30 Jahre cirp

Technische Kunststoffe auf dem Weg zur Kreislaufwirtschaft und Netto-Null

Oliver Geiger, Performance Materials

18. September 2024

BASF
We create chemistry

BASF – We create chemistry

- Our chemistry is used in almost all industries
- We combine economic success, social responsibility and environmental protection
- Sales 2023: €68.9 billion
- EBIT before special items 2023: €3.8 billion
- Employees: Around 112,000
- 6 Verbund sites and 228 other production sites
- Around 78,000 customers from various sectors in almost every country in the world

BASF’s segments


Chemicals

Materials


Industrial Solutions


Surface Technologies

Nutrition & Care


Agricultural Solutions

Chemicals
– Petrochemicals
– Intermediates

Materials
– Performance Materials
– Monomers

Surface Technologies
– Catalysts
– Coatings

Industrial Solutions
– Dispersions & Resins
– Performance Chemicals

Nutrition & Care
– Care Chemicals
– Nutrition & Health

Agricultural Solutions

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BASF‘s road to circularity and net-zero for Engineering Plastics

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Polymers are fantastic…

Clear lifetime sustainability benefits in many applications

Lightweight, EVs

Thermal Insulation

Longevity, Stability, Lightweight

… but as plastic producer the society expects us to contribute to the reduction of plastics pollution and greenhouse gas emissions

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The Green Deal is Europe’s Growth Strategy and Vision

First climate neutral continent by 2050

Lead the way to a circular economy

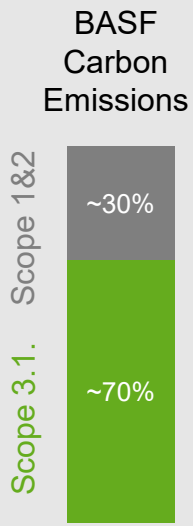
Move to a zero-pollution environment

Accelerate to a sustainable food system

The EU Commission wants zero-pollution for a toxic-free environment

Climate change and **resource scarcity** and **waste** pose major challenges that directly affect the entire plastics industry

GLOBAL CHALLENGE	*IMPLICATION FOR THE PLASTIC NDUSTRY*	*BASF PERFORMANCE MATERIALS SUSTAINABILITY TARGETS*
Climate change 	**Carbon management:** Cut emissions along entire value chain	2030: 25% CO_2 emissions reduction Scope 1&2; 15% CO_2 emissions reduction Scope 3.1 2050: Net zero CO_2 emissions
Waste and **resource scarcity** 	**Circular economy:** Build circular value chains	2030: 20% CE Sales Volume (products with >20% circular content)



