



The Future of Sustainable Advanced  
Plastic Recycling with





---

# Contents

- 4 – 7** Our Global Mission, Ambition & Action
- 8** The Plastic Problem
- 9** The Economic Opportunity
- 10 – 13** Mura's Solution – **HydroPRS™**
- 14 – 17** Global Development
- 18 – 19** Mura in the Plastics Recycling Value Chain
- 20 – 24** Partnerships
- 25** Creating a Circular Economy
- 26 – 29** Advantages & Impacts

# 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 recycled hydrocarbons from waste plastic using our breakthrough technology.

Our Ambition is to have  
1,000,000 tonnes of global  
plastic recycling capacity in  
operation or development  
within this decade.



# Our Action

## Mura Technology is:



Producing **100% recycled, fossil-replacement feedstocks** from waste plastic for the manufacture of new plastics and other materials



Creating a **truly circular economy** – with no limit to the number of times plastics can be recycled using the **HydroPRS™** process



Offering a legitimate **alternative to incineration**, reducing CO<sub>2</sub> emissions and diverting plastic away from landfill



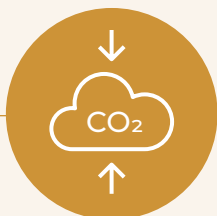
Providing a **scalable solution** to eliminate plastic waste - including plastics that can't be recycled currently



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



Offering this commercially viable process to a worldwide market via our **exclusive licensing agreement with KBR**



Sharing information on CO<sub>2</sub> reduction and research into the **positive environmental impacts of HydroPRS™**



Developing **partnerships** across the entire plastics recycling value chain to further the global roll out of **HydroPRS™**



Scan to watch a short overview of Mura Technology.

# The Plastic Problem



-  Over 350 million tonnes of plastic are produced globally every year<sup>1</sup>, with half becoming waste in less than a year<sup>2</sup>.
-  Globally, only 9% of all plastic produced has ever been recycled. The rest has been sent to incineration or landfill<sup>3</sup>.
-  Annual worldwide plastic production creates an estimated 390m tonnes of CO<sub>2</sub> every year<sup>4</sup> - equivalent to over 172million UK cars<sup>5</sup>.
-  The planet is on course to see 12 billion tonnes of plastic in landfills and the environment by 2050<sup>6</sup>.
-  Approximately 8 million tonnes of waste plastic enters the oceans each year<sup>7</sup>.

Plastic has many benefits - it is lightweight, flexible and hygienic - which has allowed for huge advances in medicine, food preservation, infrastructure and technology. Our global reliance on plastic has never been more obviously highlighted than during the global pandemic of 2020 and onwards.

The lack of recognition of plastic as a re-useable material, however, is leading to environmental damage, as much 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 process all types of plastic – in reality, many types of plastic (such as flexible, multi-layer films) are directed towards EfW (Energy from Waste / incineration), sent to landfill or exported to countries that do not have adequate recycling infrastructure.

**A new solution to solve the increasing plastic problem has never been more pressing.**

1. Plastics: The Facts - Plastics Europe (2018)  
2. Key Facts on Plastic Pollution - Plastic Oceans UK (2019)  
3. Production, Use and Fate of All Plastics Ever Made. Science Advances Research Article. Asc. Adv. 2017; R. Geyer, J.R. Jambeck, K.L Law  
4. The New Plastics Economy: Catalysing Action - The Ellen McArthur Foundation (2017)

5. Average CO2 Emissions of Newly Registered Cars, Great Britain – UK Government (2015)  
6. The New Plastics Economy: Catalysing Action - The Ellen McArthur Foundation (2017)  
7. The New Plastics Economy: Catalysing Action - The Ellen McArthur Foundation (2017)



# The Economic Opportunity

The development of a circular economy for plastic is key to the protection of the natural environment from plastic pollution and carbon emissions. To enable sustainable and ongoing protection, Mura is intending to capture the lost resource of plastic waste, valued at an estimated \$120billion (USD) annually<sup>8</sup>.

The **Market Value of global plastics** is estimated to reach

**\$754billion**  
per year by 2025<sup>9</sup>

**Oil demand** for plastic production is

**9 million**  
barrels per day, rising to  
23 million barrels day by 2060<sup>10</sup>

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

**\$180 billion**  
per year<sup>11</sup>

**Only**

**5%**

of material value from **plastic packaging collected globally** for recycling is retained in subsequent use<sup>12</sup>

**\$120billion (USD)**  
is lost through plastic waste annually<sup>13</sup>

Rather than continue to extract fossil fuels to fulfil demand for new plastic manufacture, Mura's focus is on recovering and recycling all waste plastic, converting it back into liquid hydrocarbon products for the manufacture of new plastics and other materials, helping to create a circular economy.

8. World Economic Forum (2018)

9. Statista (2019)

10. Statista (2019)

11. Mura Technology (2021), based on Oil Demand for Plastics Production Worldwide - Statista (2019)

12. The New Plastics Economy: Catalysing Action - The Ellen McArthur Foundation (2017)

13. World Economic Forum (2018)

Mura's Solution



Mura's proprietary process, **HydroPRS™** (Hydrothermal Plastic Recycling System) is an end-to-end advanced recycling process that uses supercritical steam to convert flexible and multi-layered waste plastics into industry-ready, liquid hydrocarbon products.

