



Il futuro dell'economia del Paese: circolare, come uno Pneumatico Fuori Uso

Nuove prospettive per la filiera dei PFU, strategica
per gli obiettivi nazionali e globali di sostenibilità

ROMA 23 Maggio 2023 Ore 10:00 - 13:00

Sala Gianfranco Imperatori - Associazione Civita - Piazza Venezia, 11

“il riciclo chimico: **Upcycling della GVG**”

a **sustainable future** for the
global rubber market



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▲ OUTLINE

- 1 Introduction – Market megatrend for tyre, automotive and fashion industry
- 2 Main technologies: Pyrolysis and Devulcanization
- 3 Pyrolysis: Solid industrial applications
- 4 Devulcanization: Life Green Vulcan
- 5 Devulcanization: Life RE-SHOES
- 6 Conclusion

1. Introduction

2. Main technologies:
Pyrolysis and
Devulcanization

3. Pyrolysis: solid
industrial application

4. Life Green Vulcan

5. Life RE-SHOES

6. Conclusion

MARKET MEGATREND – Transformation towards Zero Carbon Mobility

EU Carbon Neutral by 2050 - 55% Emission Reduction by 2030



Carbon Neutral
by 2040



Carbon Neutral
by 2050



Ambition
by 2050








Carbon Neutral
by 2050



-50% vs. 2021
by 2030

Sustainability Targets of the main Tire Manufacturers

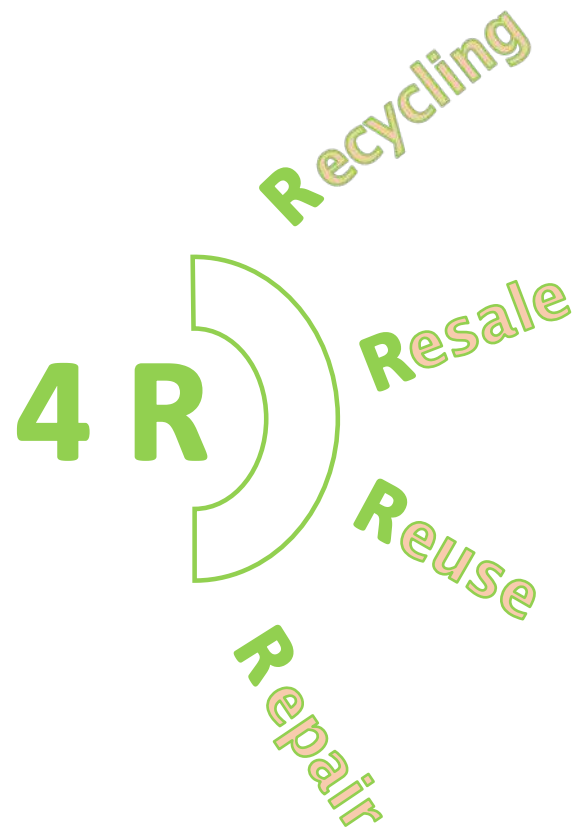
Brand	Market Share	2019	Intermediate	Final
 BRIDGESTONE	15%	% n/a (19.022 ton of the recycled rubber)	2030: 40% sustainable materials	2050 100% sustainable materials*
 MICHELIN	14%	28% sustainable materials	2020: 30% sustainable materials	2048: 80% sustainable materials*; 100% tyre recycling
 GOODYEAR	9%	20% sustainable materials	2025 50% supply chain traceability	
 Continental	7%	3% sustainable materials	2025 10% sustainable materials*	
 PIRELLI	4%	n/a	2025 Doubling of the sustainable materials quote*	

sustainable materials*: bio-sourced and recycled materials

(source: 2019 sustainability report of the reported companies, press release of the individual companies reported)

▲ FASHION INDUSTRY TREND

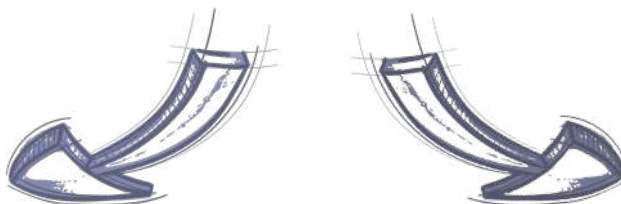
The fashion industry is responsible for the production of up to 10% of the global carbon dioxide output and accounts for one-fifth of the 300 million tons of plastic produced globally each year, according to the United Nations Environment Programme.



