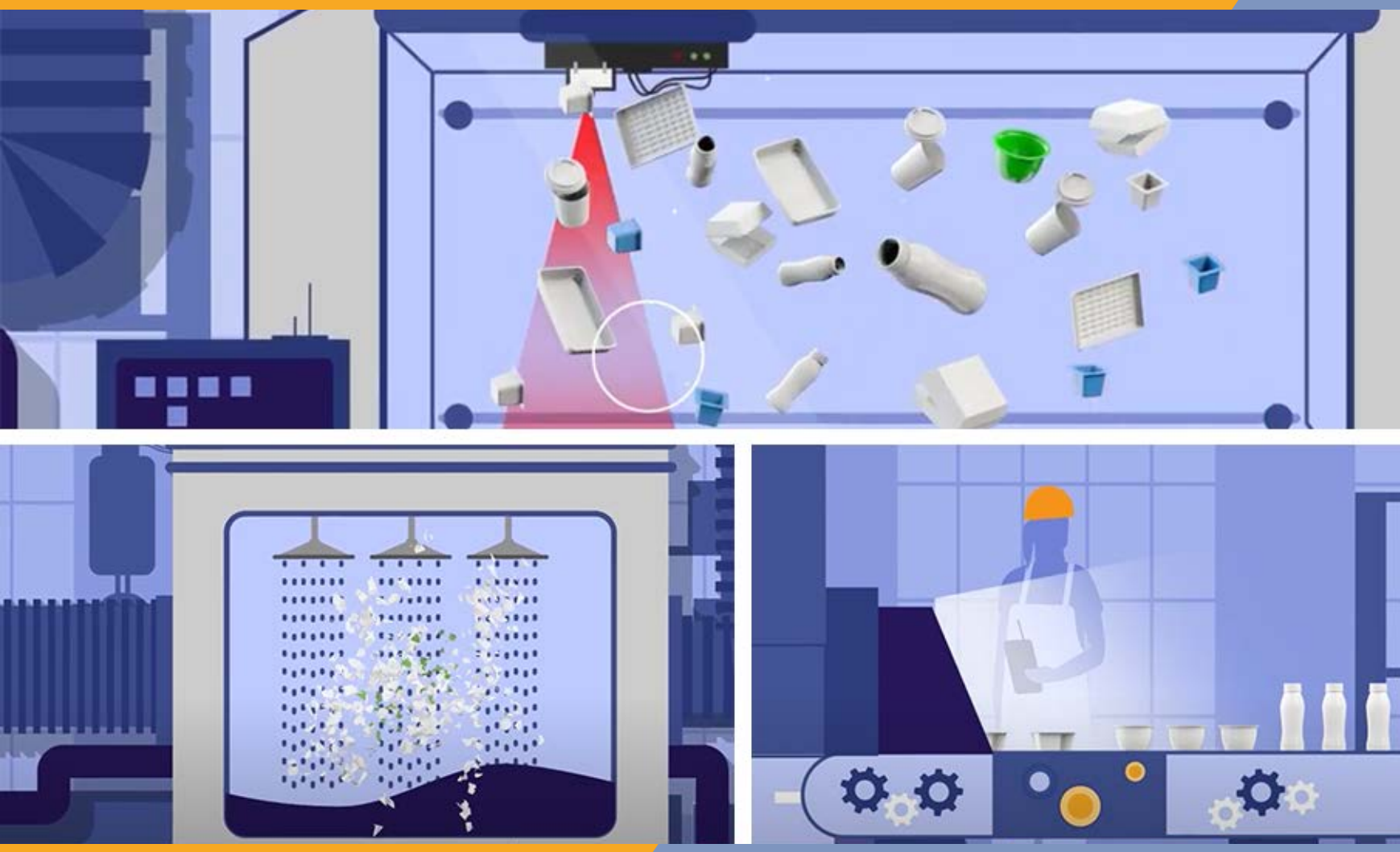
PATHWAYS TO CIRCULARITY

BREAKING DOWN THE SCIENCE OF STYRENICS RECYCLING

Styrenics have significant environmental and recyclability advantages and are often more eco-friendly than alternative solutions. Best of all, they can be recycled when their purpose has been fulfilled.



