

OceanLED

Innovative solution: Explore Weld-In E8 and E9 models

July 2022

Introduction

This document provides a concise summary of a LCA study conducted as part of Water Revolution Foundation's project to evaluate sustainability solution within the yachting industry. This specific study evaluate the environmental credentials of industry traditional product compared with OceanLED's innovative Explore Weld-In E8 and E9 models.

Approach & Data

The LCA study conducted by TETIS institute SRL (University of Genoa spin-off), followed the ISO 14040 and ISO 14044 standards, with third-party verification from ALEA Design (Universita di Modena e Reggio Emilia spin-off). Data included input/output flows for materials, transport, energy, products, and emissions. Data quality was evaluated on age, reference technology, process, calculation methods and measurement reliability. Data categories include survey/literature, databases e.g. Ecoinvent v.3.8, and proxy data e.g. estimates/averages. Specific data were used for most processes; generic data from Ecoinvent v.3.8 for raw materials, fuels, electricity. Transport modelled based on transport and distance means. Study used SimaPro 9.3

Functional Unit

The functional unit is defined as 1 hour of light usage while turned on, with the system function being its use in the yachting field.

System Boundary

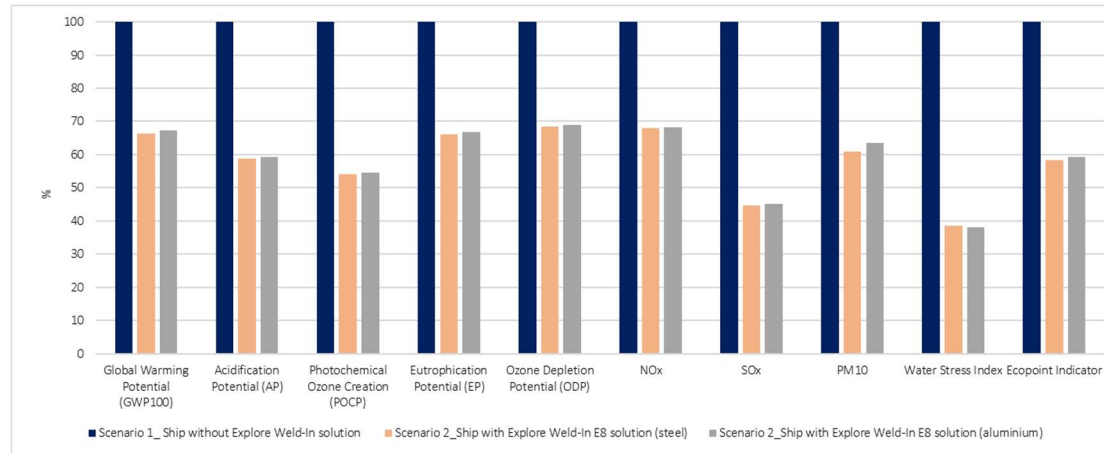
Divided into three phases: Upstream processes (from cradle to gate), Core processes (manufacturing from gate to gate), and Downstream processes (from gate to grave). No allocation procedure performed, as OceanLED provided all data regarding system production.

Results

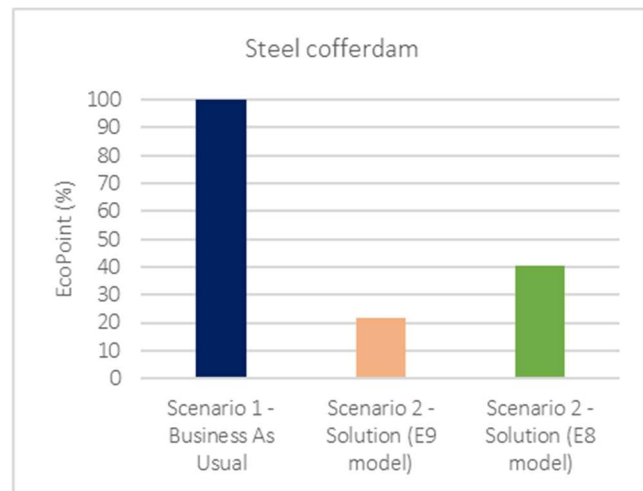
The LCA study reveals a notable reduction in environmental indicators ranging from 31% to 61.8% when comparing both steel and aluminium versions of OceanLED's Explore Weld-In E8 models with the traditional product. The most substantial reduction is observed in the Water Stress Index, indicating a 6.15% reduction for steel version and a 61.8% reduction for the aluminium version. This reduction is attributed to the lower weight of OceanLED's Explore Weld-In E8 model compared to an industry-leading, Business-As-Usual product, emphasising the importance of material selection in reducing environment impact.

