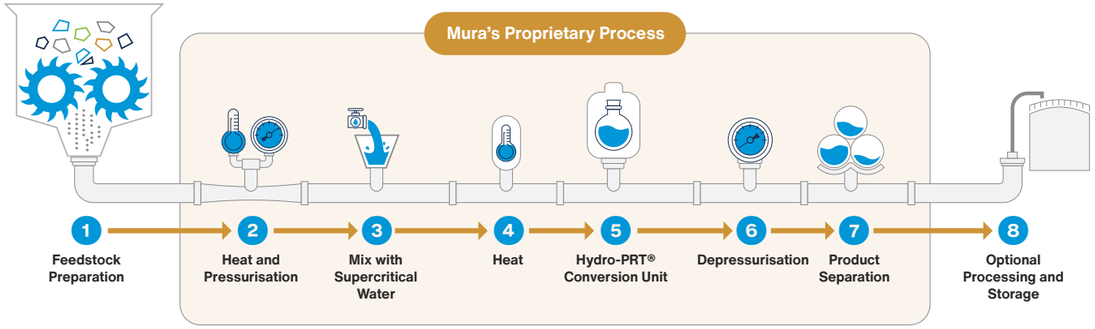
Homogeneous reaction conditions allow the cracking rate to be controlled during operation, acting as a suppressant to unwanted free radical reactions - this contributes to high yields of hydrocarbon products. Supercritical water allows for efficient heat transfer and prevents char formation.

The **Hydro-PRT®** Process

To begin the process, Recovered Plastic Feedstock (RPF) is given a final check for contaminants and fed into an extruder.

The RPF is then heated and pressurised, mixed with supercritical water and fed into the conversion unit, where the supercritical water acts as 'molecular scissors' to break down the carbon bonds in the plastic, donating hydrogen to create shorter-chain hydrocarbons. The use of hydrogen in the process gives the end products increased stability.

Following conversion, the mix is depressurised and separated into discrete circular hydrocarbon products. These products are then stored for transport to our customers.



Scan to watch a short video about our process, using baled material:

Target Feedstocks

Target feedstocks for **Hydro-PRT®** are polyolefin rich mixed plastics, such as post-consumer flexible and rigid food packaging.

Target Feedstocks:

- **Hydro-PRT®** targets polyolefin-rich, mixed plastic waste streams.
- This includes contaminated, post-consumer flexible and rigid packaging
- Spray coated or micro foil metalised films

Sourced from:

- End of life, post-consumer plastics destined for incineration or landfill
- Reject materials from mechanical recycling
- Residues from the mechanical sorting of household recyclables
- Films, nets and ropes from agricultural, aquaculture and fishing industries

Mura's Hydro-PRT® process will:

- Complement existing mechanical processes and infrastructure - not compete with them
- Recycle flexible, multi-layered materials that cannot be processed via traditional mechanical means
- Divert waste plastics that would otherwise go to landfill, incineration or leak into the environment
- Reduce the need to export plastic waste
- Process mixed plastic waste streams (films and rigids processed together)
- Accept post-consumer plastic contaminated with limited amounts of organic residues and paper

Output Hydrocarbon Products

Hydro-PRT® creates a range of valuable circular hydrocarbon products – each can be tailored to meet customer requirements and conditions. These products will be sold on long-term contracts.

Due to a flexible plant design, end products can be tailored to meet customer demand. The first **Hydro-PRT®** facility in Wilton, Teesside, Northeast England is producing:

Circular Liquid Hydrocarbons

Steam cracker and refinery feedstock for use in the manufacture of circular plastics.

Circular Heavy Residual Oil

This heavy product can be used as a replacement for bitumen in roads and roofing material.

Light Vapour Products

Cracker feedstock for use in the manufacture of circular plastics.

All products are REACH[12] registered.

12. Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Mura in the Plastics Recycling Value Chain

Plastic Value Chain Partnerships

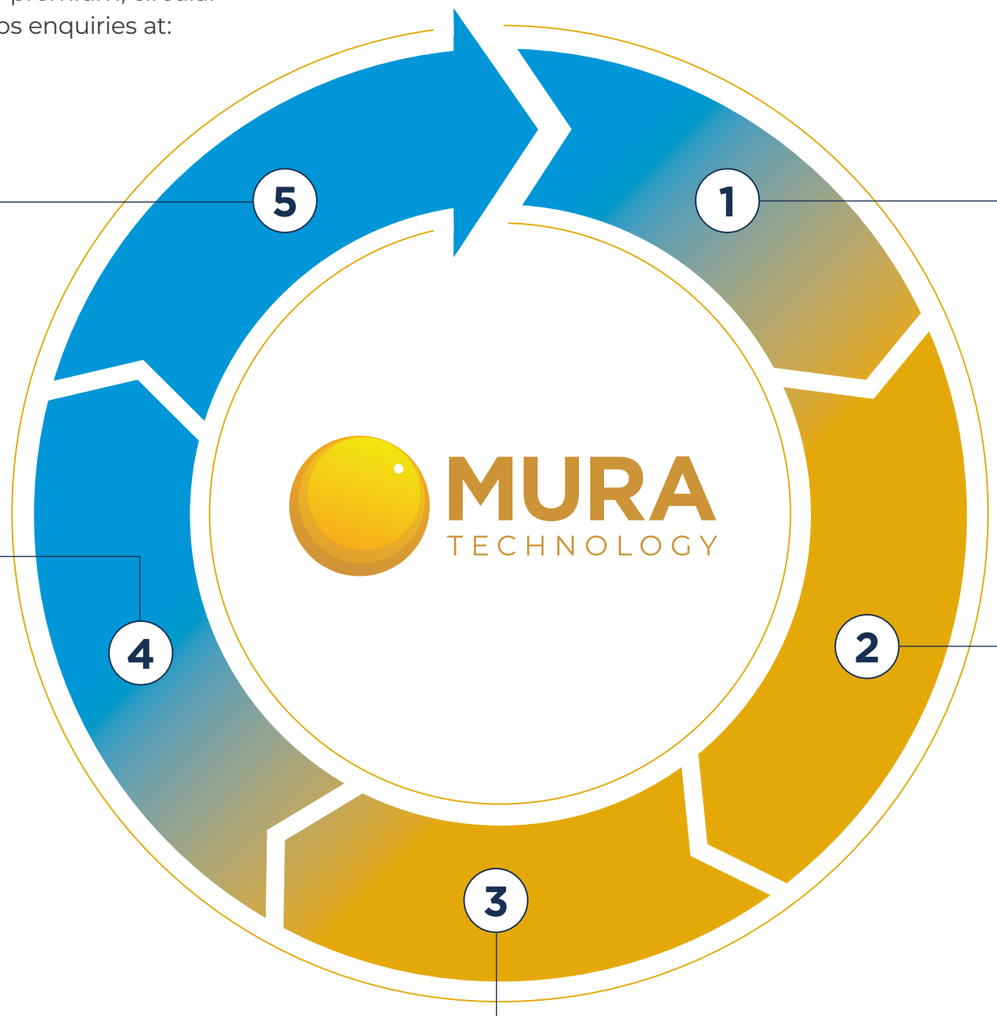
Scaling of Mura's **Hydro-PRT®** process provides partnership opportunities to all sectors within the plastics value chain, offering a viable recycling route for hard-to-recycle plastic waste and access to premium, circular hydrocarbons. Mura actively encourages partnerships enquiries at: **enquiries@muratechnology.com**

5. Converters

Mura's **Hydro-PRT®** process delivers premium, circular hydrocarbons into the plastics market - giving converters a reliable, drop-in solution for producing recycled-content products across a range of sensitive applications. enabling the fulfilment of commitments and satisfying regulatory demands.

4. Resin Producers

Low carbon, circular hydrocarbons from **Hydro-PRT®** offer a direct route to decarbonisation and fossil feedstock decoupling, dropping into existing petrochemical production without compromising performance.



1. Consumer Brands

Mura places circular hydrocarbons onto the market, enabling increased recycled content in new plastics for brands, including contact-sensitive materials – a strong consumer message. **Hydro-PRT®** provides a low carbon recycling route for hard-to-recycle plastics without the need for costly redesign of packaging, also enabling net zero and recycled content pledges to be met.

2. Waste Management & Aggregation

Mura provides a cost-competitive route for waste management companies to direct end-of-life plastics that are not considered technically or economically recyclable into a viable, low carbon recycling route. Mura drives demand for lower value plastic waste, providing an additional revenue stream for aggregators.

3. Converters / Recyclers – Mura Technology

Mura's process, **Hydro-PRT®**, recycles contaminated, multi-layered materials considered hard-to-recycle into low carbon, circular hydrocarbons for use in circular plastics. An additional integrated upgrading step can further maximise yields, increasing the proportion of higher value hydrocarbons generated from plastic waste.

