Tyre Recycling for Advanced Derivative Substitutes

Publieke samenvatting / Public summary

Aanleiding

End-of-life tyres (ELTs) present a significant global waste problem. In 2022, Europe produced around 4.4 million tonnes of ELTs, expected to exceed 5 million tonnes by 2028. Despite a 95% collection rate, effective large-scale recycling remains elusive. Mechanical recycling into rubber granulate has been the primary method, covering only a limited portion of ELTs, and is now in decline due to regulatory bans on granulate use, such as in sports fields. Most European ELTs are incinerated for energy recovery or exported, often to Asian countries where they are used as fuel under lower environmental standards, causing high greenhouse gas and toxic emissions that harm the environment and public health. In the Netherlands, ELT collection and processing is managed by RecyBEM and relies heavily on mechanical recycling. However, new restrictions on granulate use and a lack of alternatives mean more ELTs are incinerated or exported, threatening sustainability. The absence of scalable recycling options highlights an urgent need for chemical recycling plants that can process large ELT volumes into circular chemical products and reduce carbon emissions.

Doelstelling

The goal of this project is to construct and operate a large-scale flagship plant in Delfzijl, the Netherlands, that uses advanced chemical recycling technology to process end-of-life tyres (ELTs) into high-value circular products. This plant will: • Reduce CO2 emissions by replacing conventional

Projectinformatie / Project information

Projectnummer / Project number
VEKI725036
Subsidiebedrag / Grant amount
€ 30.000.000,00

Algemene informatie / General information

Penvoerder / Secretariat
Circtec Netherlands B.V.

Volg Topsector Energie op X / Follow Topsector Energie on X

@TSEnergie

production methods for carbon black and naphtha with a two-step pyrolysis process. • Increase circularity in the tyre and petrochemical industries by converting 100% of ELT mass into valuable products, including recovered carbon black (rCB) and circular naphtha. • Support the objectives of the VEKI scheme by deploying mature, sustainable technologies at industrial scale, contributing to climate goals and industrial resilience in the Netherlands. • Meet growing market demand for sustainable raw materials, with all products presold to major offtakers under long-term agreements.

Korte omschrijving

1. Permit update Activities: all permits are already issued, but will need updating before the project can start. 2. Goal: All permits upheld validated in coordination with the Environmental Department Groningen.Investment decision and financing Activities: Secure funding and finalize the investment decision. Goal: Ensure construction only begins with sufficient capital and a validated business case. 3. Preparation for construction Activities: Complete detailed engineering, finalize technical designs prepare procurement packages for all materials and systems. Goal: Achieve a risk-informed, procurement-ready design package, with all regulatory compliance in place. 4. Construction Activities: Build all technology modules using a modular approach, install equipment, , integrate supporting systems and infrastructure. Goal: Complete all buildings and technology modules, ready for commissioning and start-up. 5. Commissioning and start-up Activities: Conduct cold and hot commissioning, verify performance, and hand over to site operations. Goal: Ensure all systems meet design targets and are ready for continuous operation.

Resultaat

1. Construction and operation of a large-scale flagship plant The project will deliver a new, advanced chemical recycling plant in Delfzijl, capable of processing end-of-life tyres (ELTs) into high-value circular products. The plant is designed to operate at industrial scale, using a two-step

pyrolysis process to convert 100% of ELT mass into recycled carbon black (rCB) and circular naphtha. 2. Significant CO2 emissions reduction By replacing conventional production methods for CB and naphtha with the plant's innovative recycling technology, substantial CO2 emissions savings will be achieved at a good cost efficiency. This is achieved by recycling 53 kt of ELT sourced in the Netherlands. In addition, the standard for tyre recycling is increased as required in the GBER. 3. Production of high-quality circular products with secured market demand The produced rCB and circular naphtha are already presold to major offtakers under long-term agreements. This ensures that all products have a guaranteed market, supporting both the circular economy in the Netherlands and the sustainability goals of the tyre and petrochemical industries.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.
Voor meer informatie over de Topsector Energie, ga naar **www.topsectorenergie.nl**.

Voor meer informatie over de TSE / Energie-Innovatie regelingen die RVO aanbiedt, ga naar **www.rvo.nl/tse**.