



INEOS
STYROLUTION

LIFE ABSolutely Circular

From single-use plastics to all applications:
Sustainably sourced ABS
from recycled post-consumer
polystyrene waste

Fast facts

INEOS STYROLUTION

INEOS
STYROLUTION

90+
Years of experience
in styrenics

Nº1
Global leader
in styrenics

2,000+
APPLICATIONS
across 7 industries

 **3,600**
Employees

10
Countries



 **20**
Production sites

6 R&D
Centres



 **24**
Sales offices

~1,000
Patents

4,000+
Customers

1,500+
Products

4 BILLION
revenue in 2020



Automotive



Electronics



Household



Construction



Healthcare



Packaging



Toys, sports & leisure

Fast facts

INDAVER GROUP



1900
Employees

+40 years of experience
in sustainable waste management



9
Countries

Core customers: European companies (chemical, pharmaceutical, technology) & local public bodies



31
Operational sites

5,1 million tonnes
of waste managed



We prevent contamination of the materials chain or food chain by destroying or detoxifying hazardous substances.



24
Commercial offices

1.5 million tonnes
of waste for material recovery



We recover valuable raw materials from waste to replace primary raw materials. We do this by breaking waste down to the molecular level via innovative techniques and state-of-the-art installations.

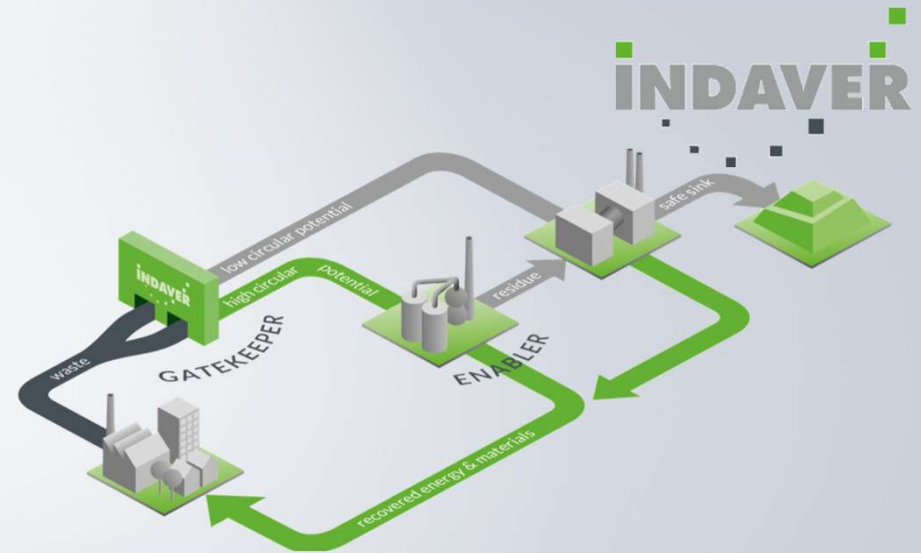


601 M €
Revenue in 2020

266.900 households*
provided with energy



We supply the energy that is released during treatment to households and industries.



Sustainable waste management to keep the circular economy clean and safe

*the equivalent of



Benefits OF STYRENICS

INEOS
STYROLUTION



CONSTRUCTION

Insulation → modern buildings far more energy-efficient



HEALTHCARE

Sterile packaging → helps to improve healthcare in cities and inaccessible parts of our world



PACKAGING

Packaging that protects and preserves food → reducing food waste and the need for preservatives

AUTOMOTIVE

Lighter, stronger vehicle components → safer transport requiring less fuel or power



ELECTRONICS

Unique properties → more efficient production process



HOUSEHOLD

Lighter and safer components → greater stability with optimized energy efficiency



TOYS, SPORTS & LEISURE

Proven performance and high versatility → key properties in attractive designs and colours



Elimination of plastic waste



Our highly ambitious challenge

By 2025,
INEOS will ...

