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Experts In Rotomolding Materials

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Looming Environmental Regulations – Threat or Opportunity for Roto?

Martin Coles – Group CEO

NZ Gas Ban – A Wake-up Call for All Rotomoulders?

AT ISSUE

Martin Coles, Matrix Polymers

NZ Gas Ban – A Wake-up Call for All Rotomoulders?

New Zealand has proposed a ban on all new installations of natural gas. This is to reduce CO2 emissions so the country can attempt to meet its climate change targets.

This has come as quite a shock to the rotomoulding community there as it has the potential to be a major threat to the future of the process in New Zealand. There is also the uncomfortable question for the rest of the global rotomoulding industry – Is New Zealand the "canary in the mine"? the early warning signal of a new trend that will eventually affect rotomoulders in every country?

Natural gas is our industry's energy of choice – it's readily available in most places, it's an efficient form of energy and it's cheap. If bans come in and we're not going to be allowed to use it, what are the alternatives and are these practical and realistic?

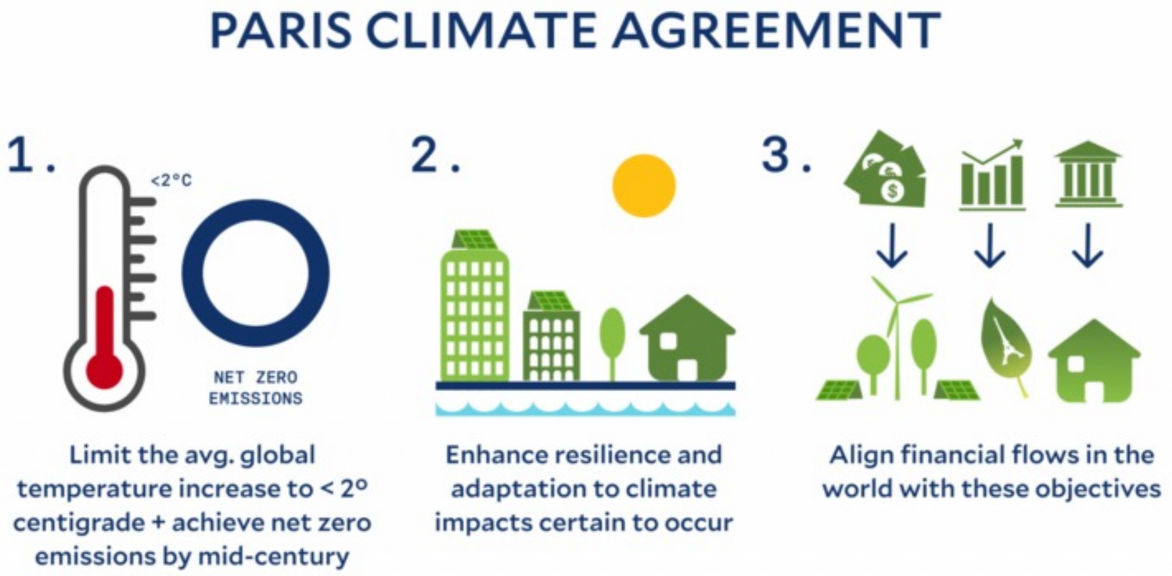
Let's look at electricity.

It seems that everything is going to be converted to electricity. So, what about rotomoulding machines? There are a few conventional rotomoulding machines that do run on electricity. Reinhardt Teknik in India built their first electric carousel for Saeplast in Iceland 10 years ago, and it's still running well. The customer already had two Reinhardt fossil-fuel powered ovens, but the fuel must be imported and is expensive and Iceland has very cheap renewable electricity generated from hydro, geothermal, and wind.