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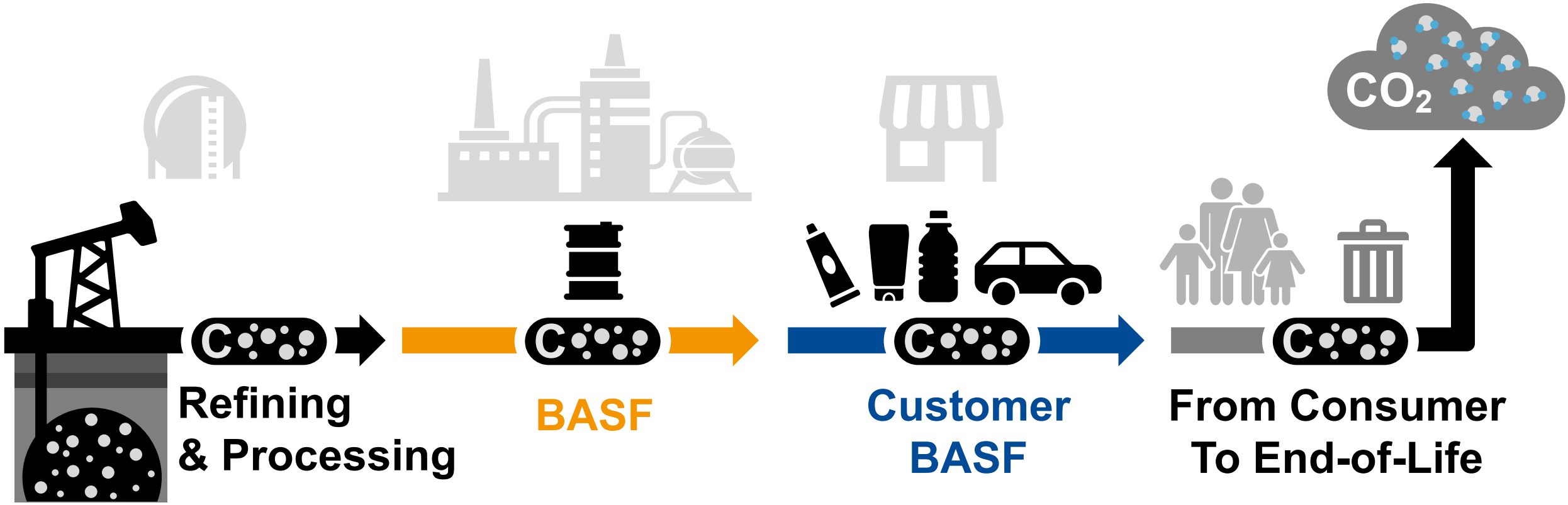
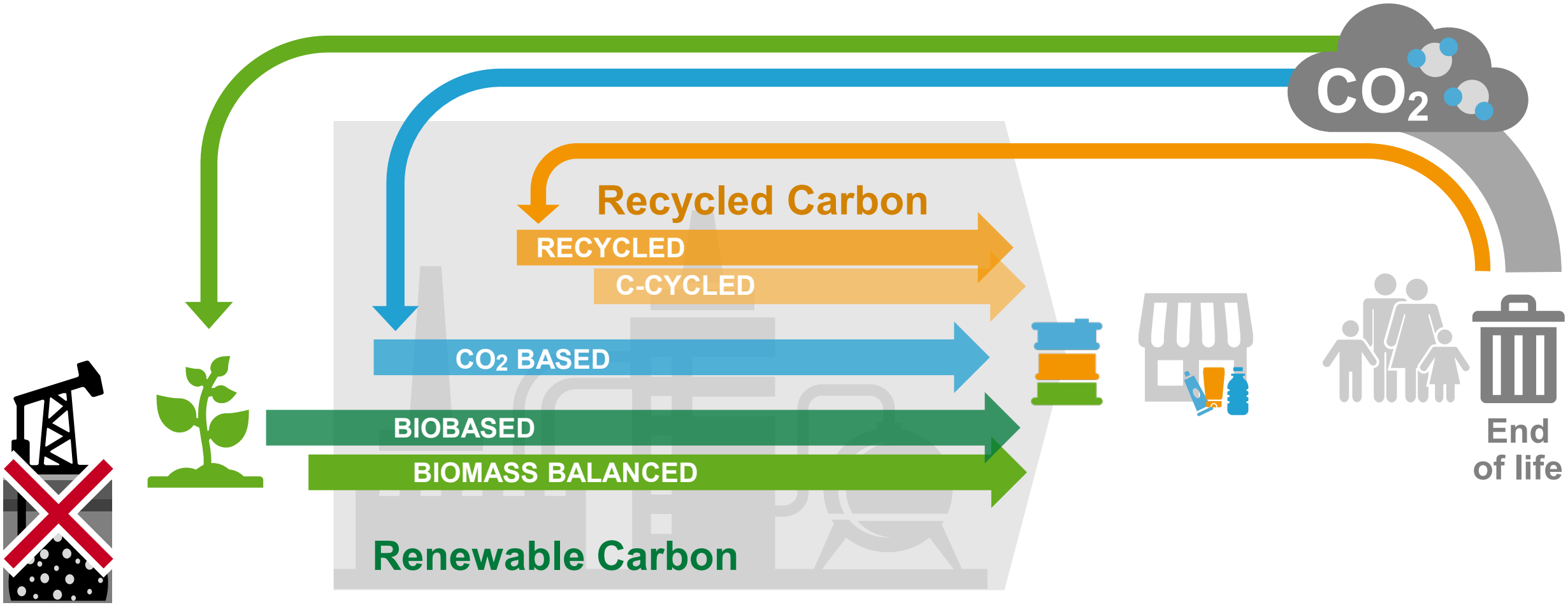
From linear …