MAIN TECHNOLOGIES: PYROLYSIS AND DEVULCANIZATION

CHEMICAL RECYCLING TECHNOLOGIES

PYROLYSYS



4th DEVULCANIZATION GENERATION
GREEN CHEMICALS



PYSOLYSYS OIL AND CARBON
BLACK



KINETIC CONTROL OF
DEVULC. REACTION

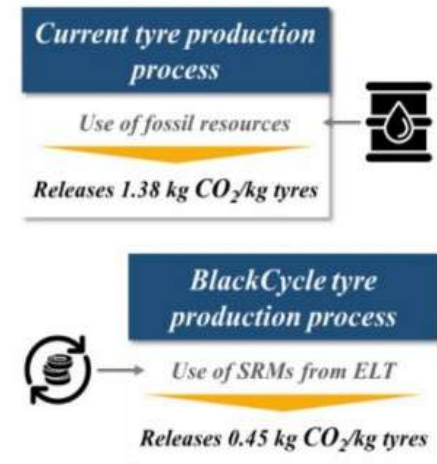
PIROLISYS: SOLID INDUSTRIAL APPLICATION



Closing the loop with ChemCycling® From waste to virgin-grade product



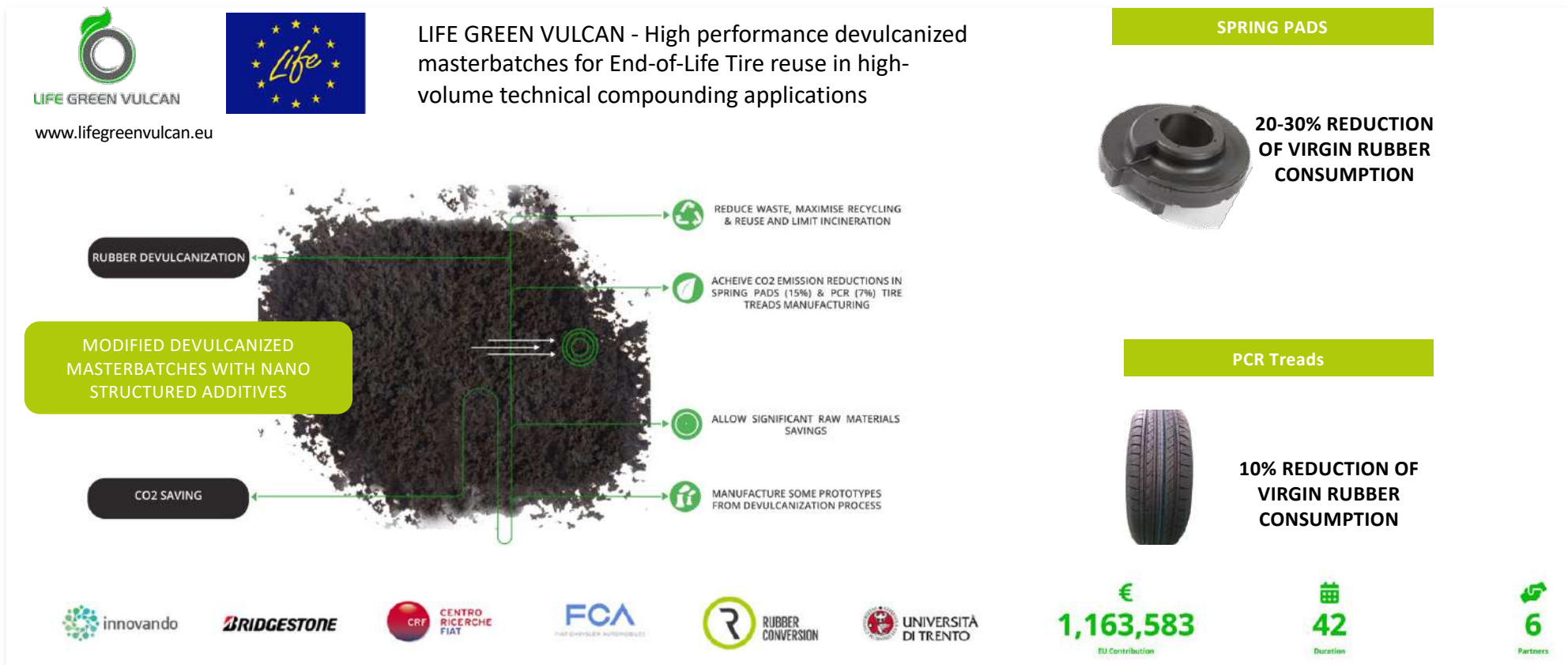
ChemCycling® is a project on chemical recycling to further develop the pyrolysis technology which turns plastic waste or end-of-life tires into a secondary raw material called pyrolysis oil.