...use on average

30%

recycled content
in products destined
for **polystyrene**
packaging in Europe

...achieve

Zero

net emissions
by 2050

...incorporate at least

325kt/a

of recycled material
into products

...ensure

100%

of polymer
products
can be recycled



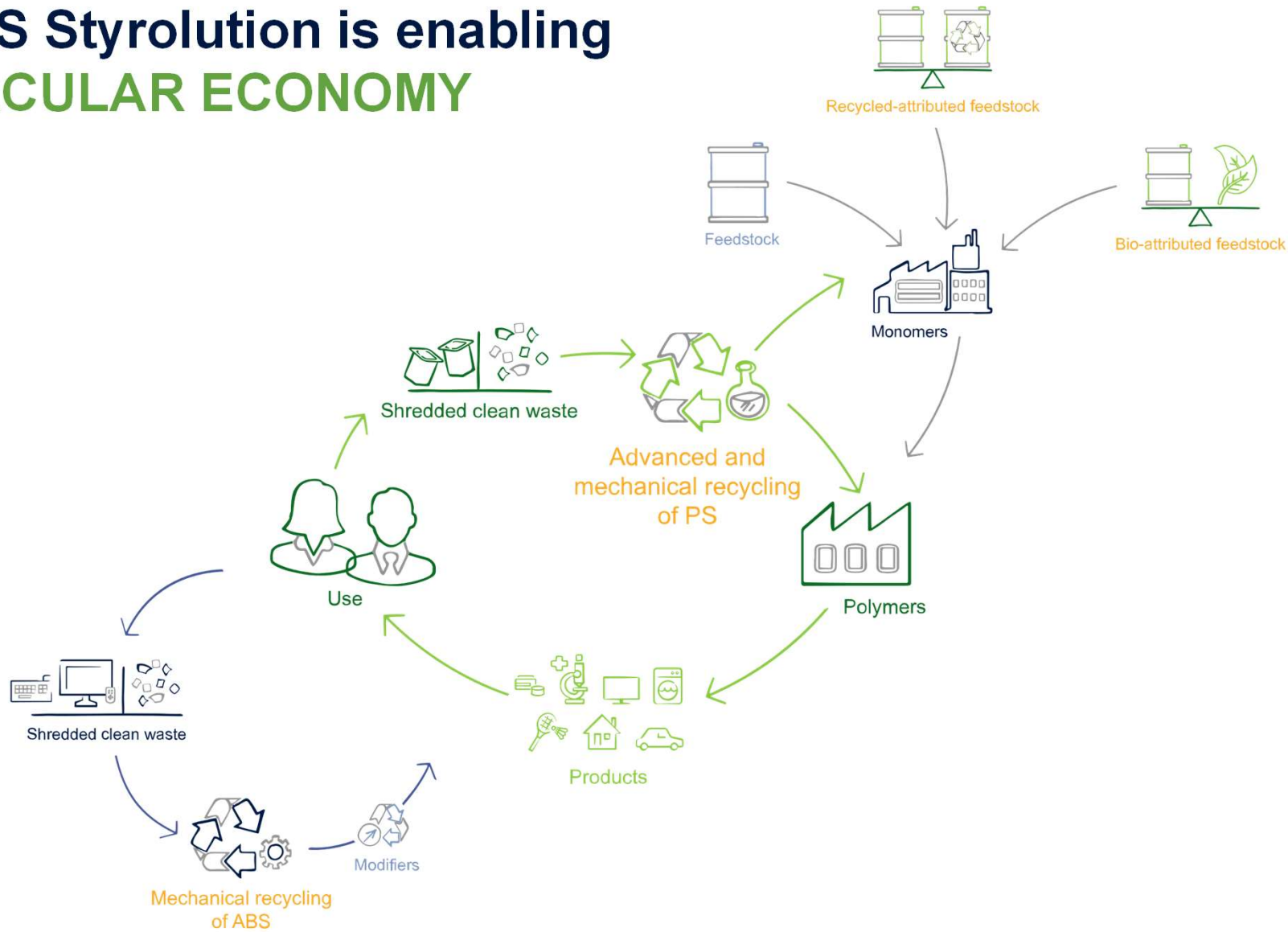
Taking the "single"
out of single use

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INEOS Styrolution is enabling a CIRCULAR ECONOMY