… to circular carbon – complementing our road to net zero

Biogenic, recycling and CO_2-based carbon are key for net zero



Keep fossil in the ground

Keep carbon in the loop

Integration of circular feedstock into chemical production clusters is key to enable a circular economy

- **~10 km²** site area (Ludwigshafen)
- **~ 125 production facilities** with **~ 200 production plants**
- **~ 2,850 km** pipeline system
- **~ 6.1 million** metric tons sales products p.a.*
- **~ 5.7 million** t CO_2 savings via Verbund p.a.**

* Ludwigshafen site, as of December 31, 2023
** Global, as of December 31, 2023

We report and reduce GHG emissions

We report and reduce greenhouse gas emissions

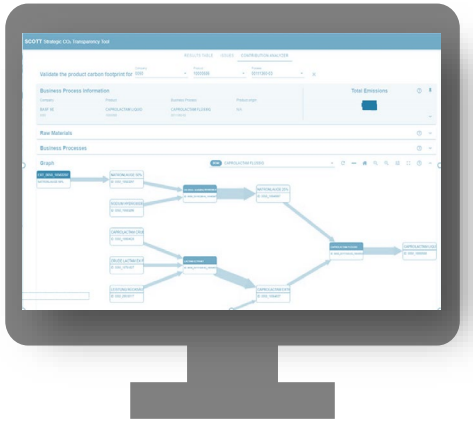
Meet SCOTT: the BASF database of 45,000 TfS compliant product carbon footprints

20,000
Raw materials
SCOPE 3.1

10 TWh/a
Energy
SCOPE 2

700
Production plants

SCOPE
1



CO_2

Product Carbon Footprints of

~45,000 sales products

Cradle

Gate

SCOTT stands for **S**trategic **CO**2 **T**ransparency **T**ool. This is an automated cradle-to-gate Product Carbon Footprints (PCFs) calculation based on process emissions, energy demand and upstream emissions (raw material PCF from databases)

We report and reduce greenhouse gas emissions

Green Electricity - BASF drives forward renewable energy projects across the globe

Hollandse Kust Zuid – world's largest wind park

On-site solar park Schwarzheide, Germany

25 years onshore wind power from Spain

25 years offshore wind power from Germany

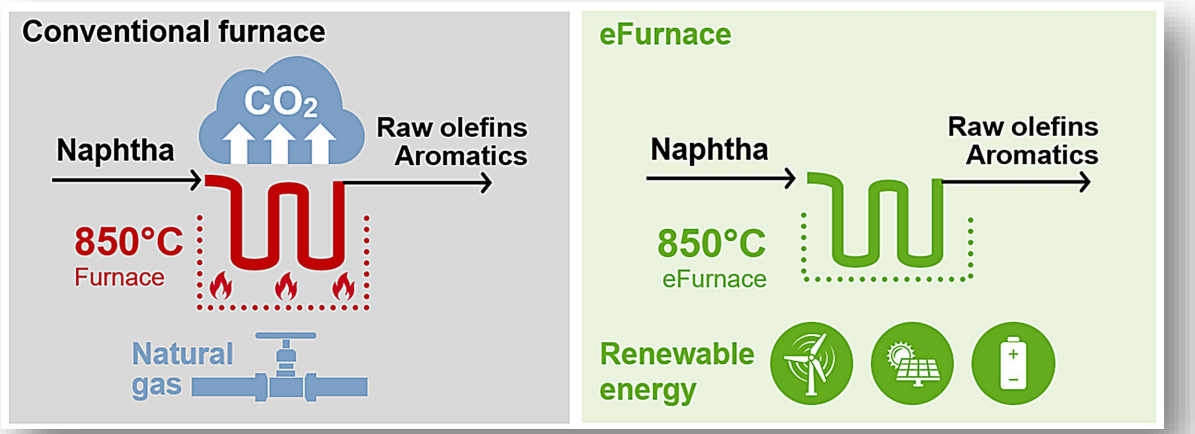
Wind and solar power for sites across US