The Reinhardt machine has a 3.8 metre oven, and the

Climate Change & Carbon Dioxide Emissions

- Paris Climate Agreement – reduction of greenhouse gases to limit global temperature increase
- Politician pledges – a vote winner
- Bans and restrictions – e.g. Australian government contracts and grants require carbon emissions declarations and plan of reductions
- Carbon Tax - From 2023 to 2025 importers into Europe will need to report emissions of imports. Charges apply from 2026
- European CBAM (Carbon Border Adjustment Mechanism) – Carbon price on imports into EU **impose charges on certain imports for emissions that are released when these products are manufactured in the country of exportation**. To protect local manufacturers by making importers pay for emissions embedded in certain goods



Biggest Climate Change Related Threat to Roto is Gas

- Roto currently dependent on gas
- Gas supply security & cost of gas
- Potential gas bans (eg New Zealand proposal)
- Carbon Tax on emissions & future tax on rotomoulded products?
- Roto is very inefficient process – 5-8% of energy from gas converted into moulded product
- Roto has high carbon footprint

How Reduce Threat?

- Use less gas!
- Minimise wastage – better oven seals, more efficient burners, optimise usage of oven by loading up more parts on arm
- Use materials that need less energy to process – mould at lower Peak Internal Air Temperature (PIAT)
- Switch to alternative ‘greener’ renewable gas sources – bio-gas or bio-mass
- Supplement energy needs from other renewable sources – solar or wind
- Explore alternative methods of rotomolding without gas