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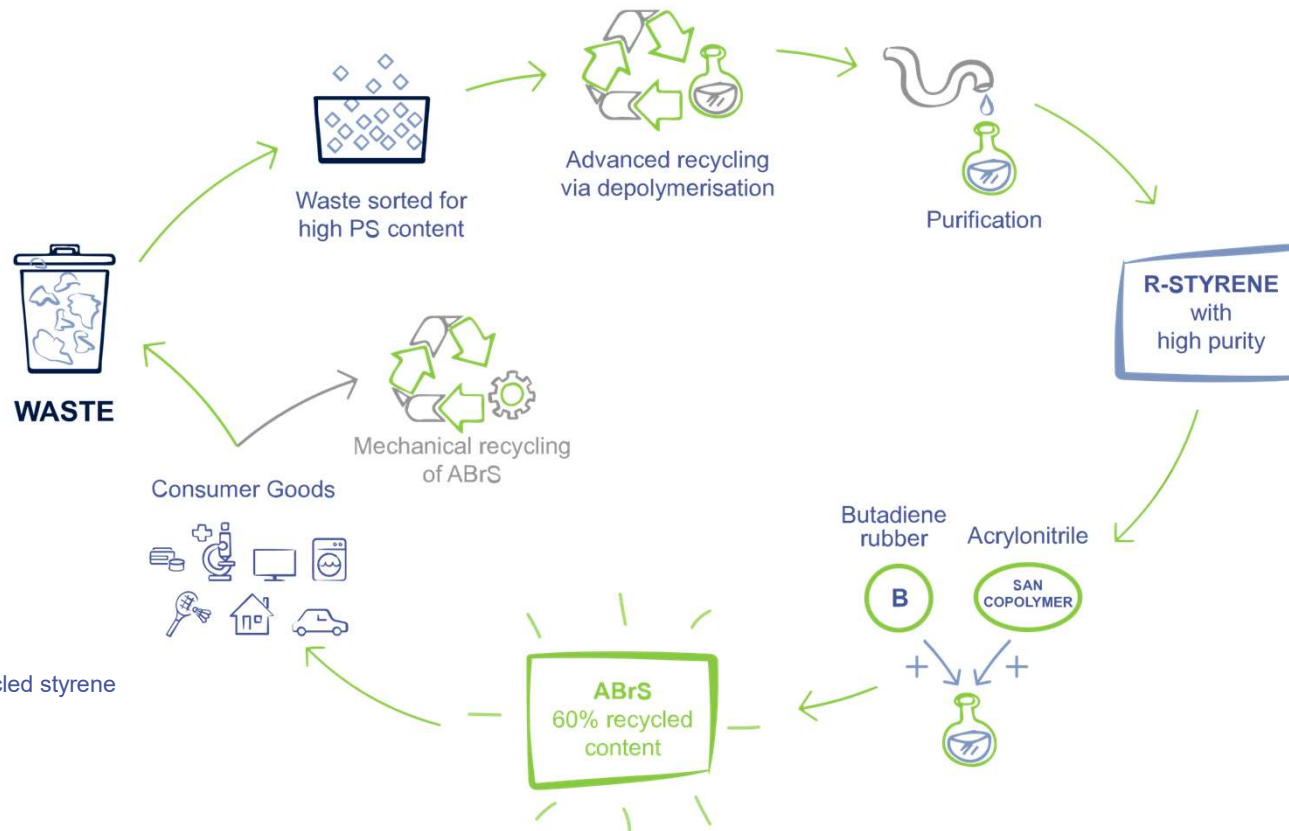


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**LIFE ABSolutely
Circular**