Global Development

Our global technology roll-out plan is underway, with the first commercial scale **Hydro-PRT®** facilities commencing operations in 2026.

Mura Wilton, United Kingdom

Mura's first facility to utilise **Hydro-PRT®** is Mura Wilton, located in Teesside, Northeast England. This first facility, producing 20kta of circular hydrocarbons, will be operational in 2026. Mura Wilton is a wholly owned subsidiary of Mura Technology. See pages 18 and 19 for further details.

Additional Facilities, United Kingdom

The UK plays a pivotal role in Mura's global growth strategy, driven by strong demand from the European petrochemical sector and bolstered by supportive legislation and government initiatives accelerating the shift towards a circular plastics economy. Mura is looking to develop additional **Hydro-PRT®** facilities, and with a well-established petrochemical infrastructure and several suitable locations already identified, the UK is ideally positioned to host, leading the way in closing the loop on plastic.

Licensed Facilities

Via our exclusive Global Licensing Partner, preferred engineering partner and investor KBR, Mura offer licenses to the **Hydro-PRT®** technology. Facilities built under license by Mitsubishi Chemical Corporation (MCC) in Ibaraki, Japan and by LG Chem in Dangjin, South Korea will commence operations in 2026. See pages 20 and 21 for more details.

MITSUBISHI CHEMICAL LG Chem

Singapore, Southeast Asia

In August 2025, Mura announced plans to develop a 50kta facility in Singapore. The new facility will be located on Jurong Island within the Singapore Essential Chemicals Complex (SECC) , where Mura has recently secured rights to a site from PCS Pte. Ltd. (PCS). Mura has also opened a Singapore office to support this strategic expansion. The site's location within PCS's SECC offers significant integrational advantages, including direct pipeline connections to potential customers, proximity to necessary utilities, and access to skilled personnel.

Mura expects to secure a high proportion of RPF from Singapore as feedstock for its facility. This will be supplemented with imports of RPF from regional sources, supporting Southeast Asia's ambitions for plastic circularity and reducing single-use plastic pollution in the region.

Mura Developed Facility Licensed Facility Under Review for Development by Mura

Mura Wilton

Our first facility to use **Hydro-PRT®**, Mura Wilton, is set to become operational in 2026. Based in Teesside, Northeast England, Mura Wilton is located at Wilton International, an established industrial site, and will produce 20kta of circular hydrocarbons. In August 2022, Mura awarded px Group a 10 year operations and maintenance contract.

Location Benefits

- Wilton remains an important petrochemical industrial base
- Access to transportation infrastructure
- Skilled local workforce due to area's industrial heritage

Local Economic Benefits

- This first site brought over 150 jobs during the construction phase and maintains 50-60 direct employment jobs related to commercial operation
- High value employment
- Local partners and resource to help with construction and operations
- Positive national media coverage for the Northeast and backing from local politicians
- Increased export trade
- Potential for site rejuvenation, creating a hub of new industry through innovative processes and technology