Automated Rotomoulding Using Electricity & No Oven

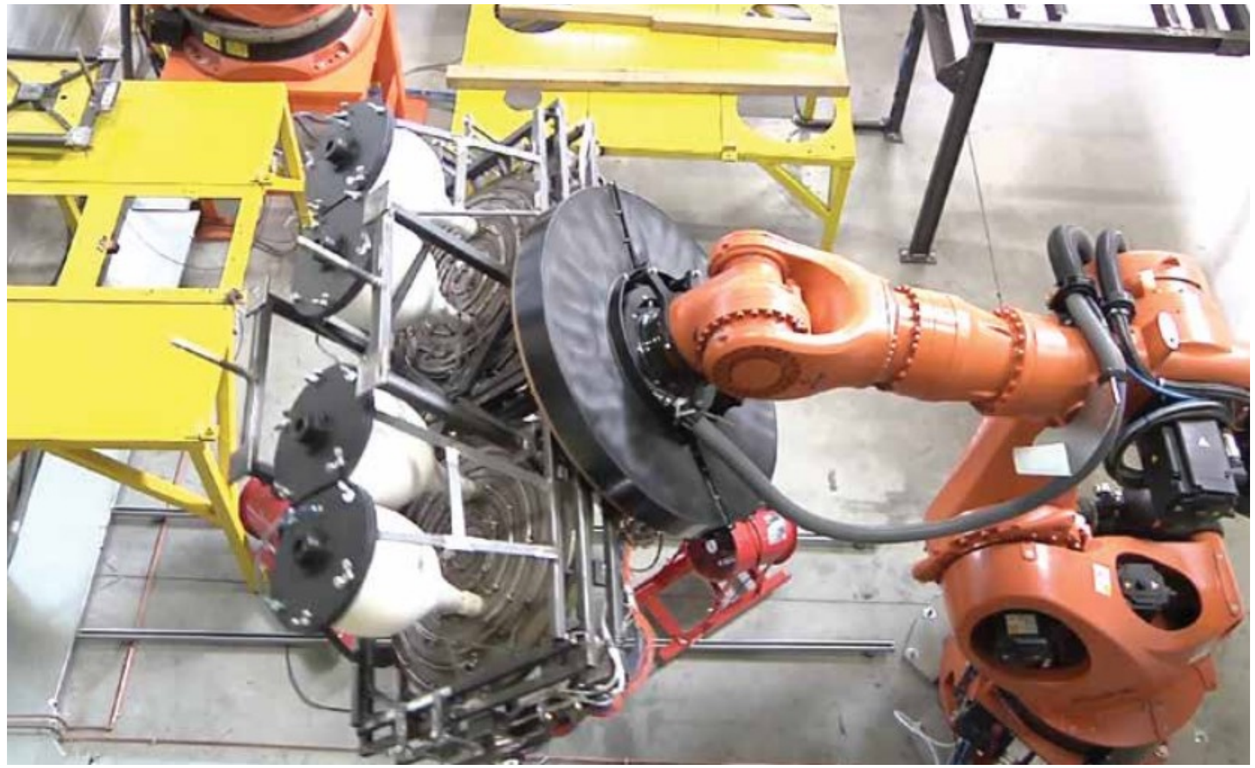


