Defenda

Innovative solution: Fendaskin

November 2023

Introduction

The study is part of a larger project by Water Revolution Foundation to assess the sustainability credentials of supplier's solutions, thereby making more sustainable alternative available to the yachting industry. The broader aim of the project is to inform stakeholders, consumers and public institutions on the need to collaborate in mitigating impacts and strengthening the industry's commitment to SDGs achievement. This specific LCA study examines the environmental credentials of Defenda's fender covers, Fendaskin made from a new generation biopolymer (Bioprene) compared to the Business-as-Usual fender covers made of neoprene

Approach & Data

The LCA was conducted in accordance with the ISO 14040 and ISO 14044 by ALEA Design (Università di Modena e Reggio Emilia) with third party verification from TETIS Institute SRL (University of Genova spin-off). Collected data include input and output flows relating to materials, transport, energy, products, and emissions. Data quality evaluation based on parameters such as age, reference technology, process, calculation methods, and measurement irregularities. Data categorized into specific data (from surveys or literature), selected generic data (from databases), and proxy data (estimates and averages). Specific data used for most processes, while generic data from Ecoinvent v.3.9 used for raw materials, fuels, and electricity production. Transport modelled based on means of transport and distances. SimaPro 9.5 used for the study.

Functional Unit

The functional unit is defined as 1 hour of use, with the system function being applied in the yachting field.

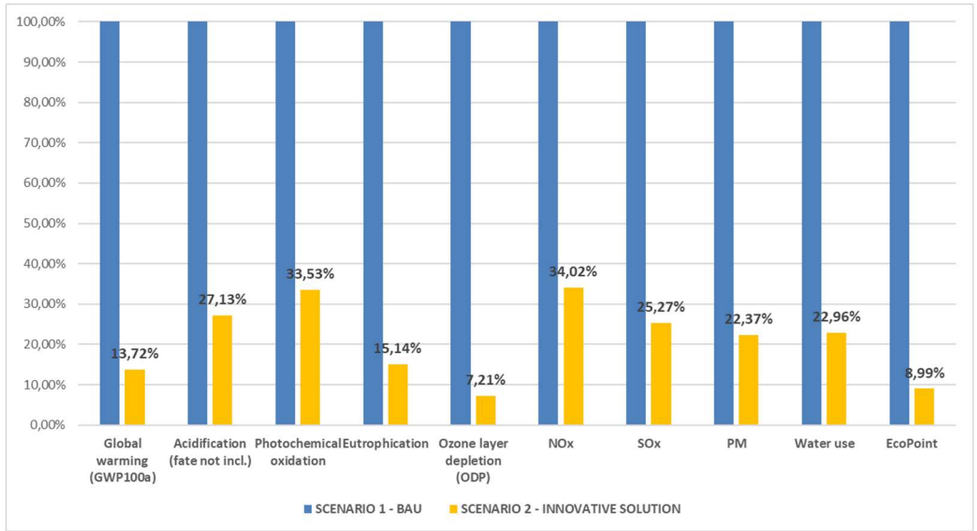
System Boundary

Divided into three phases: Upstream processes (from cradle to gate), Core processes (manufacturing from gate to gate), and Downstream processes (from gate to grave). No allocation procedure performed, as Defenda provided all data regarding system production.

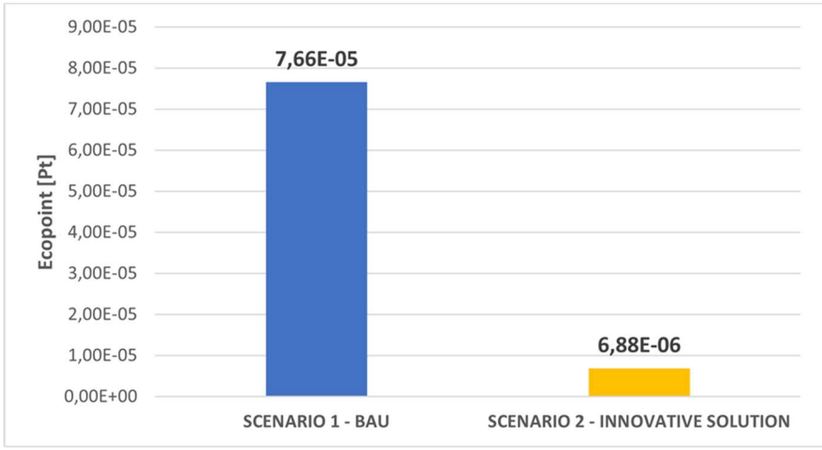
Result

Defenda's innovation showed a reduction in environmental impact across all impact categories. The reduction ranges from 65.95% to 92.79%, demonstrating that the Fendaskin is a more sustainable option compared to its mainstream alternative.

LCA Impact Category Results (Business-As-Usual vs FMD Innovation)



Comparison between the results of the Scenario 1- Yacht with neoprene fender cover (BAU) and Scenario 2- Yacht with bioprene Fendaskin (Innovative Solution). The results are expressed in percentage



Summary of the single score (Ecopoint) assessed scenarios. Scenario 1 is business as usual (yacht with neoprene fender cover), and scenario 2 is the innovative solution (yacht with Fendaskin bioprene fender cover). The higher the Ecopoint value, the higher the potential environmental impact

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