Funding

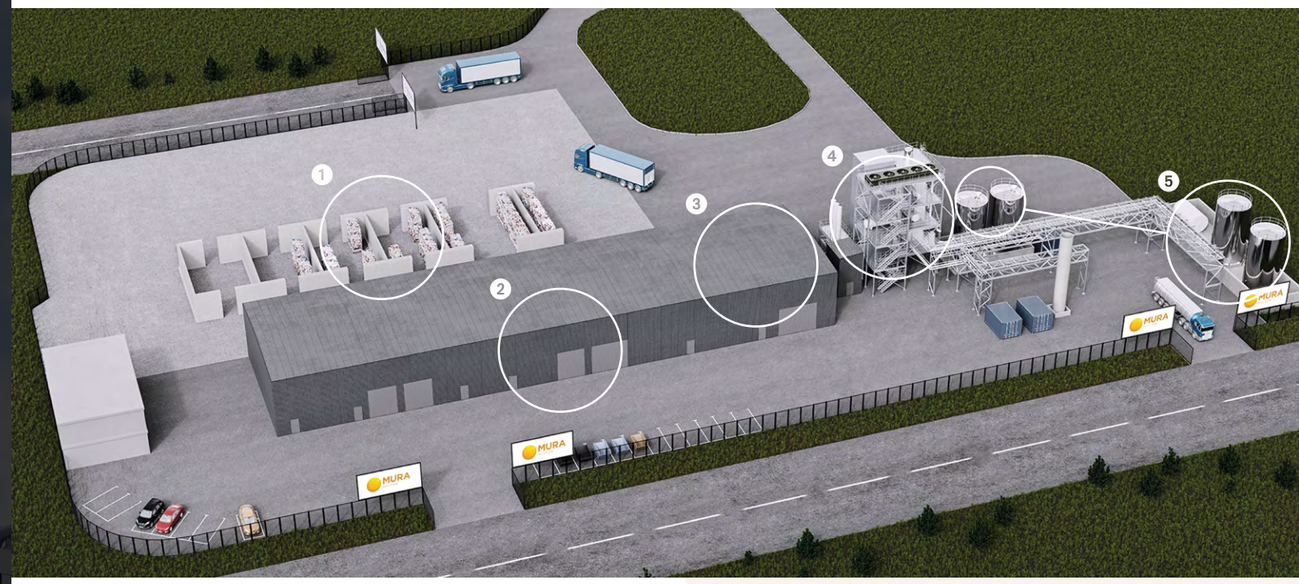
In October 2020, Mura Wilton was awarded a £4.42 million grant from Innovate UK, the UK's innovation agency, to build this world's first commercial-scale **Hydro-PRT®** advanced recycling plant. Focussing on the UK Government's priority to drive economic growth through new technology, the award came via the Industrial Strategy Challenge Fund's Smart Sustainable Plastic Packaging programme, recognising the commercial-scale feasibility of the technology and potential of the advanced recycling sector to help meet ambitious plastic recycling targets.

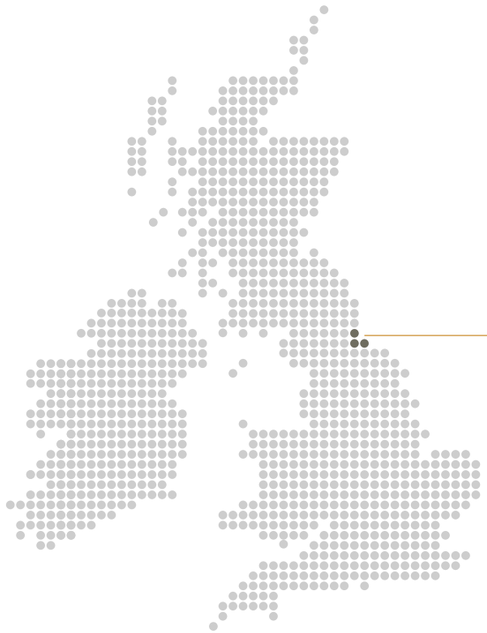
The award of the Innovate UK funding demonstrates support for the industry and confirms alignment with the UK Government targets on increasing recycling capacity.

New UK regulations to help meet these targets include:

- **The Plastic Packaging Tax (PPT)**, which came into force in 2022 and applies to finished plastic packaging manufactured in or imported into the UK, which must contain at least 30% recycled plastic to avoid the tax
- **Simpler Recycling**, a policy which mandates that from March 2027, plastic film packaging and plastic bags will need to be collected within the plastic recycling stream – which will require a viable recycling route

Mura is well placed to help global companies in the worldwide plastics supply chain meet their Governmental regulations on plastic waste reduction and efforts towards developing a circular economy.





1. Feedstock Storage
2. Feedstock Preparation Stage
3. Prepared Plastic Feed System
4. Hydro-PRT® Core Technology
5. End Product Storage

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Redcar
United Kingdom
TS10 4RF

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Phone: 01642 438 280

Exclusive Licensing and Engineering Agreement with KBR

At the start of 2021, Mura partnered with KBR, a leading international provider of science, technology and engineering solutions, to support the global roll-out of **Hydro-PRT®** and the identification of new markets for the technology. KBR will provide licenses, engineering, technical services and modules to develop sites for global clients.

KBR's position at the forefront in the provision of innovative, game-changing technologies offers Mura Technology world-class development opportunities and validates the technical capabilities of the **Hydro-PRT®** process.

"We are extremely excited to announce that KBR will offer this innovative plastic recycling process for licence to clients so they can efficiently recycle end-of-life waste plastic and convert it into a reusable feedstock for plastics. This technology aligns with KBR's commitment to sustainability by reducing lifecycle greenhouse gas emissions and the volume of waste that enters landfills and the environment, whilst contributing to the growth of the plastic circular economy."