The Explore Weld-E9 model also show reduction in most indicators compared to the BAU scenario, except for the Water Stress Index. The Water Stress Index reduction is 5.1% for aluminium type but shows a 17.7% increase for the steel type. The increased impact for the steel type is due to its greater weight compared to the BAU scenario.

LCA Impact Category Results (Business-As-Usual vs OceanLED Weld-In E8 model)

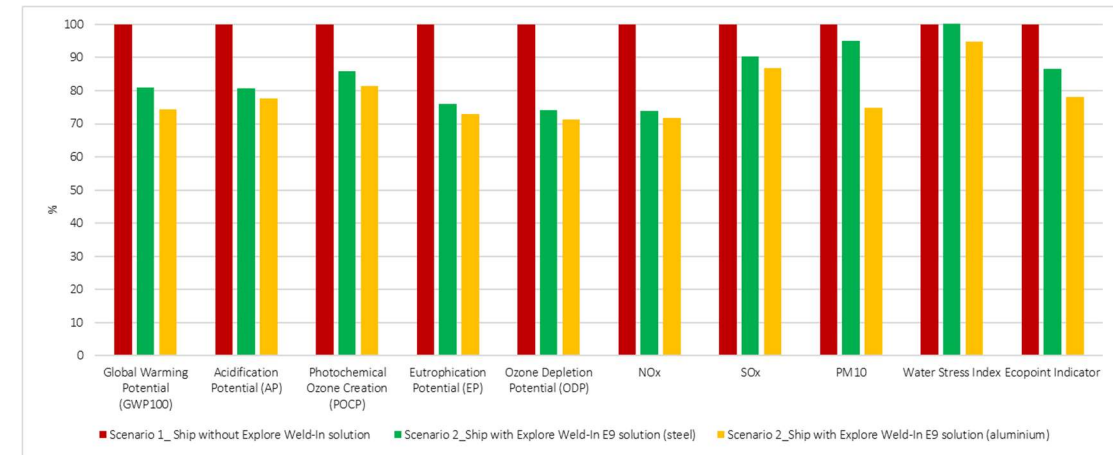


Comparison of environmental impacts between the results of Scenario 1- Yacht without Explore Weld-In solution (BAU) and Yacht with Explore Weld-In E8 solution. The results are expressed in percentage.

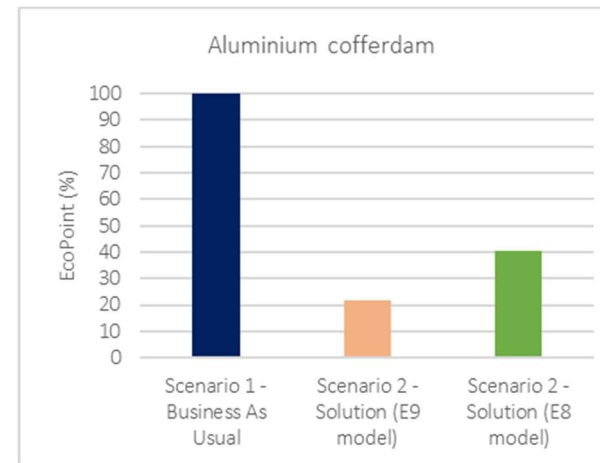


Summary of the single score (Ecopoint) assessed scenarios. Scenario 1 is business as usual (yacht without Explore Weld-In solution), and scenario 2 is the innovative solutions (yacht with Steel Cofferdam Explore E8 and E9 Weld-In). The results are expressed in percentage compared to Scenario 1 - Ship without Explore Weld-In solution (BAU). The higher the Ecopoint value, the higher the potential environmental impact.

Impact Category Results (Business-As-Usual vs OceanLED Explore Weld-In E9 model)



Comparison of environmental impacts between the results of Scenario 1- Yacht without Explore Weld-In solution (BAU) and Yacht with Explore Weld-In E9 solution. The results are expressed in percentage.



Summary of the single score (Ecopoint) assessed scenarios. Scenario 1 is business as usual (yacht without Explore Weld-In solution), and scenario 2 is the innovative solutions (yacht with Aluminium Cofferdam Explore E8 and E9 Weld-In). The results are expressed in percentage compared to Scenario 1 - Ship without Explore Weld-In solution (BAU). The higher the Ecopoint value, the higher the potential environmental impact.