Renewable power for several Chinese sites

Picture sources: BASF, American Public Power Association

We report and reduce greenhouse gas emissions

Electrification - Demonstration plant for large-scale electrically heated eFurnace



Supported by:
Federal Ministry for Economic Affairs and Climate Action
on the basis of a decision by the German Bundestag

- BASF, SABIC and Linde **have built the world's first demonstration plant** for large-scale electrically heated steam cracker furnaces (eFurnace)
- Demonstration plant with 6 megawatts **input of renewable electrical energy to be fully integrated into a steam cracker** at BASF's Ludwigshafen Verbund site
- Technology has the **potential to reduce CO_2 emissions by at least 90%** compared to conventional steam crackers

Circularity is the ultimate goal

Picture: BASF, https://unsplash.com/

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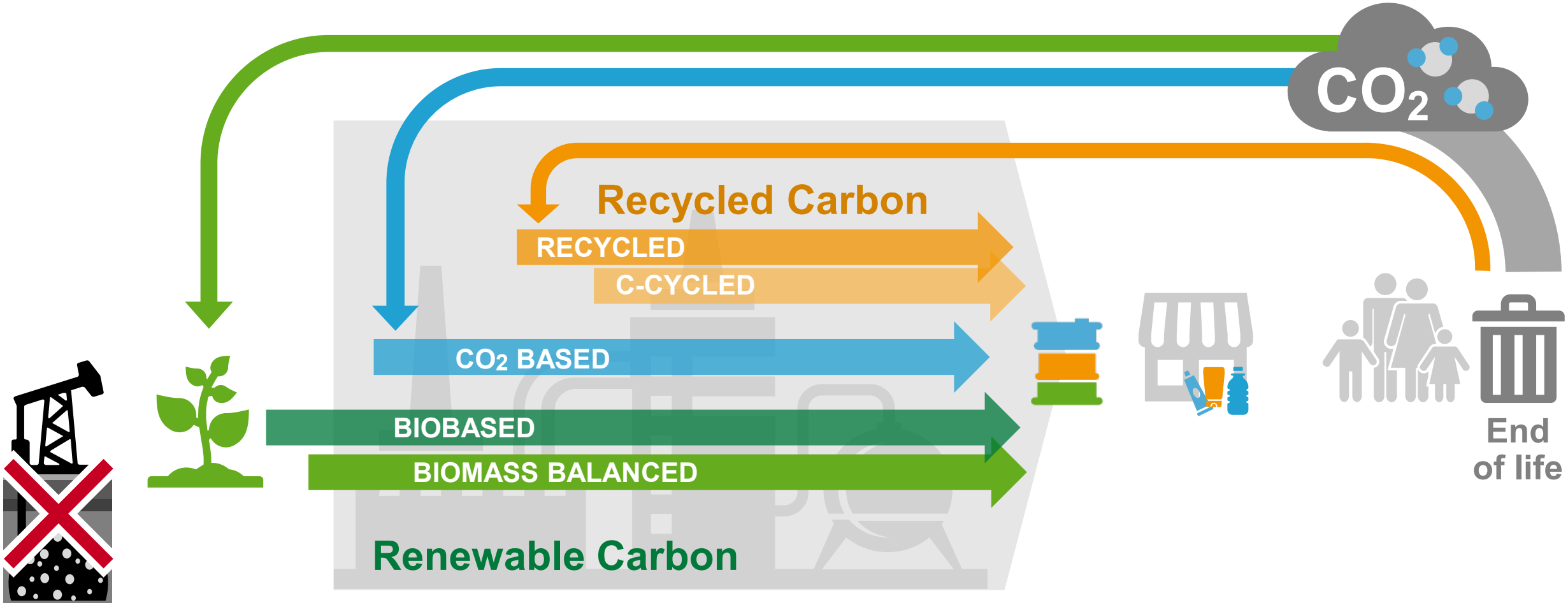
Circularity is the ultimate goal