INEOS STYROLUTION

Driving Success. Together.

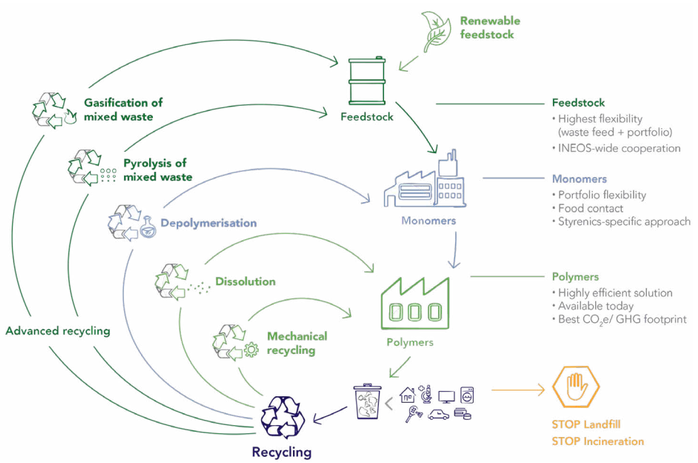
1

STYRENICS
DESIGNED FOR RECYCLING

A common misconception is that materials like glass, aluminum and paper are inherently more sustainable than plastics. On the contrary, styrenics have significant environmental and recyclability advantages and are often a more eco-friendly solution. For example, polystyrene's materials strength and barrier properties allow it to be used as a single layer in applications. Alternatives often use multiple material layers that cannot be adequately separated during the recycling process. Furthermore, their lightweight properties reduce climate impact — polystyrene foam, for example, is around 98% air! Best of all, when their purpose has been fulfilled, they can be recycled.

2

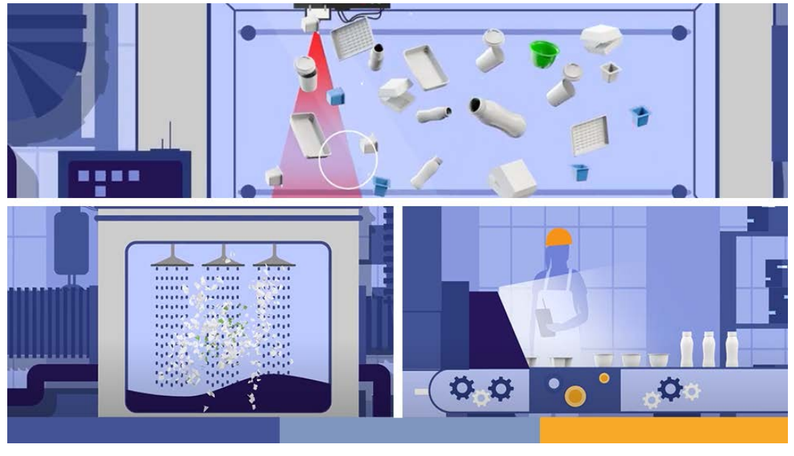
STYRENICS
UNEQUALLED RECYCLING PERFORMANCE



Recycling technologies enable us to capture a broader spectrum of plastic waste, processing materials at higher contamination levels and, in some cases, eliminating the need for complex and expensive sorting steps, which are often cited as a reason for low recycling rates. Mechanical and advanced recycling technologies complement each other. Therefore, when a material is not able to be adequately recycled using mechanical methods, then advanced recycling technologies should be introduced for material recovery. By recycling plastics, companies reduce their carbon footprint and produce environmentally conscious products — because plastic should be kept in the loop, not in the landfill.