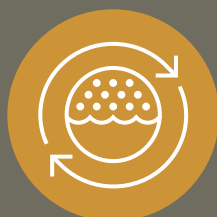
These products can be used as fossil-replacement feedstocks in the manufacture of new, virgin-grade plastics and other materials.

### 3 Key HydroPRS™ Process Advantages



#### Scalability

**HydroPRS™** is inherently scalable - the use of supercritical water offers highly efficient, homogenous heat transfer – during the process, the supercritical steam surrounds the plastic rather than heating from an external source, making scale-up a simple process. The use of supercritical water offers a source of hydrogen to saturate the broken chemical chains, with hydrogen transferring into the end products.



#### Plastic Scope

**HydroPRS™** offers a much higher scope for recycling all major types of plastic, including flexible and rigid multi-layered materials, currently considered 'unrecyclable' via traditional mechanical methods. It can process contaminated and mixed, post-consumer plastics as the process is insensitive to organic contaminants such as paper, cardboard and organic matter (e.g. food residue), meaning a wider range of recyclable waste plastics.



#### High Product Yields

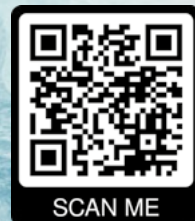
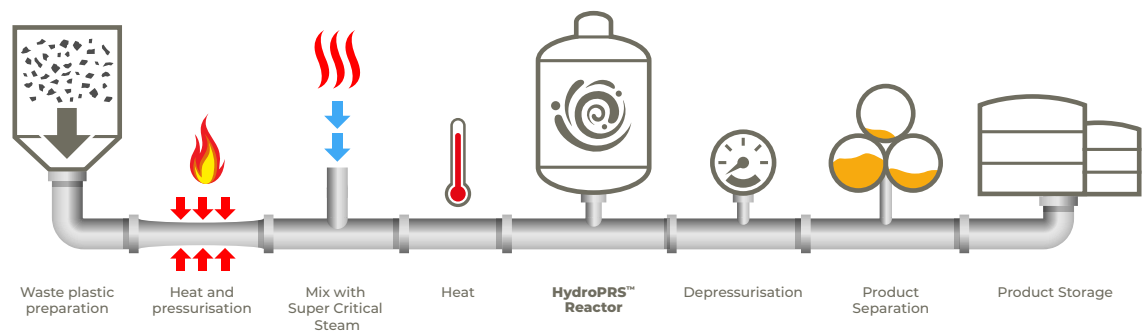
Homogeneous reaction conditions allow the cracking rate to be controlled during operation, acting as a suppressant to unwanted free radical reactions - this contributes to high yields of hydrocarbon products. The use of supercritical water gives a means of rapid heating that avoids excessive temperatures that could lead to char formation.

## The HydroPRS™ Process

To begin the process, mixed waste plastics are shredded and unwanted contaminants such as glass, grit, metal and stones are removed.

The mix is then heated and pressurized, mixed with supercritical steam and fed into the reactor, 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 depressurized and separated into liquid hydrocarbon products. These products are then stored for transport to our customers.



Scan to watch a short video about our process.

# Target Feedstocks

Target feedstocks for **HydroPRS™** are primarily contaminated, post-consumer, multi-layer plastic, such as flexible films and rigid trays.

## Target Feedstocks:

- **HydroPRS™** can process mixed plastic mixed waste streams
- This includes dirty, post-consumer flexible and rigid packaging
- Laminated and metalised films can be processed

## Sourced from:

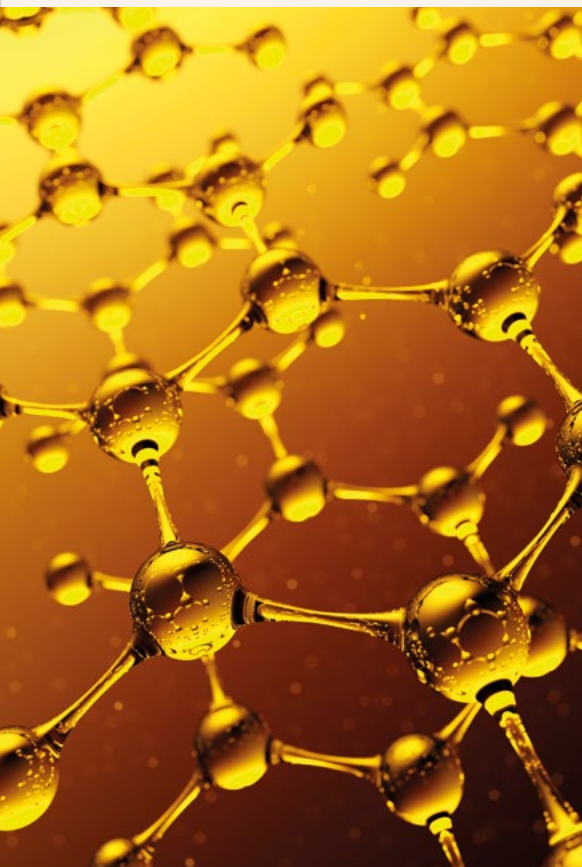
- End of life, post-consumer plastics destined for incineration or landfill
- Reject materials from mechanical recycling
- Residues from the mechanical sorting of household recyclables
- Films, nets and ropes from agricultural, aquaculture and fishing

