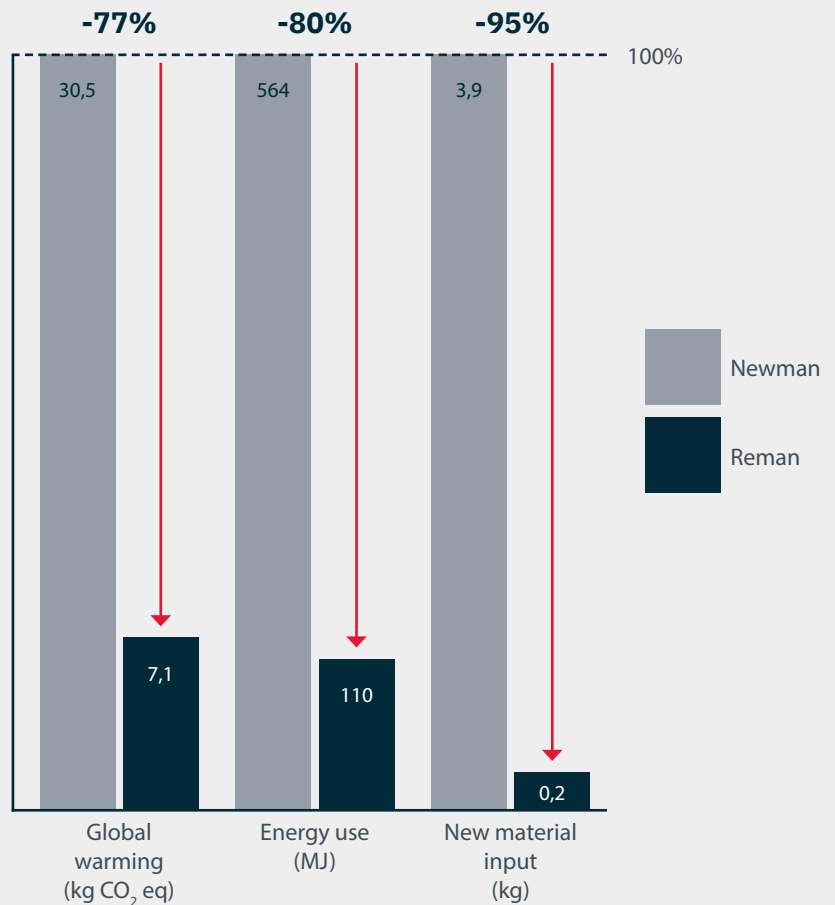




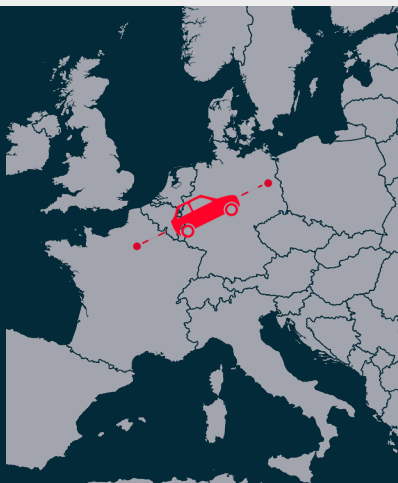
# LIFE CYCLE ASSESSMENT FOR STARTERS

A remanufactured **starter** from BORG Automotive saves the environment 77% CO<sub>2</sub>eq, 80% energy, and 95% of the new materials compared to a newly manufactured starter.



## DID YOU KNOW?

The CO<sub>2</sub> savings of 15 remanufactured starters compared to 15 newly manufactured starters are equivalent to the CO<sub>2</sub> emitted by a petrol passenger car on a journey from Paris to Berlin.



## How did we find out?

Linköping University has performed a life cycle assessment of a starter from BORG Automotive. The environmental assessments will consider the potential benefits of remanufacturing regarding global warming, resource use, and energy use compared to a newly manufactured product of the same design. The report has been critically reviewed by a sustainability consultant at SustainX (LCA expertise and head of the critical review).

## Method

Life cycle assessment (LCA) is a standardized and widely used method for evaluating the environmental impact of a product or service. It includes the whole life cycle, from extracting raw material, material production, product manufacturing, and product use to end-of-life treatment. With this approach, an LCA can expose what stage, process, or material causes the main environmental impact.

The aim of the life cycle assessment is to evaluate the environmental impact of a remanufactured product (reman) and to compare it to the environmental impact of a new product (newman). To achieve this, an attributional modelling approach is used, where the input and output flows of the processes of a system are inventoried for a specified period based on historical data.

The environmental assessment of the starter is performed through LCA methodology according to ISO 14040 and ISO 14044, where the principles and structure and the requirements and guidelines are described. Limited compliance on ISO 14044 due to critical review done by one expert and not by a panel. SimaPro Professional Version 9.4.0.2 software is used to perform the LCA, the inventory database Ecoinvent 3.8 is used for the life cycle inventory, and the Cumulative Energy Demand (CED) and EPD(2018) methods are used for the impact assessment.