The BlackCycle project involves 13 organisations in a unique European public-private partnership. The consortium will develop specific solutions to produce sustainable raw materials for tyres: ELT collection and feedstock selection, pyrolysis optimisation, oil refining and valorisation, furnace process optimisation, and sustainable tyre performance assessment.

EU FUNDED RESEARCH PROJECT: LIFE GREEN VULCAN

Fundamental research on nano-filler devulcanized rubber modification and composite design



▲ AUTOMOTIVE COMPONENT: What's the next?

Life Green Vulcan: driver for further automotive rubber component application



Engine mount



Bushing



Strut top mount

and more...

▲ TYRE: What's the next?

Hot Retread powered by Sustainable Rubber Compound

Retread tyre was one of the first reply to the basic need of circular economy and sustainability
Additional enviromental impact reduction could come thanks to the use of devulcanized rubber
Some figures: 70% raw material reduction, 65% energy reduction, 95% CO₂ emission reduction

-CITY BUS

-8 Vehicles

-control dx / SRC sx &
viceversa



-REGIONAL

-8 Vehicles

- control dx / SRC sx &
viceversa



-LONG HAUL

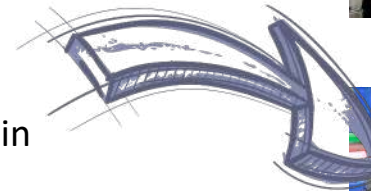
-8 Vehicles

control dx / SRC sx &
viceversa



Rubber Conversion starts a first
project with one of the main player in
Italy for hot retread tyres

CURRENT ON GOING TEST ON 96 TYRES



Tire Retread based on SRC 450 EVO

Zero defects

EU FUNDED RESEARCH PROJECT: LIFE RE-SHOES

Sorting and recovery worn-out shoes and production scraps to make secondary raw materials for manufacture new REcycled SHOES



LIFE RE-SHOES – The project wants to provide an alternative, circular and sustainable solution for footwear end-of-life management. The project aims to implement a new circular economy business model based on the collection, sorting and recycling of post-consumer outdoor shoes from which to obtain secondary raw materials to be used for manufacture a new generation of high-quality recycled shoes.



Partner involved



CONCLUSION

«The circular economy is no longer just a fad or a refrain on everyone's lips, but it is the solution needed to reverse the catastrophic climate change course»

Stefano Carloni, Presidente di AIRP





THANK YOU
FOR YOUR ATTENTION!

...and be sustainable



RUBBER CONVERSION

SUSTAINABLE RUBBER COMPOUNDS



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