## Mura's HydroPRS™ process will:

- Complement existing mechanical processes and infrastructure - not compete with them
- Recycle the 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 to developing countries
- Process mixed plastic waste streams (films and rigids processed together)
- Accept post-consumer plastic contaminated with organic residues and paper

# Output Hydrocarbon Products

**HydroPRS™** creates a range of valuable hydrocarbon products – each can be tailored to meet market requirements and conditions. These products are expected to be sold on long-term contracts.



Due to a flexible plant design, end products can be tailored to meet customer demand. The initial **HydroPRS™** plant in Teesside, Northeast England is producing:



## **Naphtha**

Recycled naphtha can be used to replace fossil naphtha as a feedstock to make new plastics.



## **Distillate Gas Oil**

Distillate Gas Oil can be used to replace fossil naphtha as a feedstock to make new plastics.



## **Heavy Gas Oil**

This product can be used as a feedstock for a range of petrochemical processes, including the production of plastics, chemicals, waxes and oils.



## **Heavy Wax Residue**

This high-boiling hydrocarbon product can be used as an additive in the production of bitumen or asphalt, for use in sustainable road building.

All products are REACH<sup>14</sup> registered.

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



---

# Global Development

Our global technology roll-out plan is underway, with the first commercial-scale recycling site set to open mid-2024.

## **ReNew ELP, United Kingdom**

The first site to utilise **HydroPRS™** is ReNew ELP in Teesside, Northeast England. This first facility will produce 20,000 tonnes of recycled, liquid hydrocarbons annually and is expected to be operational by mid-2024. The site has capacity to expand to over three times this initial size. ReNew ELP is a wholly owned subsidiary of Mura Technology. See page 16 for further details.