Our concept: FROM POLYSTYRENE WASTE TO RPS AND ABrS WITH A VARIETY OF APPLICATIONS

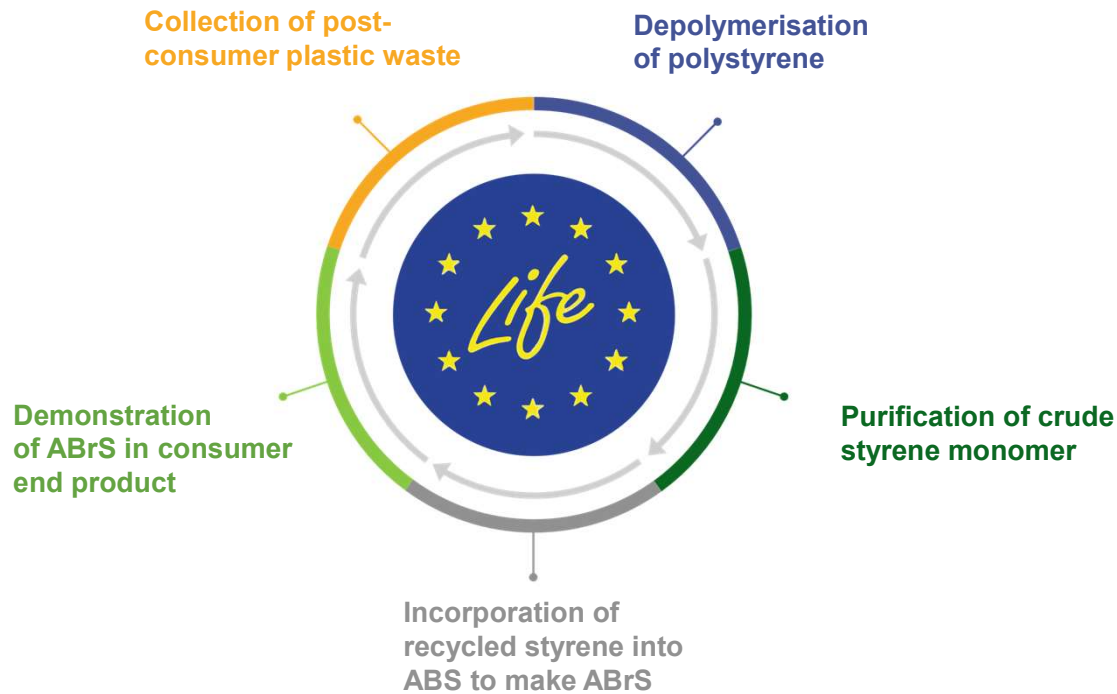


PS = polystyrene
 rPS = recycled polystyrene
 ABS = Acrylonitrile butadiene styrene
 ABrS = Acrylonitrile butadiene with recycled styrene



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SCOPE, TIMELINE & DELIVERABLES



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- ABrS at lab-scale
- Provide 500 kg ABrS
- Provide 1477 ton of 30% rPS
- Project management consortium
- Sustainability assessments & stakeholder approach
- Upscaling plan

INDAVER

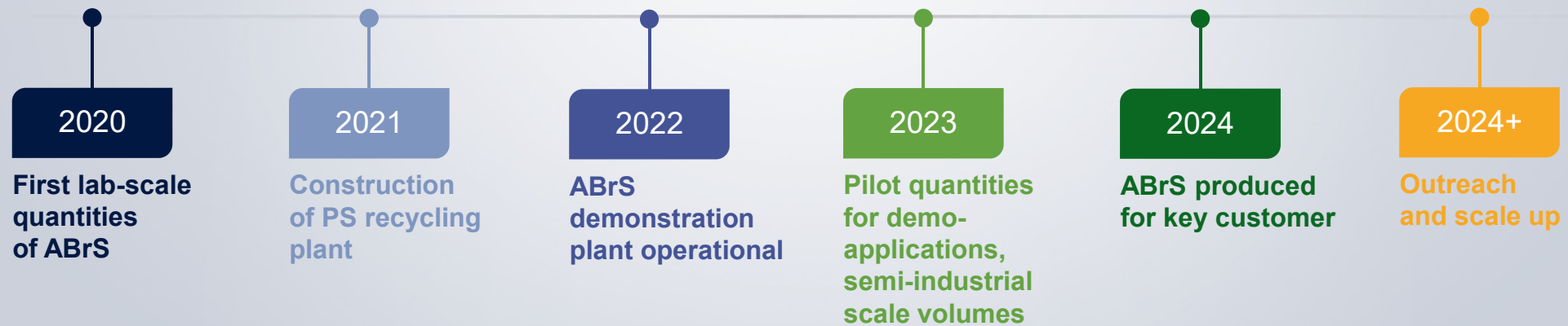
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LIFE ABSolutely Circular

