

García N.<sup>(1)</sup>, Pablos L.<sup>(1)</sup>, Moral A.<sup>(1)</sup>, Mesas M.<sup>(2)</sup>, Puigmal L.<sup>(2)</sup>, González I.<sup>(3)</sup>, Garrido D.<sup>(3)</sup>, Campos J.M.<sup>(4)</sup>, González L.C.<sup>(4)</sup>, Alfonso J.<sup>(5)</sup>, Hacala A.<sup>(6)</sup>, Curea O.<sup>(6)</sup>, Maia J.<sup>(7)</sup>, Soares A.<sup>(7)</sup>

# "Eco-technologies" for the main components in Green-Cars

There were no environmental studies in Green Cars with a life cycle approach. In the project, **current technologies** of the main components in a EV are analyzed...



... and Eco-Design strategies were applied to improve their environmental behaviour. This work also presents the simulation of the initial scenarios and the virtual comparison with the **proposed "Eco-technologies"**

## Characterization of the impact associated with the life cycle of components. Methodology Eco-indicator 99 H/A

Life cycle stages

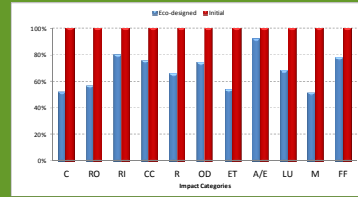
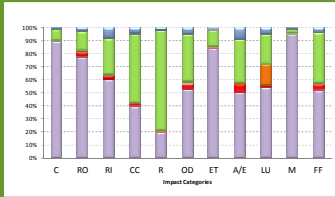
Materials Transport Components Fabrication Installation Use End of life

Impact categories of Eco-indicator 99  
C: Carcinogens  
RO: Resp. Organics  
RI: Resp. Inorganics  
CC: Climate Change  
OD: Ozone Layer Depletion  
R: Radiation  
ET: Ecotoxicity  
A/E: Acidification/Eutrophication  
LU: Land Use  
M: Minerals  
FF: Fossil Fuels

## Comparative of the characterization of the impact associated with a current component (red) and the "eco-designed" one (blue). Methodology Eco-indicator 99 H/A

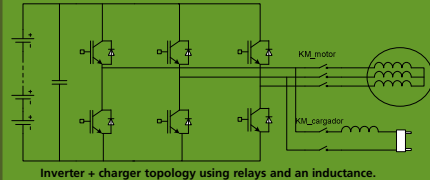
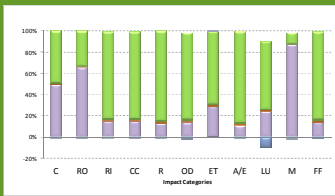
Solution selected among the improvement ideas

(7)



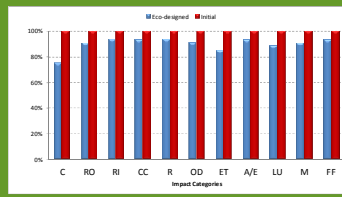
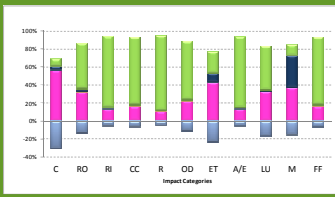
The weight of the battery is reduced to the half achieving the same vehicle autonomy through a range extender.

(3)



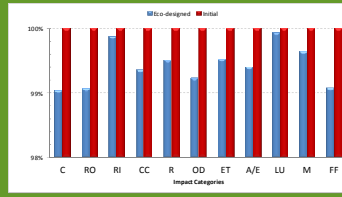
The battery charger is included in the inverter. We are prototyping to check the environmental advantages.

(1)



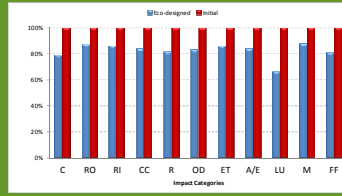
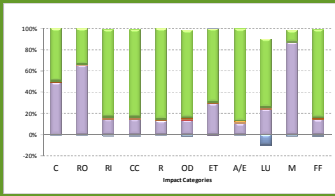
Four components have been integrated in an only module more energetically efficient and less wiring is necessary.

(2)



Incorporation of natural fibers in the friction material and removal of some heavy metals.

(4)

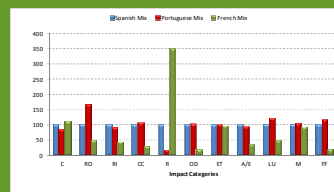
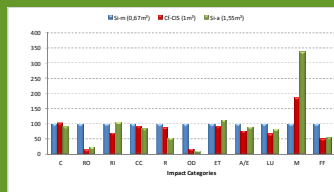


Zoning the passenger compartment's climate control system, climate seats and ceramic casing of the HVAC unit

Several renewable energy sources that can be integrated in an EV have been analyzed.

Solar panels outcomes in EV are highly dependent on the mode of use of the vehicle and the region where it is used.

(6)



Next step: to study the energy recovery in other devices, such as car suspension.



(5)



Integration in an entire vehicle. Analysis of the implications the new components have in the rest of systems of the EV.

For more information, please visit our website:

[www.greencar-ecodesing.eu](http://www.greencar-ecodesing.eu)

Now, we are developing fine tuning and testing of these eco-innovated prototypes.