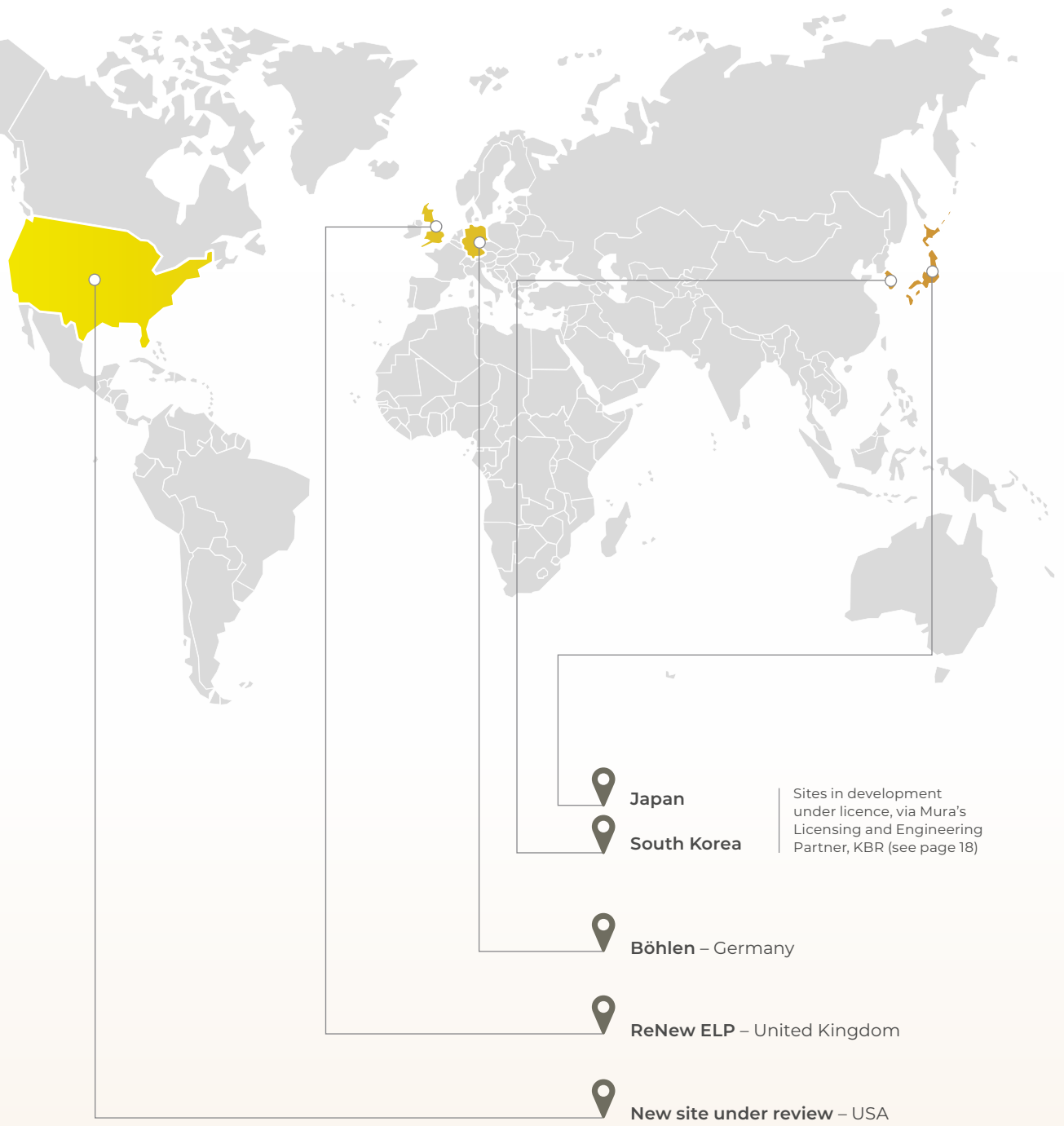
## **Europe**

In September 2022, Mura Technology and Dow announced plans to construct a new facility at Dow's Böhlen site in Germany – helping to rapidly scale the advanced recycling of plastics. This is the first advanced recycling site to be based at a Dow site and has a projected production capacity of 100,000 tonnes of recycled hydrocarbons annually.

The German chemical industry benefits from good infrastructure through integrated industrial sites, called chemparks, which house a high concentration of chemical industries and feedstock sorting facilities. Mura is developing feedstock supply, including discussions with incinerators to divert residual waste plastics into recycling.

## **USA**

Mura is reviewing a number of new locations for construction of its first US site, with focus on establishing the project in an area with a strong public focus on recycling.



# ReNew ELP

The first site to use the **HydroPRS™** process is under construction by ReNew ELP, a subsidiary of Mura Technology, in Teesside, North East England. This 20,000 tonne per annum capacity recycling site is located at Wilton International, an established industrial site with readily available utilities and potential for laboratory, scale-up and pilot facilities.

The site will produce 20,000 tonnes of recycled, liquid hydrocarbons annually and is expected to be operational in early 2024. The site has capacity to expand to over three times this initial size.

ReNew ELP has appointed Wood PLC, the global consulting and engineering company, as its Engineering, Procurement and Construction contractor (EPC) on the project and have awarded a 10 year operations and maintenance contract to px Group.

## Location Benefits

- Key companies in the petrochemical industry based at Wilton
- Access to established freeport and transport links
- Skilled local workforce due to area's industrial heritage

## Local Economic Benefits

- The first site will bring up to 150 jobs during construction and 50-60 direct employment jobs related to commercial operation
- High-value employment, at an economically uncertain time
- Local partners and resource to help with construction

- Positive national media coverage for the North East and backing from local politicians
- Increased export trade
- Huge potential for site rejuvenation - creating a hub of new industry through innovative processes and bringing new technology to Teesside

## Funding

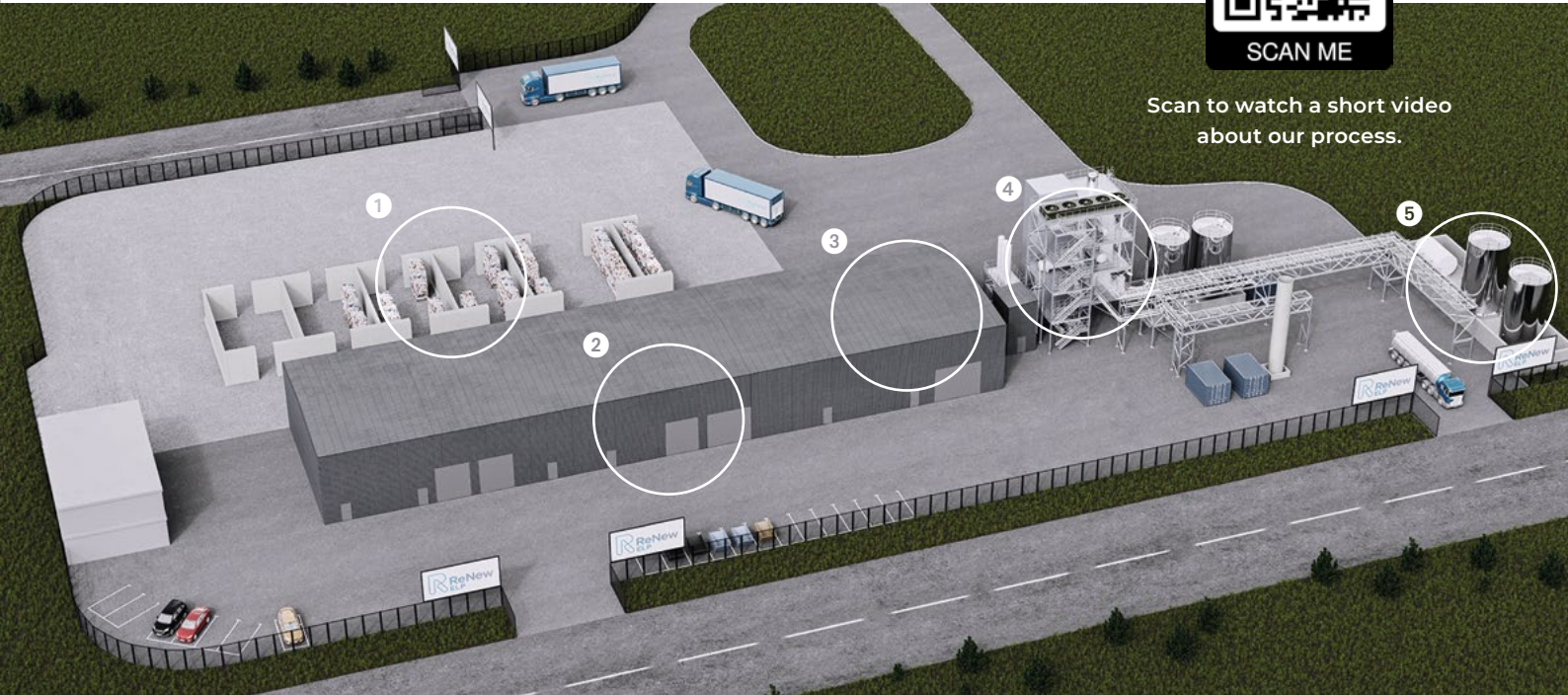
In October 2020, ReNew ELP was awarded a £4.42 million grant from Innovate UK, the UK's innovation agency, to build this world's first commercial-scale **HydroPRS™** advanced plastic recycling plant. Focussing on the UK Government's priority to drive economic growth through new technology, the award 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 UK Government targets on increasing recycling capacity.