SCOPE, TIMELINE & DELIVERABLES

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STYROLUTION



Closing the loop of plastic recycling



Lab-scale demonstration of ABrS

Objective:
Demonstrate the production
of ABrS at lab-scale

2020

First lab-scale
quantities of ABrS

2021

Construction of
PS recycling plant

2022

ABrS demonstration
plant operational

2023

Pilot quantities for
demoapplications,
semi-industrial scale
volumes

2024

ABrS produced
for key customer

2024+

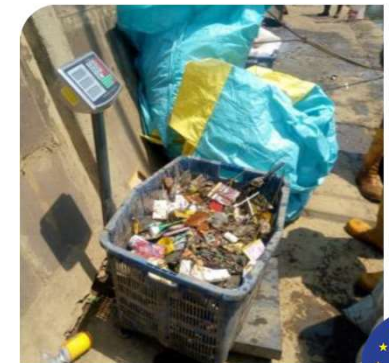
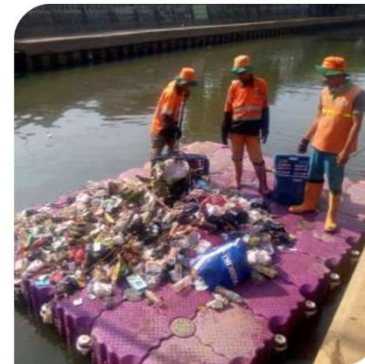
Outreach
and scale up



Sourcing PS waste

Objective:
Evaluate different PS sources

- Mapping and identification of waste providers
- Evaluation of quality and testing of different waste sources



2020

First lab-scale quantities of ABrS

2021

Construction of PS recycling plant

2022

ABrS demonstration plant operational

2023

Pilot quantities for demoapplications, semi-industrial scale volumes

2024

ABrS produced for key customer

2024+

Outreach and scale up



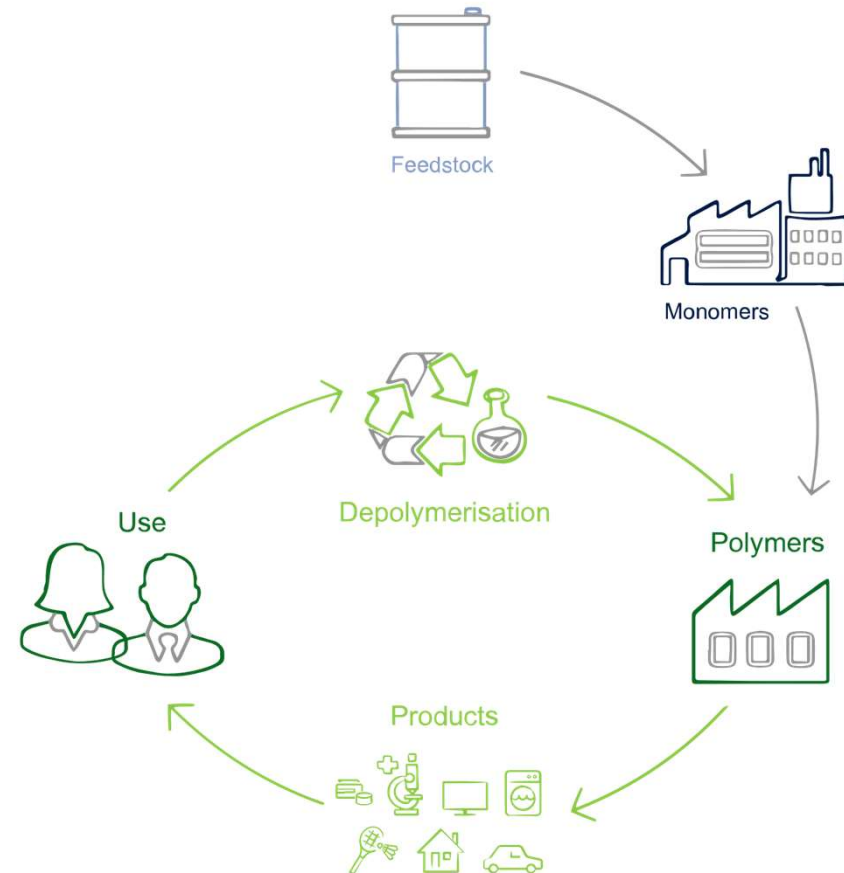
Depolymerisation to monomers: POLYSTYRENE TO STYRENE