Biogenic, recycling and CO_2-based Carbon will close the loop



Keep fossil in the ground

Keep carbon in the loop

Circularity is the ultimate goal

Tackle the major end-of-life plastic waste streams (Europe)

Packaging waste
~16 million tons

Textile waste
~6 million tons

End-of-life tires
~3 million tons

Mattress foams
~2 million tons

Shredder residue*
~2 million tons

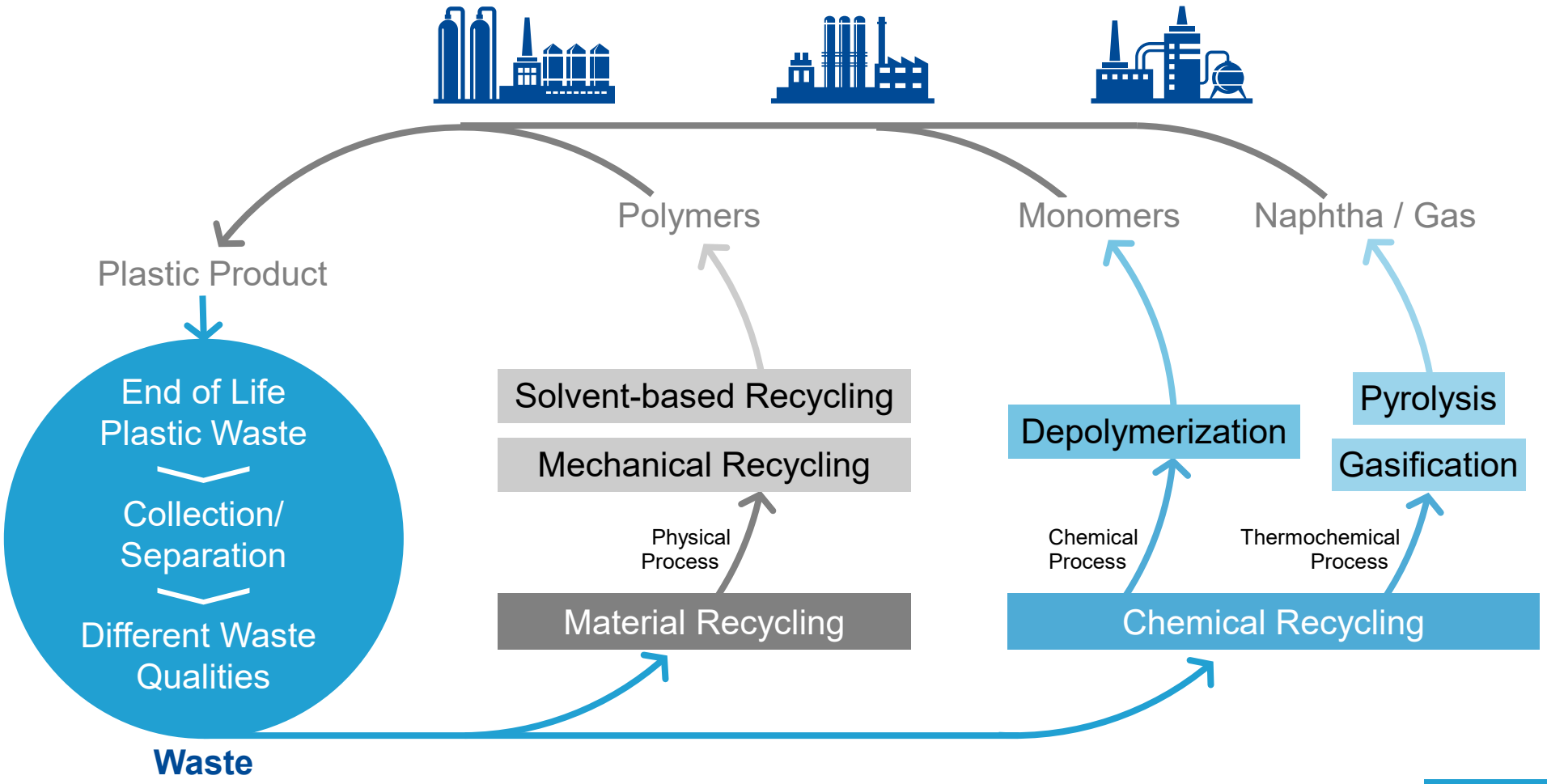
*Includes automotive and appliances

Challenges of post-consumer recyclates

- Contamination of feedstock for recycling is a major pitfall
- Industrial sorting not yet possible or in-efficient - as of today, optimized for metal retrieval