Scan to watch a short video about our process.



- 1 Plastic Storage
- 2 Plastic Preparation
- 3 Clean Plastic Store and Feeder
- 4 HydroPRS™ Core Technology
- 5 End Product Storage

**Head Office:**  
 ReNew ELP  
 Wilton Centre  
 Redcar  
 United Kingdom  
 TS10 4RF

Email: [info@renewelp.co.uk](mailto:info@renewelp.co.uk)  
 Phone: 01642 438 280

# Exclusive Licensing and Engineering Agreement with KBR

At the start of 2021, Mura aligned with KBR, a leading international provider of science, technology and engineering solutions, to support the global roll-out of **HydroPRS™** and the identification of new markets for the technology. KBR will provide engineering and technical services as well as equipment 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 **HydroPRS™** 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 or other valuable chemicals production. 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."*

**Doug Kelly, KBR**  
President, Technology

*"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 an environmentally friendly, plastic neutral and 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:**

**Francis Tsang**  
Senior Director - Plastics  
Recycling Technology, KBR Inc.  
[francis.tsang@kbr.com](mailto:francis.tsang@kbr.com)  
[www.kbr.com](http://www.kbr.com)





A new partnership and license sale between Mura, KBR and leading global chemical producer LG Chem was announced in January 2022. This partnership will support the continued international roll-out of **HydroPRS™**, with the first project in South Korea to initially recycle up to 25,000 tonnes of plastic waste annually.

South Korea is a crucial market for deploying HydroPRS being one of the world's leaders in plastic consumption per capita. The country aims to reduce its plastic waste by 20 percent by 2025.



#### First Licence Agreement

In June 2021, Mura and KBR were delighted to announce the first Licensing and Engineering Agreement with Mitsubishi Chemical Corporation (MCC), which plans to deploy the **HydroPRS™** plastic recycling system in Japan to reduce plastic waste and create a circular plastics economy.

This first project will be based at MCC's Ibaraki plant and is expected to complete construction in 2024. It will have the capacity to process 25,000 tonnes of plastic waste per year - with MCC studying the possibility of increasing capacity in the future. Initially, the project will aim to use post-industrial plastics. With 9 million tonnes of plastic waste arising annually in Japan, MCC will seek to extend the scope of the project and target these plastics as raw materials.



#### GS Caltex

In October 2021, Mura Technology and KBR announced a new licensing agreement with GS Caltex for their planned plastics circularity project in South Korea. The 50,000 unit will convert waste plastics into raw materials for conversion into new plastics.

*"We are thrilled to support GS Caltex in their effort to integrate circularity in their value chain. The technology is positioned to play a pivotal role in KBR's effort to help our clients' ESG objectives through our sustainability platform."*

#### Doug Kelly, KBR President, Technology

*"Deploying Mura's plastics recycling technology, offered in alliance with KBR, marks one of the key factors for us at GS Caltex towards meeting our circularity targets. With this contract we move a step ahead in the sustainable and green technology sector by establishing a greener facility,"*

#### Woo Jin Choi, Vice President of GS Caltex

# Partnerships

## Dow

In April 2021, Mura Technology announced its partnership with Dow. The collaboration supports the rapid scaling of Mura's **HydroPRS™** 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 **HydroPRS™** 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 ReNew ELP, Mura's first **HydroPRS™** site, currently under construction in the UK (see page 16). Dow will use these materials to develop new, virgin-grade plastic for applications such as food packaging and other packaging products to be re-circulated into global supply chains, creating a true circular plastics economy.