Image courtesy of AMS Belgium

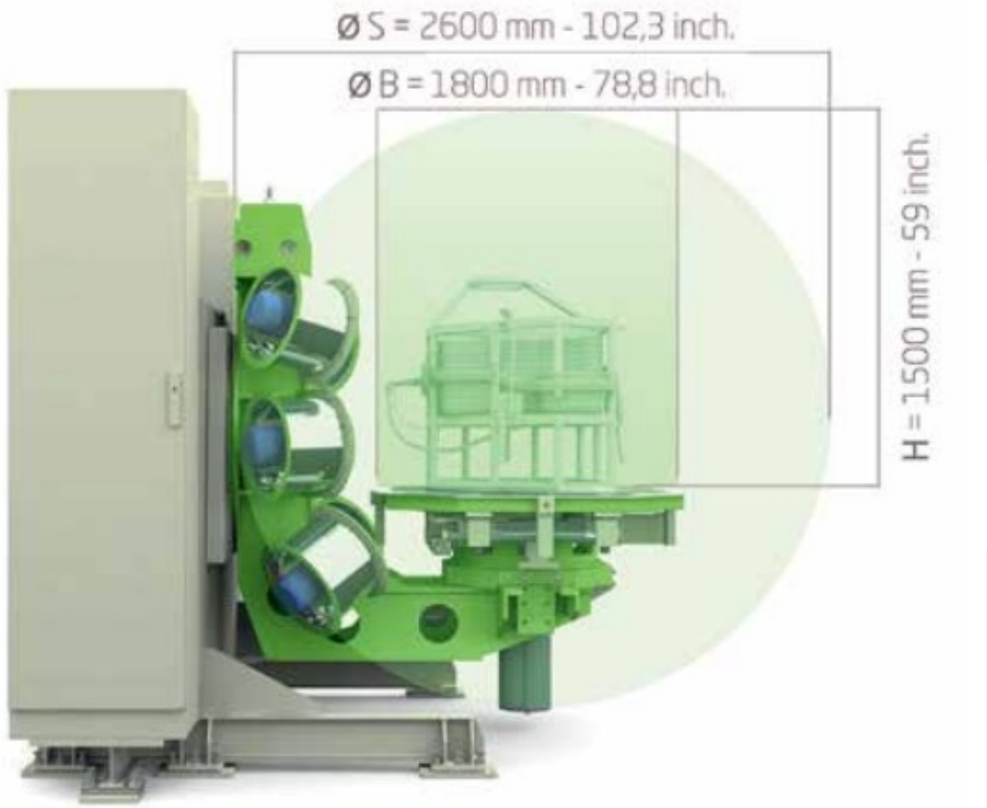
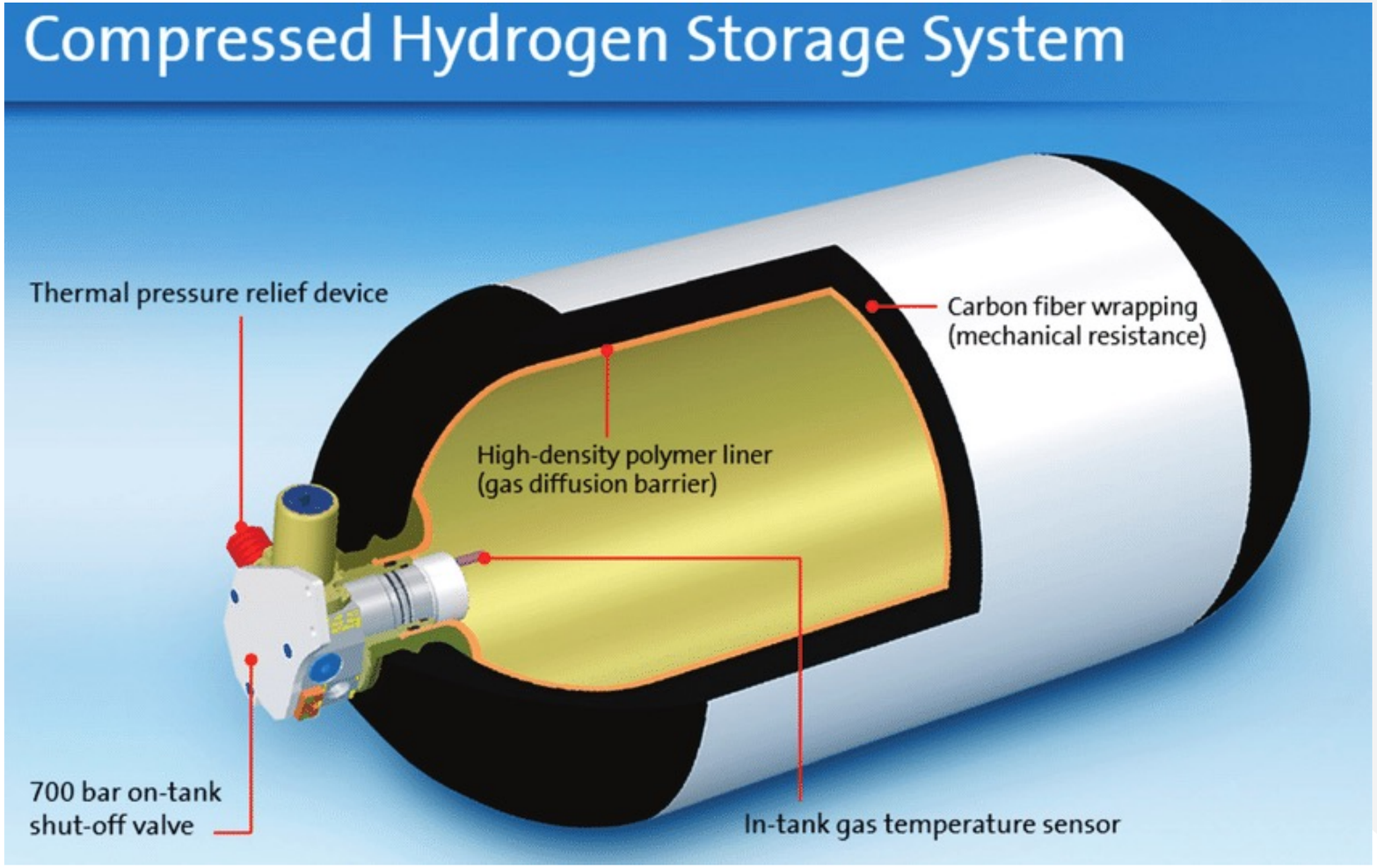