- Limited share of Performance Polymers such as PA, PBT, PU, TPU etc.

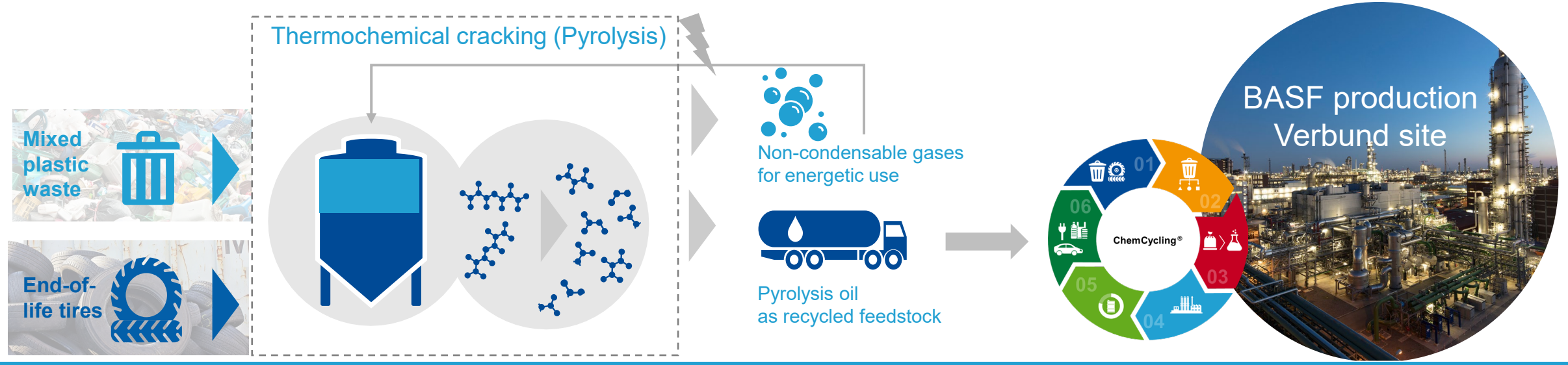
Circularity is the ultimate goal

A range of recycling technologies is needed to realize a circular plastics economy



Circularity is the ultimate goal

A complementary technology - Pyrolysis of end-of-life plastic waste



BASF collaborations to secure supply

Suitable waste supply

Mixed plastic waste

End-of-life tires

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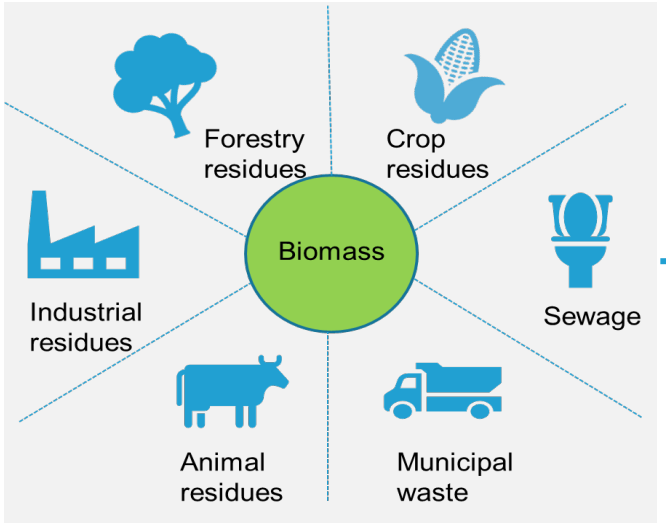
Circularity is the ultimate goal

Substituting fossil feedstocks through renewable feedstocks



Biomass waste and residue

Biogas plants
(Anaerobic digestion)

Biogas
(Methane, Carbon dioxide..)