Hari Ravindran, Senior Vice President and Global Head of Technology Solutions, KBR

"We want to change the way the world thinks about plastics - not as a waste product, but as a valuable resource - using our technology to forge a sustainable future. KBR is the natural choice for us to achieve this vision - a global leader with the capabilities to support the licensing of our technology around the world."

Dr Steve Mahon, CEO, Mura Technology

For Licensing and Engineering, please contact:

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www.kbr.com

KBR: Exclusive Licensing and Engineering Agreement

MITSUBISHI CHEMICAL

Ibaraki, Japan
20kta, operational H1 2026

In June 2021, Mura and KBR were delighted to announce the first agreement for licensing and engineering with Mitsubishi Chemical Corporation (MCC), which plans to deploy **Hydro-PRT®** in Japan to reduce plastic waste an create a circular plastics economy.

This first project, based at MCC's Ibaraki plant, was inaugurated in June 2025 and is now in the commissioning phase, expected to commence commercial operations in H1 2026. It has the capacity to process 20kta of plastic waste with MCC studying the possibility of increasing capacity in the future. The facility has started operations processing post-industrial plastic waste and will transition to Recovered Plastic Feedstock (RPF) from post-commercial and post-consumer sources. With 8 million tonnes of RPF arising annually in Japan, MCC will seek to extend the scope of the project and target these plastics as raw materials.

LG Chem

Dangjin, South Korea
20kta, operational H1 2026

The partnership and license sale between Mura, KBR and leading global chemical producer LG Chem was announced in January 2022. This partnership supports the continued roll-out of **Hydro-PRT®**, with this first project in South Korea to initially recycle up to 25kta of RPF and due to begin commercial operations in H1 2026.

South Korea is a crucial market for deploying **Hydro-PRT®**, being one of the world's leaders in plastic consumption per capita.

Partnerships

Partnerships

Dow

In April 2021, Mura Technology announced its partnership with Dow. The collaboration supports the rapid scaling of Mura's **Hydro-PRT**® process, whilst the deal marks an important step in Dow's commitment to advance a circular economy for plastics and keep plastic waste from entering the environment.

The partnership combines Dow's materials science capabilities, global scale and financial resources with Mura's leading technology, to produce circular feedstocks, for conversion into the recycled plastics that consumers and global brands are increasingly seeking. Dow will play an important role as a global manufacturer of plastic, proving that Mura's solution can meet both the sustainability and performance needs of the industry and that the products made via **Hydro-PRT**® can be employed at scale.

In addition to investing in Mura, Dow will act as offtaker for some of the recycled hydrocarbon products produced at Mura Wilton, Mura's first **Hydro-PRT**® site, currently under construction in the UK (see page 18). Dow will use these materials to develop new plastic for applications such as food packaging and other packaging products to be re-circulated into global supply chains, contributing to a circular plastics economy.

"At Dow, we see advanced recycling as a critical enabler of a more circular future, and our work with Mura is an important part of that vision. Together, we're creating real pathways to transform plastic waste into valuable resources and support customers and brands in achieving their circularity goals. This kind of collaboration is how circular plastics move from ambition to reality – at the scale the world needs.

Stephanie Kalil, Commercial Vice President, EMEA, Packaging & Specialty Plastics, Dow

www.dow.com

igus GmbH

Mura partnered with igus GmbH. in 2020 via a strategic investment to support roll-out of Mura's **Hydro-PRT**® process. The family-run company based in Cologne, Germany, are global leaders in developing and producing motion plastics and have sustainability at the core.

"This could be the solution the plastics industry has been crying out for. Plastic, as a material, has many great properties and applications which make modern life possible – but it must be sustainable. We're proud to be partnering with Mura to pioneer truly recycled plastic that doesn't compromise on quality, ultimately resulting in a cleaner, greener and thriving natural environment."

Frank Blase, CEO, Igus

"We are delighted to partner with igus. Their global network and investment will accelerate our ability to deploy Mura's recycling capacity. Igus are our first strategic investor and we applaud the leadership they have shown to support Mura and in their own recycling initiatives."

Dr Steve Mahon, CEO, Mura Technology

www.igus.eu

CPChem

In December 2021, Mura partnered with CPChem, following an equity investment from their subsidiary, Six Pines Investments LLC. This new agreement constitutes a major development in the advanced recycling market as Mura aims to be the world's largest producer of circular hydrocarbons, whilst CPChem has the goal of manufacturing at least 500,000 tons per year of circular polyethylene by 2030.

