LIFE GREEN VULCAN

High performance devulcanized masterbatches for End-of-Life Tire reuse in high-volume technical compounding applications

www.lifegreenvulcan.eu

PROJECT

The LIFE GREEN VULCAN project aims at increasing the reuse rate of rubber waste with an innovative and environmentally friendly devulcanisation technology. Co-funded by the LIFE Programme of the European Union, project will enable a circular and low-carbon economy by expanding the recycling rate of End-of-Life tyres.
The most promising method to reuse ELT-derived rubber materials in high quality products is devulcanization.
The technology could yield a product – substitute for virgin rubber, both in terms of properties and in terms of cost of manufacture.
The devulcanization technology will be demonstrated through the manufacturing of two compounds using high content of reprocessed rubber feedstock from End-of-Life Tyres.

PROBLEM TARGETED

Vulcanized rubber, as elastomer, is very difficult to recycle, which is why the major part of the End-of-Life Tyres (ELT) and other rubber products are being landfilled (65%) or disposed through incineration (17.5%).
Tyres and automotive component applications, which represent some 75% of rubber demand at the European level, make almost no use at all of reprocessed rubber feedstock.
Reclaimed rubber from ELTs is used at very low concentrations in tyre manufacturing (below 5%), due to technical constraints.
Consequently, despite the increasing cost of raw materials and the environmental issues related to their consumption, the material recycling and reuse rate of rubber waste is still very low (i.e. 12.8%, decreasing to 1.5 wt% if considering the amount reused for remanufacturing high-value products like compounded General Rubber Goods – GRG – and tyres).

PROPOSED SOLUTION

The LIFE GREEN VULCAN demonstration project will integrate an innovative yet industrially established devulcanization process with a blending post-processing stage into a combined solution, which has never been used in rubber recycling before.

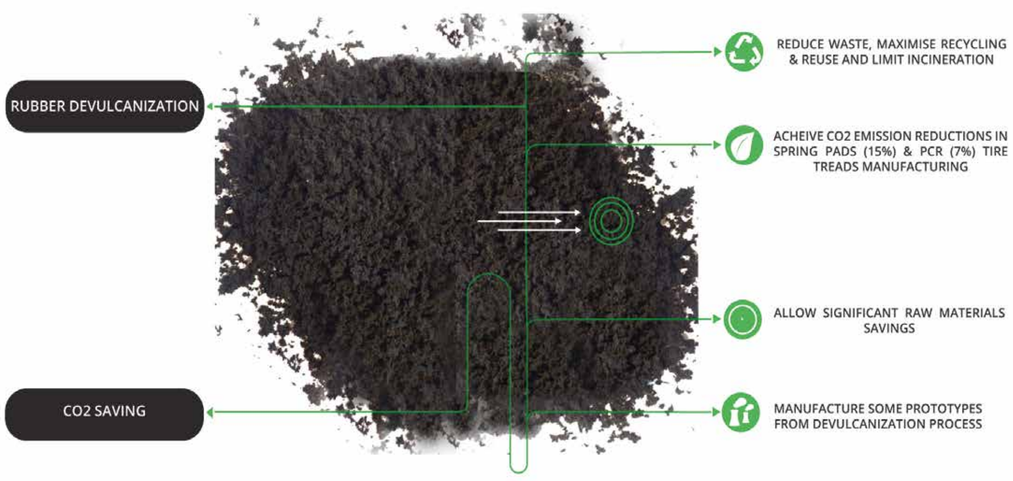
This will unlock the path to a higher recycling rate of ELT-derived rubber.

Rubber devulcanization is a powerful method of recycling that has an enormous potential for the development of quality raw materials from ELTs. The resulting material can be transformed into useful products which could serve as a substitute for virgin rubber.

OBJECTIVES

- PROVIDE A SOLUTION FOR THE RUBBER REUSE IN HIGH-QUALITY PRODUCTS
- GET HIGHER VALUE MATERIALS TO SUBSTITUTE VIRGIN RUBBER
- SCALE-UP A DEVULCANIZATION PROCESS
- RECOVERY OF CRITICAL RAW MATERIAL- NATURAL RUBBER
- ESTABLISH A WIDER RANGE OF ELT APPLICATION

EXPECTED IMPACTS



DEVULCANIZATION PROCESS

LIFE GREEN VULCAN will integrate the devulcanization technology and produce two compounds using high content of reprocessed rubber feedstock from ELTs:
a compound for manufacturing spring pads for cars and light trucks a compound for manufacturing Passenger Car Radial (PCR) tyre treads.

The innovative technology will allow an increase in the recycling rate of rubber from end-of-life tyres, while reducing CO2 emissions linked to the production process.

PARTNERS

innovando · BRIDGESTONE · CRF CENTRO RICERCHE FIAT · STELLANTIS · RUBBER CONVERSION · UNIVERSITÀ DI TRENTO

PROJECT DETAILS

PROJECT TITLE: High performance devulcanized masterbatches for End-of-Life Tire reuse in high-volume technical compounding applications
START DATE: 01/09/2020
END DATE: 29/02/2024
TOPIC: Environment and Resource Efficiency
SECTOR: Waste
EU CONTRIBUTION: 1,163,583 Euro

With the contribution of the LIFE Programme of the European Union.
LIFE19 ENV/IT/000213

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