Heating

Electricity

Upgrade
to Bio-Methane

ISCC
International Sustainability & Carbon Certification

REDcert²

Gas grid

Transportation

Utilization for chemical production

Customers already start to implement our solutions

Our customers already start to implement our solutions

Bow door handle Mercedes-Benz EQE & S-Class made from mass balanced Ultramid®

Targets and application

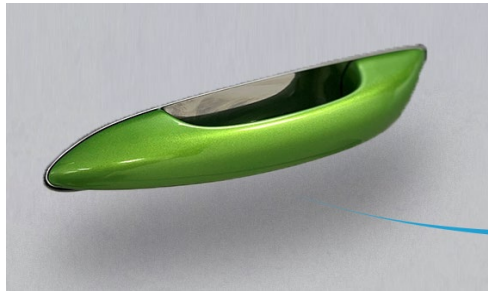
- Solution addressing both targets
- Safety-relevant and visible part

Increase circular material content

Resource Conservation

Reduce CO_2 emissions[1)]

Climate Protection



REDcert²

ChemCycling®

Drop-in solution

- 100% Substitution of fossil feedstock
- Renewable feedstock: Waste based Biomethane
- Circular feedstock: Pyrolysis oil from EoL tires
- Mass Balance: Using REDcert2 certified feedstock attribution principle

REDcert²

Biomass Balance

1) PCF reduction based on sum of partial PCF's, Partial PCF excluding biogenic CO2 and Partial PCF biogenic CO2.

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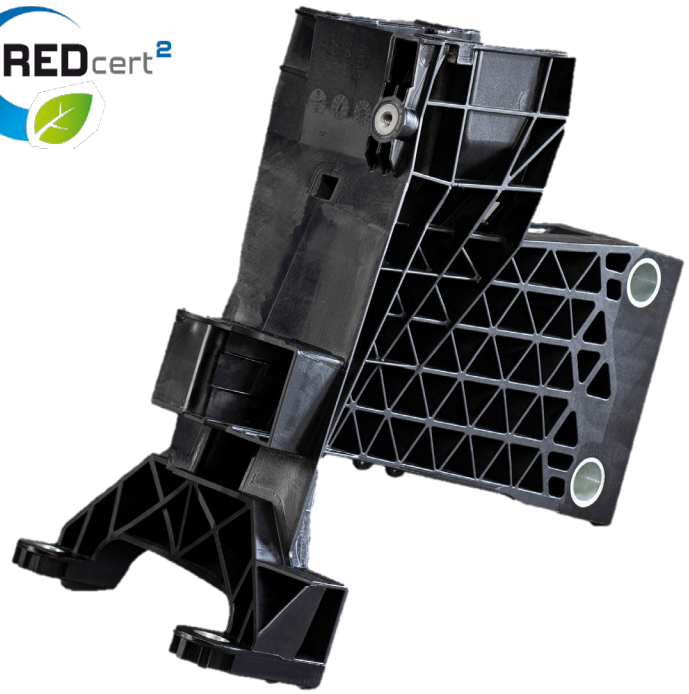
Our customers already start to implement our solutions

Safety-relevant crash absorber Mercedes-Benz S-Class



Markus Schäfer • Follower:in
Mitglied des Vorstands der Mercedes-Benz Group AG, Chief Technology Offi...
1 Woche •

Chemical recycling takes another step forward with the announcement that our #MercedesBenz S-Class is now fitted with a crash absorber made from advanced recycled plastic.

As part of the front end, the part creates a more even distribution of the forces acting on the other car in a frontal crash and is thus subject to especially high quality and safety requirements.

Using a process pioneered by our partner BASF, this safety-critical component is constructed from pyrolysis oil made from scrap tyres mixed with biomethane. The result is a virgin-quality plastic that replaces raw fossil resources in line with the so-called mass-balance approach. Crucially, this recycled plastic has the same characteristics as virgin plastic produced from crude oil, which means it has the potential to replace a large number of vehicle components across our model range, including technically demanding parts such as the crash absorber.