Depolymerisation
brings polystyrene to
styrene monomer
in one single step

Improved
GHG
savings

Improved
circularity and
reduced use
of fossil fuel

Improved
collection
and sorting
of plastic waste



Construction and operation of rSAN demonstration plant

Objective:
Construction and operation of demonstration plant to produce ABrS

2020

First lab-scale quantities of ABrS

2021

Construction of PS recycling plant

2022

ABrS demonstration plant operational

2023

Pilot quantities for demoapplications, semi-industrial scale volumes

2024

ABrS produced for key customer

2024+

Outreach and scale up



rSM to rPS

Objective:
Roadmap for upscaling
of advanced recycling of PS

- Incorporate rSM as a drop-in solution into our PS production

rSM = recycled styrene monomer

rPS = recycled polystyrene



2020

First lab-scale quantities of ABrS

2021

Construction of PS recycling plant

2022

ABrS demonstration plant operational

2023

Pilot quantities for demoapplications, semi-industrial scale volumes

2024

ABrS produced for key customer

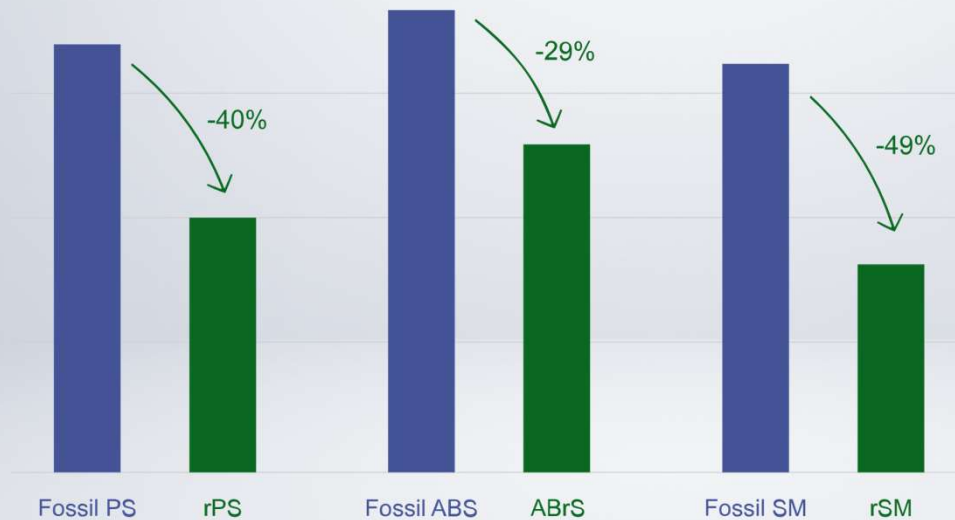
2024+

Outreach and scale up



Sustainability assessment

Objective:
Monitor and report on the project's environmental impacts



Production GHG emissions (kgCO₂-eq/ton material)

Reducing greenhouse gas emissions through depolymerisation

2020

First 10 kg of ABrS at lab-scale

2021

Construction of PS recycling plant

2022

ABrS demonstration plant operational

2023

500 kg ABrS produced, 1477 ton of 30% rPS

2024

ABrS produced for a toy manufacturer

2024+

Outreach and scale-up plan



Communication

Objective:

Promote the awareness of PS depolymerisation, circularity and the EU Life project

INTERVIEWS
EVENTS ARTICLES
POSTERS PRESS
EU LIFE RELEASES
ABSOLUTELY CIRCULAR
SUSTAINABILITY REPORT FLYERS VIDEOS
WEBSITES PRESENTATIONS
SOCIAL MEDIA

2020

First 10 kg of ABrS at lab-scale

2021

Construction of PS recycling plant

2022

ABrS demonstration plant operational

2023

500 kg ABrS produced, 1477 ton of 30% rPS

2024

ABrS produced for a toy manufacturer

2024+

Outreach and scale-up plan



Demonstrate ABrS as a drop-in in solution for all applications

Objective:
Prove the viability
of recycled styrene monomer
in ABrS production



2020

First lab-scale quantities of ABrS

2021

Construction of PS recycling plant

2022

ABrS demonstration plant operational

2023

Pilot quantities for demoapplications, semi-industrial scale volumes

2024

ABrS produced for key customer

2024+

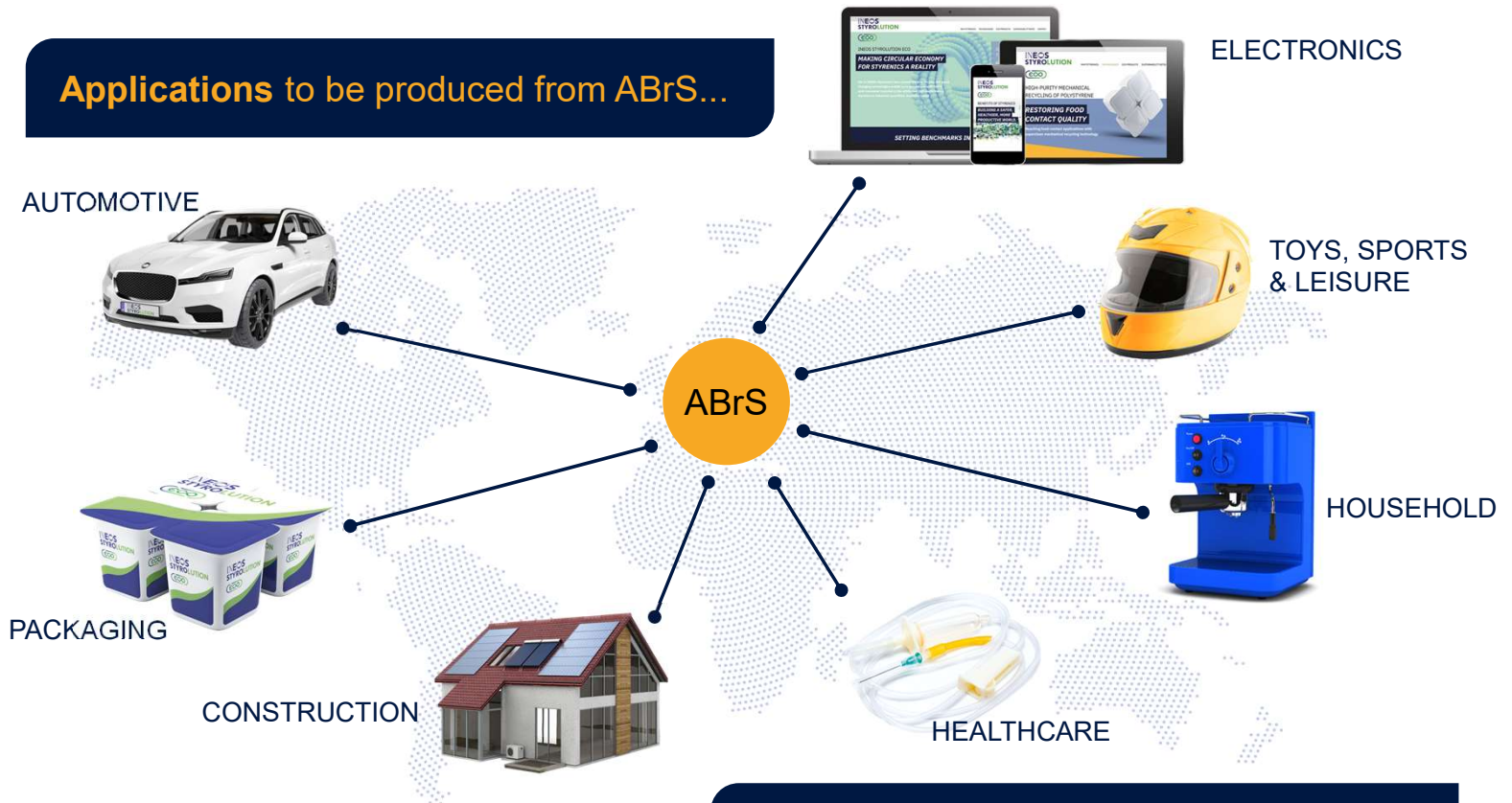
Outreach and scale up



Outreach and scale-up plan

