

ConCirMy Configurator for the Circular Economy



Resource-efficient Circular Economy – Innovative Product Cycles (ReziProK)

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In Germany, around half a million tonnes of end-of-life (EOL) tyres accumulate annually and only a small proportion is used as recycled material for the production of new tyres. Within the framework of ConCirMy, it is being investigated whether and how tyres can be optimised with regard to the goals of a circular economy without compromising on quality. A tool is being developed to provide information on environmental compatibility to various stakeholders in the supply chain which can be taken into account in purchasing decisions.



Recycling of EOL tyres

EOL tyres represent a valuable resource and can be returned to the material cycle through recycling. Vehicle manufacturers are also interested in increasing this proportion – a motivation based, for example, on the End-of-Life Vehicles Directive, according to which 85% of end-of-life vehicles by weight must be reused or recycled and 95% must be recovered. These requirements are also important with regard to the development of new vehicles and their components, the pressure is increasing with the transformation to electromobility because some components are difficult to recycle.



Recycling of end-of-life tyres.

Merging core system

The aim of the ConCirMy project is to develop a product configurator which informs users about the environmental impacts and other sustainability aspects of the product (raw materials used, possibilities of recycling or reuse) in the life cycle of the tyre and enables them to consider this information in their purchasing decisions. These can be accessed by different user groups situated at different levels in the supply chain – consumers, designers, recyclers – and taken into account in decision-making alongside other important factors such as functionality and cost.

Ultimately, the aim is to support the production and purchase of more sustainable products, the development of more environmentally friendly designs and the move towards recycling and reuse. The configurator acts as a unifying core system that makes specific information available to different actors in the supply chain. Technically, both the integrated environmental assessment of products and components in a product configurator for the end customer and the comparative implementation of different calculation approaches are new.

Socio-economic analyses are conducted in order to learn about consumer preferences and demand potentials for bio- and circular economy-based automotive components, including related sustainability aspects. Recommendations are derived for the various supplier groups of the targeted circular economy system. For the successful implementation of the circular system, business models are developed. Furthermore, the need for standards to support the development of the supply chain towards a circular economy is examined.

First results

First research has demonstrated that tires are a highly complex product and that there is no established product classification including information about raw materials. Therefore, a key result of the project is the development of a generic tire model, which serves as basis for the product configuration. Furthermore, the concept for sustainability assessment was expanded with an interface to a life cycle assessment database (Ecoinvent) and an interface for retrieving data from ERP systems.

Further research has showed that the use phase of a tire has the biggest impact on the environmental assessment of its whole life cycle. In order to be able to integrate information from the use phase, several variants of sensor data collection were examined and implemented as a prototype in the form of an app. In parallel to the technological developments, surveys on acceptance factors were done into two phases and socio-economic analyses were carried out.

Interdisciplinary project consortium

CAS Software AG, DECHEMA e.V., the Department of Innovation Economics at the TU Berlin and the German Institute for Standardization (DIN) are working together on the “ConCirMy” project to develop an interconnected and sustainable assistance system.

CAS brings expertise in software development and is developing the configurator in cooperation with all partners.

DECHEMA e.V. conducts market research on the product life cycle as well as on the current handling and recycling of used tyres in Germany and creates life cycle assessment studies which form the basis for evaluation of environmental impacts in the configurator tool.

Using socio-economic analyses, the Department of Innovation Economics at TU Berlin determines acceptance factors and demand potentials for sustainable automotive components, develops recommendations for the different players in the circular system, and develops business models for its successful implementation.

DIN reviews the project results with regards to potential standardization needs. For this purpose, an overview of existing norms and standards is prepared.

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Resource-efficient Circular Economy – Innovative Product Cycles (ReziProK)

As part of the FONA Field of action 6:
The circular economy – efficient use of raw materials, avoiding waste

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ConCirMy – Configurator for the Circular Economy

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