This is not the first time we have used this groundbreaking recycling process. Some of the EQE, EQE SUV and S-class models already use bow door handles made from the same combination of raw materials.

Together with our partners, we are closing the materials loop and actively driving the development of innovative recycling processes.

#MercedesBenz #Sustainability #Innovation #ambition2039

Sie und 379 weitere Personen 5 Kommentare • 23 direkt geteilte Beiträge

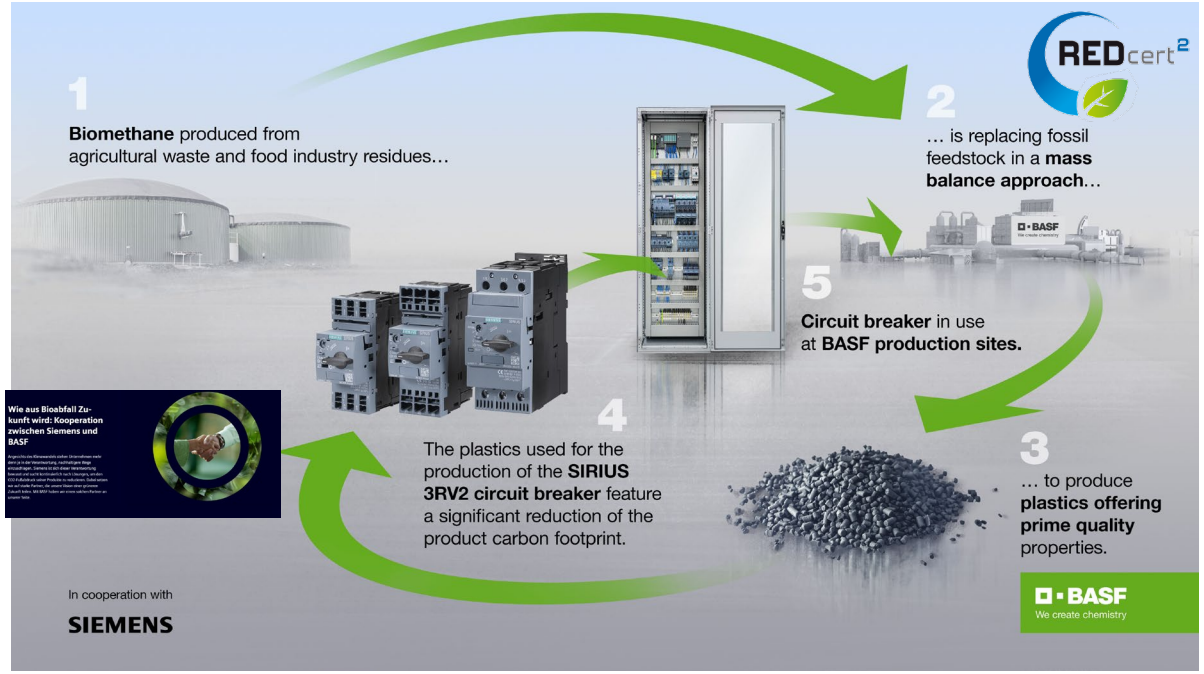
Source: LinkedIn 17.08.2023

Safety-relevant art crash absorber made from mass balanced Ultramid®
„Engineering change“ in 09/2023 (running change after SOP)

Our customers already start to implement our solutions

SIEMENS circuit breaker from biomass balanced Ultramid® and Ultradur®

SIRIUS 3RV2 circuit breaker for industrial facilities and machines now using **10 different Ultramid® and Ultradur® biomass balanced products**



Source : SIEMENS EcoTech Label

Siemens EcoTech label

- BMB products are defined under “Low carbon material”, due to the PCF reduction of the materials (up to 30% reduction*).

*According to TfS Methodology and compares the CO2 reduction of the BASF Biomass Balanced product vs the conventional BASF product

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We need (more) pioneers!

…just like 30 clrp

Let‘s Go!Create

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