"CPChem and Mura believe waste plastics should not end up in landfills, as they can be circularly recycled into new plastics for use across a wide array of applications. CPChem believes that solving the global problem of plastic waste will require innovation, investment, and cooperation throughout the entire plastics value chain. Six Pines' investment advances CPChem's ambition to reduce waste and reuse as a valuable resource, accelerating change for a sustainable future."

Benny Mermans, Vice President of Sustainability at CP Chem

www.cpchem.com

Positive Environmental Impacts

Plastic pollution and global warming are urgent environmental challenges. Mura strives to address both with **Hydro-PRT®**, contributing to a circular economy for plastic, whilst helping to decarbonise the plastics industry and eliminate global plastic pollution.

Hydro-PRT® diverts plastic waste away from landfill and incineration and into recycling, reducing plastic pollution of the environment.

The process increases the scope of recyclable plastics, including contaminated, multi-layered flexible and rigid plastic packaging.

Hydro-PRT® exhibits substantial CO_2 savings when compared to incineration – supporting net zero ambitions.

Hydro-PRT® reduces the demand for feedstocks derived from fossil fuels by creating circular hydrocarbons for use in the manufacture of new plastics.

Minimal waste is produced - impurities in the plastic feedstock (colourants, additives etc.) generally fall into the Circular Heavy Residual Oil for use in asphalt.

Global roll-out of **Hydro-PRT®** will assist countries in creating a circular economy and recycle the plastic they consume.

Life Cycle Assessments

A **carbon footprint** is the total amount of greenhouse gases that are generated by our actions – from the manufacture to ultimate disposal of the materials we use in everyday life.

Greenhouse gases in the atmosphere trap heat and contribute to climate change.

Carbon dioxide, or **CO_2**, is the primary greenhouse gas emitted by human activity.

A Life Cycle Assessment (LCA) is a useful tool to understand the environmental impacts of a process or product. Independent LCAs of Mura's advanced recycling process, **Hydro-PRT®**, have been performed to better evaluate the impacts, including the carbon footprint of the process, in support of Mura's sustainable pathway to net zero.

The LCAs also support optimisation of Mura's operations, including potential improvements to energy and resource management to further reduce environmental impacts.

Life Cycle Assessments

WMG at the University Of Warwick

The first independent LCA of **Hydro-PRT®** by WMG, funded through Innovate UK's Smart Sustainable Plastic Packaging challenge (SSPP) focused on Mura's first commercial-scale site in Wilton, Teesside, showing:

- A significant **c.80% reduction in Global Warming Potential** (GWP) when compared to Energy from Waste (incineration), a saving of over 1.8 t CO_2 eq GWP per tonne of plastic processed.
- Further updates to this first report show that **Hydro-PRT®** produces circular naphtha products at **lower GWP than virgin fossil equivalents** (UK and EU grid comparison) and reduces EU naphtha production GWP by 55%. This could be further improved by using renewable energy to supply the first plant in Wilton, reducing GWP by c.60%.
- A new WMG study evaluated the carbon impacts of a combination of waste management approaches and found that combining advanced recycling with mechanical recycling resulted in a **42% carbon emissions saving** when compared to the existing model of incineration and mechanical recycling, making incineration of plastic waste no longer the preferred option.

Read the first report

WMG
THE UNIVERSITY OF WARWICK

European Commission's Joint Research Centre

Conducted by the European Commission's Joint Research Centre (JRC) and Spanish consultancy AIMPLAS, this study compared data from Mura's hydrothermal process and several unnamed pyrolysis companies, showing that **Hydro-PRT®**:

- Has a **50% lower Global Warming Potential than the pyrolysis processes studied**, making it the leading technology in the field for carbon emissions reductions.
- Has a **>60% lower carbon GWP when compared to Energy from Waste** (incineration), consistent with the WMG paper released in March 2023.
- Is the best performing across mechanical, advanced and energy recovery for **resource use, an indication of circularity**.

Read the full report

European Commission
JOINT RESEARCH CENTRE

80% Carbon Emissions

saving when compared to incinerating plastic.

Leading Technology

in sector with a 50% lower GWP than pyrolysis data reviewed.

A Cleaner Equivalent

to fossil naptha. **Hydro-PRT®** naphtha has a lower GWP when compared with fossil naphtha.

Impactful Partner to Mechanical Recycling

with advanced and mechanical combined saving 42% carbon emissions when compared to incineration and mechanical recycling.

Best Performing

for resource use, across mechanical recycling, advanced recyclng and energy recovery – an indication of circularity.

MURA
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