3

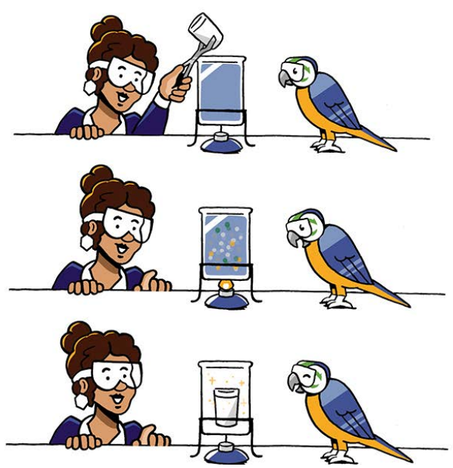
MECHANICAL RECYCLING
FROM POLYMER TO POLYMER



Mechanical recycling, sometimes referred to as 'traditional recycling' is the most widely known and used recycling technology. This technology plays an important role in a circular economy for plastics. This is a method by which industrial or post-consumer waste is physically processed back into pellets, without changing the basic chemical structure of the material. With the inclusion of an additional 'super-cleaning' process combined with state-of-the-art sorting technology, mechanically recycled polystyrene can be used for food-contact applications with the same high quality and performance as the original product.

4

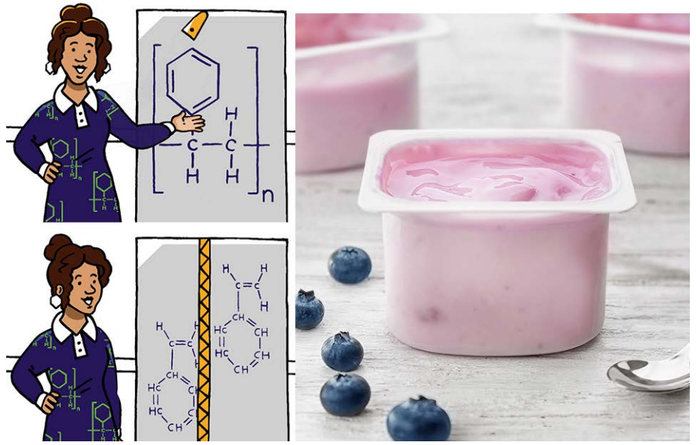
DISSOLUTION
FROM POLYMER TO PURE "CLEANED" POLYMER



The dissolution method takes plastic waste in its solid form and dissolves it in a solvent. Once dissolved, the process can separate contaminants and additives, and separate the original polymer from the solvent. The end-product then becomes a cleaned polymer that may be reused as new raw material plastic.

5

DEPOLYMERISATION
FROM POLYMER TO MONOMERS



Depolymerisation "un-zips" the polymer chain, breaking it down into the individual molecules. This process separates and purifies polystyrene, and can be repeated on the same material an infinite number of times. This recycled material is safe for food-contact and medical applications.

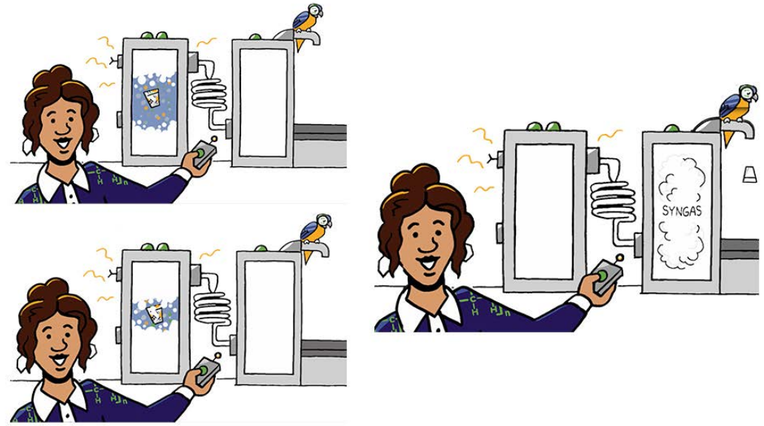
6

PYROLYSIS
FROM POLYMER TO FEEDSTOCK

Pyrolysis uses a thermal cracking process to convert plastic waste to an oil, which is then further purified and used as feedstock in the production of base chemicals, for example, ethylene for polymer production.