Introduction in commercial ABS plants with r-styrene from depolymerisation

Applications to be produced from ABrS...



...scale-up into all different applications

2020

First lab-scale quantities of ABrS

2021

Construction of PS recycling plant

2022

ABrS demonstration plant operational

2023

Pilot quantities for demoapplications, semi-industrial scale volumes

2024

ABrS produced for key customer

2024+

Outreach and scale up



Summary

Supported by EU

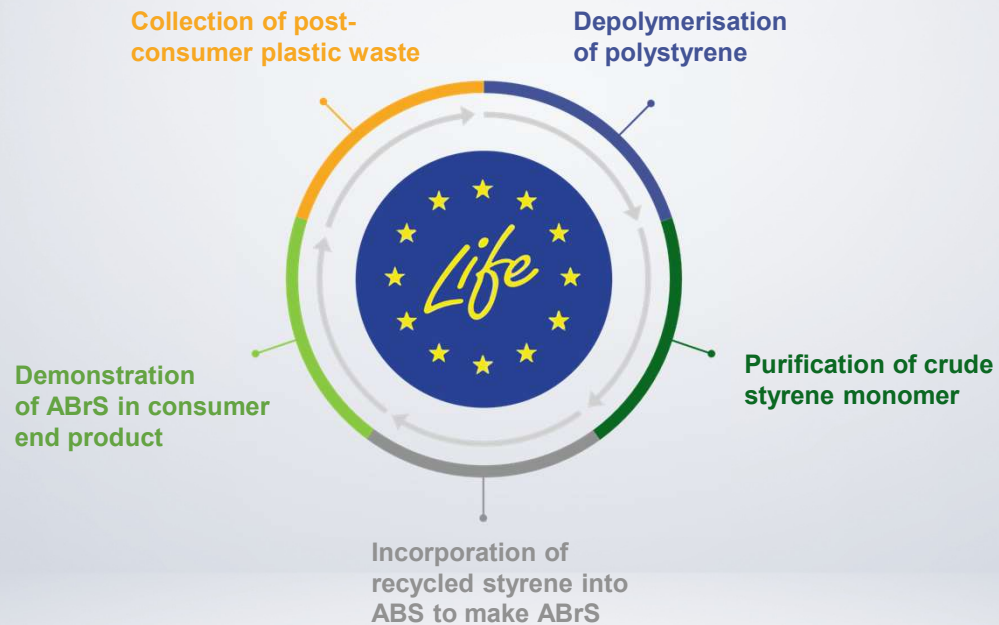
Industries:

Toys, Automotive,
Household, Cosmetics

Partner: Indaver

Timeline:

2020-2024



Objectives

Demonstrate for the first time the **incorporation of recycled styrene monomer** into ABS

Demonstrate the production of **mass-produced** consumer end product using **ABrS**

Demonstrate **advanced recycling** (specifically depolymerisation) as an economically viable and environmentally sound route towards a circular plastic economy





INEOS STYROOLUTION

Driving Success. Together.

For more information visit
www.ineos-styrolution.com