*"We are delighted to offer our investment and expertise to support the development of this truly game-changing recycling process. We are committed to enacting real change to stop plastic going to waste and accelerate moves towards a more circular economy. We know achieving this goal will take major innovation and investment and we can't do it alone. That's why our partnership with Mura is so exciting and why we believe it will form a key pillar of our recycling strategy going forward."*

**Marco ten Bruggencate, EMEA  
Commercial Vice President, Packaging and  
Specialty Plastics, Dow**

*"Plastic pollution is a global challenge and our goal is to meet it head on by recapturing millions of tonnes of plastic waste every year and put them to work again as a valuable resource for the world's biggest brands. We're changing the way the world thinks about plastics – not as something to throw away, but as a product that can be used over and over again, and sustainably, without damaging our natural environment. Our partnership with Dow will help make this a reality for global brands and deliver a circular plastics economy globally within the next decade."*

**Dr Steve Mahon, CEO, Mura Technology**

[www.dow.com](http://www.dow.com)





### igus GmbH

Mura partnered with igus GmbH. in 2020 via a strategic investment to support roll-out of Mura's **HydroPRS™** 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](http://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 major development in the advanced recycling market as Mura aims to be the world's largest producer of recycled 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 Merman, Vice President of Sustainability at CP Chem**

[www.cpchem.com](http://www.cpchem.com)



# Partner with Mura

To support the development and global roll-out of this innovative process, we are establishing a collaborative group of international partners from the full plastic recycling value chain, including petrochemical companies, waste management firms and international consumer brands, to work in unison with a collective goal as part of an open, accessible and inclusive platform.

By becoming a Mura Partner, your company will:

## **Resin Producers / Petrochemical Industry**

- Have access to recycled hydrocarbon feedstock
- Decouple manufacture from fossil-derived feedstocks
- Have a place in a true circular economy

## **Consumer Brands / Manufacturers**

- Have access to recycled resin for use in plastic packaging, reducing need for costly packaging redesigns
- Be part of a truly circular solution to turn the tide on plastic waste
- Be on a pathway to Net Zero, exhibiting significant CO<sub>2</sub> savings
- Have a strong message of action to communicate to consumers

## **Waste Management**

- Have a cost-competitive alternative to incinerating waste plastic
- See a reduction in requirement to export plastic waste

## **For Partnership Enquiries, please contact:**

**Oliver Borek**  
**Global Head of Business  
Development**

Mura Technology  
[o.borek@muratechnology.com](mailto:o.borek@muratechnology.com)

# Creating a Circular Economy

It is Mura's ambition to contribute to a circular economy for plastics and a reduction in carbon emissions from the plastics industry using our innovative advanced recycling process **HydroPRS™**. Mura also aims to keep plastic as a resource in use for as long as possible, recovering and recycling it to extract value and regenerating it into new products with a **produce - consume - recycle** model - an alternative to the traditional fossil, linear model of produce - consume - dispose. Mura also aims to redirect plastic waste away from incineration and landfill and into recycling, replacing the use of fossil resource in the manufacture of plastic, in turn reducing carbon emissions and helping to strive for Net Zero.

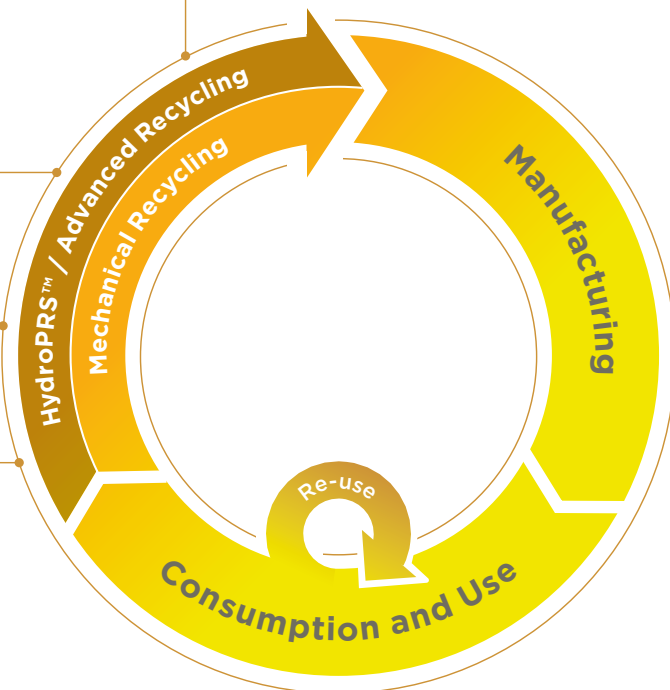
## HydroPRS™ – Closing the Circular Economy

**HydroPRS™** is a complementary process to mechanical recycling, focussing on materials that cannot be easily recycled via mechanical means.

The scope for recyclable plastics is widened to include flexible and rigid multi-layer materials.

**HydroPRS™** captures those plastics that would otherwise be sent to landfill or incineration, reducing the potential for leakage into the environment.

Mura's revolutionary process recognises the value of plastic waste, diverting it back into recycling and the economy and away from environmental pollution.