7

GASIFICATION
FROM POLYMER TO FEEDSTOCK



Gasification works well with highly contaminated waste by enabling processing of mixed plastic waste alongside domestic and bio-waste. The technology heats materials to high temperatures without oxygen, which means no burning or incinerating, and creates syngas, used as a carbon source to produce base chemicals.

8

PATHWAY TO CIRCULARITY
WITH INEOS STYROLUTION ECO

INEOS STYROLUTION

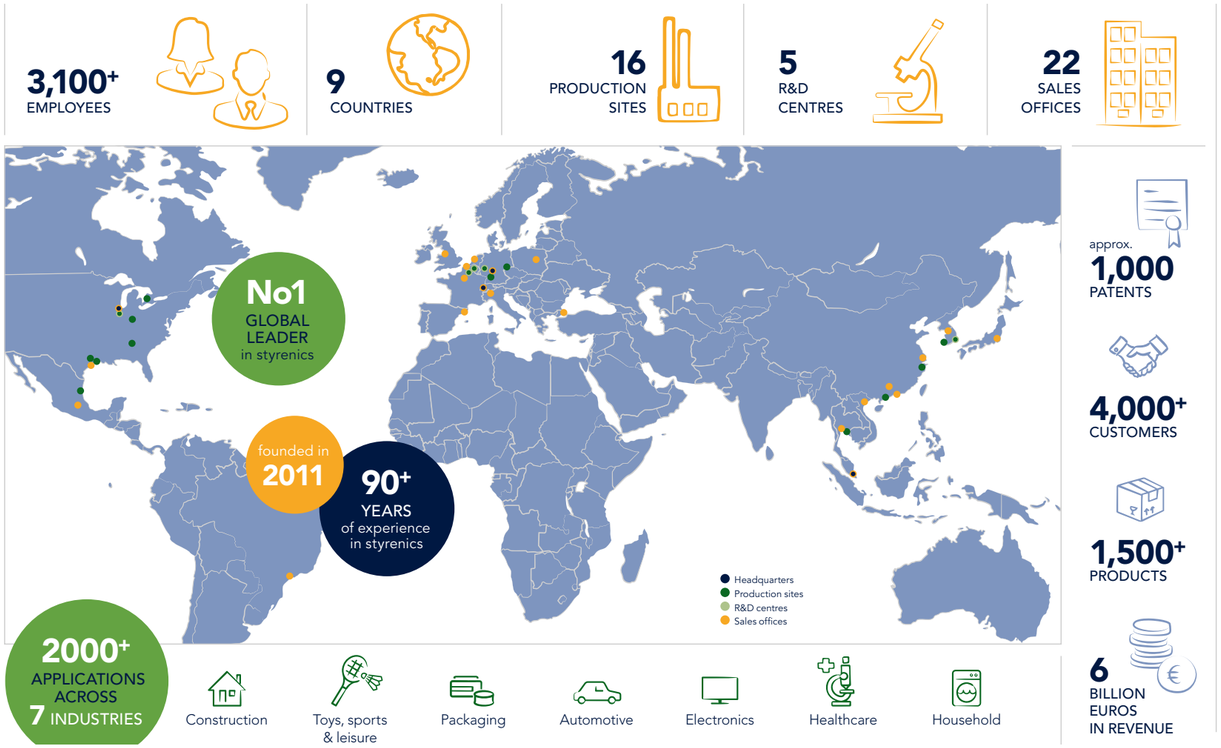
ECO

Our INEOS Styrolution ECO product line is created using recycled styrenic and bio-attributed materials and has a lower greenhouse gas footprint than materials made from fossil feedstock. Thus closing the loop with waste prevention, recycling, and allowing for the life cycle of this valuable material to be infinite. To be repurposed and reused, again, and again.

https://styrolution-eco.com/

INEOS STYROLUTION AT A GLANCE

INEOS Styrolution is the global leader in styrenics.The company provides products for many everyday applications across a broad range of industries, including healthcare, automotive, electronics, household, construction, toys/sports/leisure, and healthcare.



LET´S COLLABORATE

If you would like further details, need assistance in creating your applications, or are curious to explore new possibilities with styrenics, please contact us!

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