Image courtesy of Persico

Opportunities for Roto from the move away from fossil fuels

- Electric Vehicles (EVs)
- EV Charging Stations

Composite Hydrogen Storage Tanks



Roto Materials for Green Hydrogen Storage

Revolve® EVOH

Revolve® PVDF

Revolve® PA 12

Revolve® PA 11

Revolve® PA RDN

Revolve® XL400

Energy Density Very Low – Must Be Compressed - High Pressure

Application	Operating Pressure (bar)
Energy storage	60
E-mobility (Bus & Trucks)	350
E-mobility (Cars)	700/750

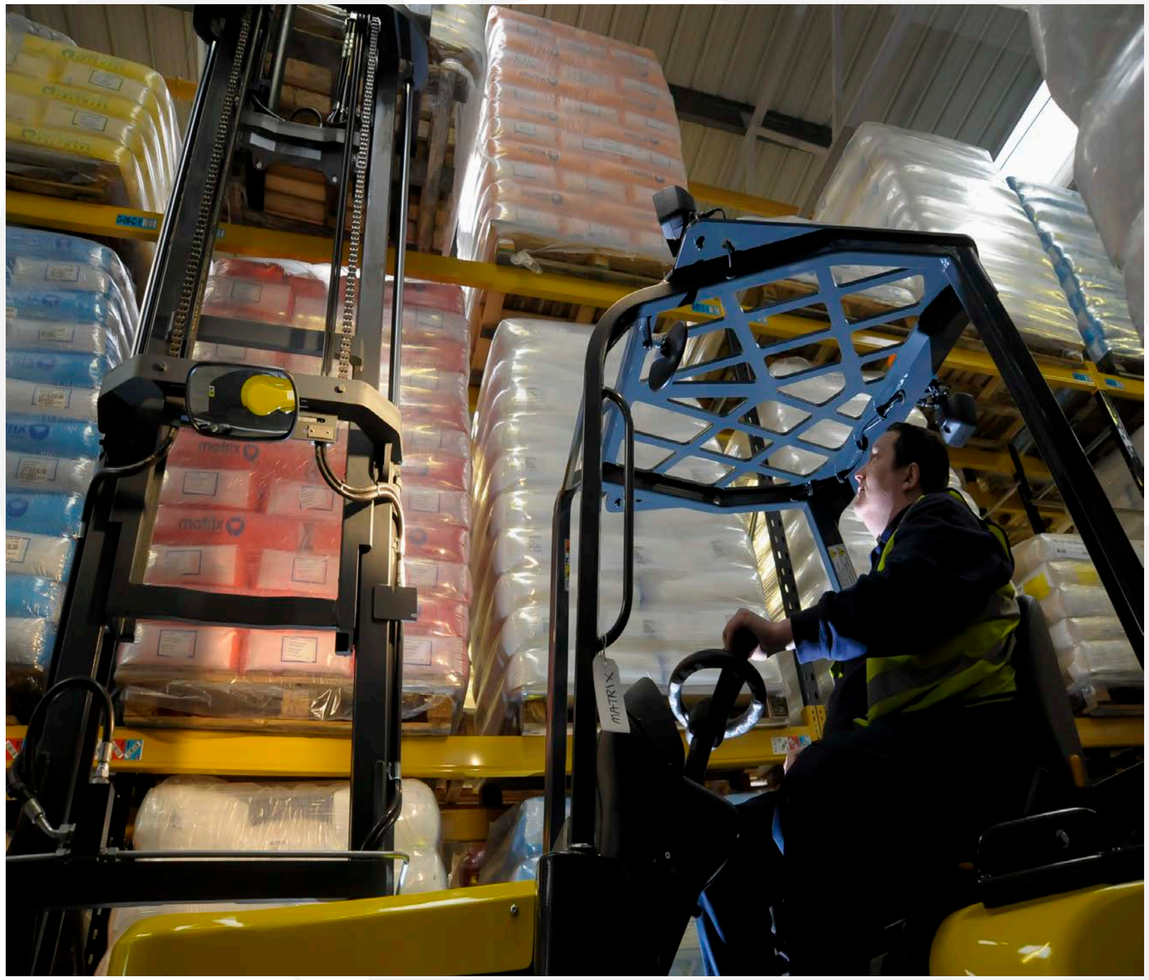
3 Main Environmental Challenges for Plastics

- Climate Change – reducing CO2 emissions to Net Zero
- Recycling of plastics & recycled content in products
- Marine plastic pollution

Plastic Waste & Recycled Plastics

- New Plastics Tax on packaging in Europe - €240/MT

  (= 11 cents/lb) if less than 30% recycle
- Proposed CO2 Tax on virgin plastics
- Proposed EU Ban on recyclable materials in landfill by 2035
- Proposed EU Tax on incineration



Threats to Roto

- Increasing packaging costs – from suppliers and to package roto products
- Future extension of taxes from packaging to other plastic products?
- Talk of products needing to be made with minimum percentage of recycled content – what %?
- How define recycle?
- Feasibility & cost of making roto products with 30% recycled content

Opportunities for Roto

- More collection of waste – more storage and materials handling products needed
- Reduced single-use packaging – more multi-use durable packaging
- Industry initiatives - ARMA goal of 3,600 MT (8 million lbs) of recycle used in Australia and New Zealand roto products by 2025

Marine Pollution

- Plastic pollution damages the reputation of our industry
- Issue not just obvious one of plastic products – loss of pellets and powder is a significant problem
- Proposal to Marine Environment Protection Committee of International Marine Organisation to re-classify plastic pellets and powders as “harmful substances” (PPR 9/12, Page 34, Section 15)
- Potential big increase in cost and complexity of shipping plastic pellets & powders
- Massive global trade of plastics – some regions depend on imports, others exports

What Can We Do to Reduce Plastic Pollution?