# Mura in the Plastics Recycling Value Chain

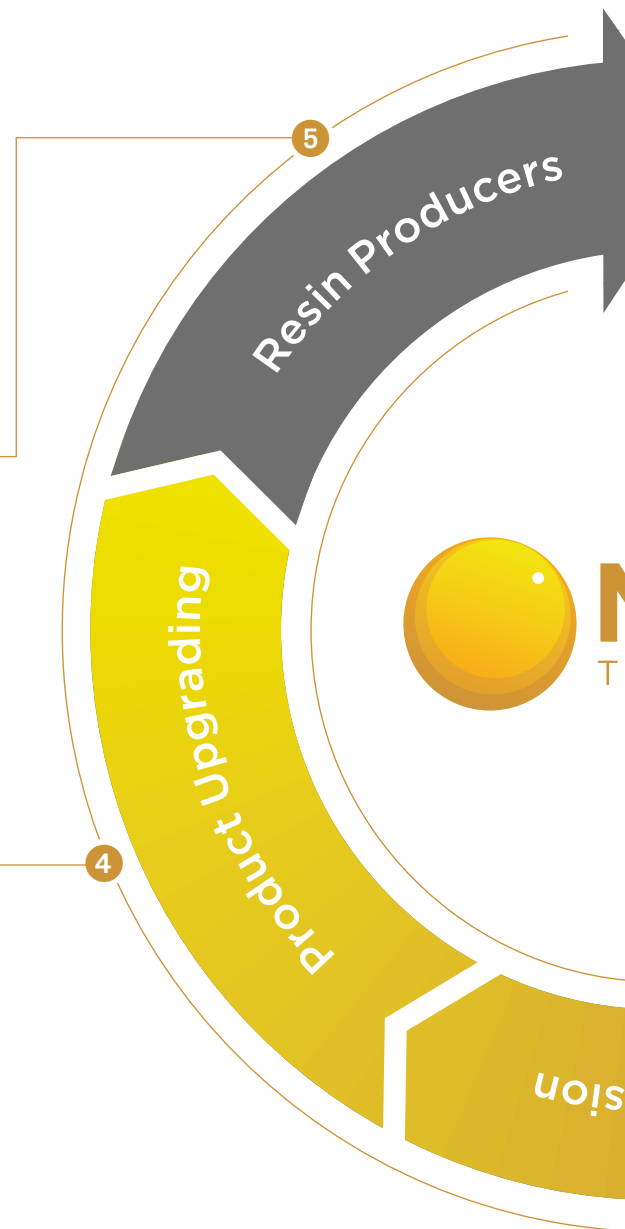
The plastics recycling value chain consists of parties who have so far mainly worked in isolation when it comes to creating advanced plastic recycling solutions. Mura intends to work closely with parties along the entire plastics recycling value chain to leverage their respective strengths and work together to accelerate the roll out of **HydroPRS™** capacity.

## 5. Resin Producers

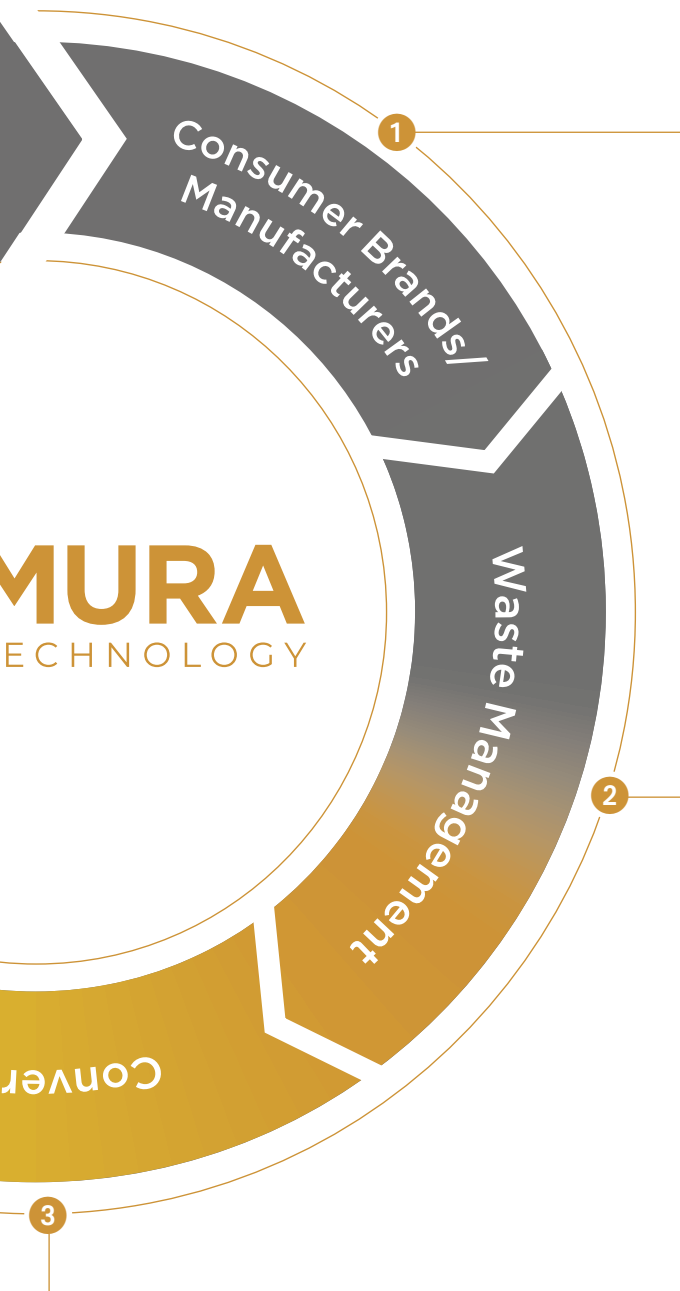
Mura can provide sustainable feedstocks from **HydroPRS™** as a replacement for fossil-derived petrochemical products for use in the manufacture of new plastics and other materials. This creates a circular feedstock that removes the reliance on fossil resource, to transition into a truly circular economy.