- Operation Clean Sweep – we can all do our bit – we all need to sign up!
- British Standards – PAS 510:2021 – voluntary set of good practices to handle & manage pellets and powder to minimise leakage to environment
- Some industry initiatives

  - ARMA goal to sign up all members of association to Operation Clean Sweep by end of 2023

  - BPF Plastic Free Mersey Project

  - New Zealand Marine Farming Association – Sponsored Beach Clean

Odyssey Innovation – Turning Marine Waste into Rotomolded Kayaks

- Rob Thompson – a visionary
- Collecting marine waste from shores, coves and shipwrecks in South West England
- Teams of volunteers collecting waste
- Persuaded local government to collect marine waste for free, within 100 mile radius of Exeter
- Exeter City Council sorts and recycles mostly single use plastic

Partnership with Local Government

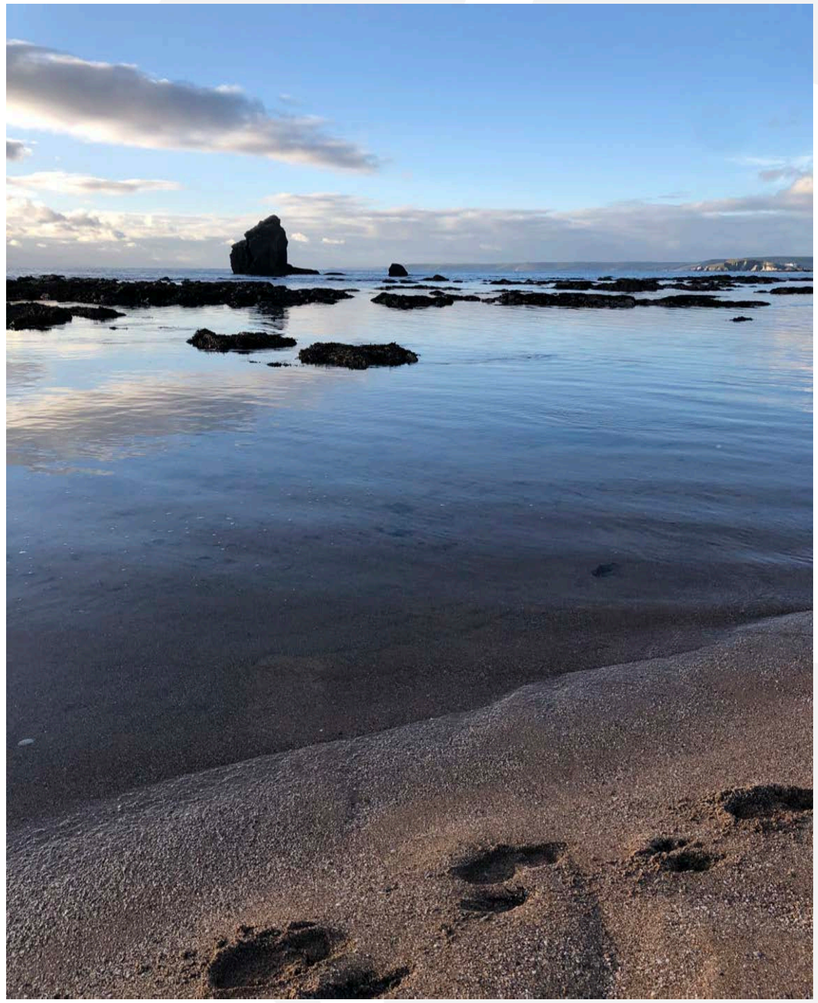
- Big volume of fishing nets and fishing gear
- In co-operation with Exeter City Council – set up collection points for fishing nets on docksides

Fishing Nets to Kayaks

- Fishing nets sorted by Exeter City Council
- Most fishing nets made of Polyethylene
- Specialist company processes nets into clean pellets
- Compounded with recycle and virgin polymer to make suitable for rotomolding
- Producing black rotomolded kayaks
- Used to collect more marine waste – “Paddle for Plastic” scheme
- True circularity!

Conclusion

- Regulations and new laws relating to the environment are coming!
- Better to be prepared than not
- Get ahead of the curve NOW!
- We all have a responsibility to improve our environment
- **What difference can you make?**



THANK YOU !

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