## 4. Product Upgrading

In January 2021, Mura formed an exclusive Global Licensing and Engineering Agreement with KBR, a leading international provider of science, technology and engineering solutions, to support the global roll-out of **HydroPRS™** (see page 20). Mura is working with KBR to provide optimised product upgrading to create maximum conversion efficiency of **HydroPRS™** feedstock to new plastics. Upgrading will be offered as an add-on option to the core process to facilitate integration into existing refineries.







**1. Consumer Brands / Manufacturers**

Sustainability and the ability to recycle products and packaging are some of the biggest problems facing consumer brands and manufacturers. Mura's **HydroPRS™** process offers access to recycled resin alongside a recycling route for problematic material without the need for costly redesign of packaging (which may reduce performance efficiency). **HydroPRS™** provides a pathway to Net Zero, with early LCA data exhibiting significant CO<sub>2</sub> savings from **HydroPRS™** products.

**2. Waste Management**

End-of-life plastics not considered recyclable via traditional mechanical means are currently sent to incineration, landfill or export. **HydroPRS™** is a cost-competitive alternative. Global recycling partners will supply Mura with high plastic content feedstock, resulting in likely contracts for long-term access to waste plastic feedstock.

**3. Converters / Recyclers – Mura Technology**

Mura's **HydroPRS™** process is a complementary solution to sit alongside the mechanical recycling industry, processing those waste plastics that cannot currently be recycled. A commercially viable alternative to incineration and landfill for end-of-life plastics, efficient roll-out is expected to result in significant amounts of advanced recycling capacity across the globe.

# Advantages and Impacts

## Sustainability and the Environment

Plastic pollution and global warming are urgent environmental challenges. Mura strives to address both with **HydroPRS™**, creating a true circular economy for plastic, whilst helping to decarbonise the petrochemical industry and eliminate global plastic pollution.



**HydroPRS™** 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 flexible, multi-layered plastics and post-consumer packaging.



**HydroPRS™** exhibits substantial CO<sub>2</sub> savings when compared to incineration – supporting Net Zero ambitions. For Life Cycle Assessments, see page 29.



**HydroPRS™** reduces the need for fossil fuel extraction by creating recycled hydrocarbons for use in the manufacture of new plastics.



Minimal waste is produced - impurities in the plastic feedstock (colourants, additives etc.) fall into the heavier hydrocarbon feedstocks.



Global roll-out of **HydroPRS™** will prevent the need for waste plastic export to developing countries.

# Creating a Circular Economy

## Life Cycle Assessments

A carbon footprint is the total amount of greenhouse gases that are generated by our actions – from the manufacture and disposal of materials to everyday life. A greenhouse gas is a gas in the Earth's atmosphere that traps heat. Carbon dioxide, or CO<sub>2</sub>, 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, **HydroPRS™**, have been performed to help better evaluate the impacts, including the carbon footprint of the process, in support of Mura's sustainability pathway to Net Zero.

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

# Life Cycle Assessments

## WMG at the University Of Warwick

This independent LCA of **HydroPRS™** by WMG, funded through Innovate UK's Smart Sustainable Plastic Packaging challenge (SSPP) and focussed on Mura's first commercial-scale site in Wilton, Teesside, showed:

- A significant **c80% reduction in the Global Warming Potential (GWP)** when compared to Energy from Waste (incineration), a saving of over 1.8 t CO<sub>2</sub> eq GWP per tonne of plastic processed.
- **Equivalent or better GWP** of recycled naphtha-based product from the **HydroPRS™** conversion process when compared to fossil equivalents. This could be further improved by using renewable energy to supply the Wilton plant, reducing GWP by c60%.



Read the full report

## 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 **HydroPRS™**:

- Has a **50% lower Global Warming Potential than the pyrolysis processes**, 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

# 80% Carbon Emissions

**saving** when compared to incinerating plastic

# Leading Technology

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

# A Cleaner Equivalent

**to fossil naphtha.** HydroPRS™ recycled naphtha has a lower GWP when compared with fossil naphtha

# Best Performing

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







[enquiries@muratechnology.com](mailto:enquiries@muratechnology.com)  
020 3848 7130

Mura Technology  
LDN:W, 3 Noble Street,  
London EC2V 7EE