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Electric vehicle user-centric design for optimised energy efficiency

GRANT AGREEMENT No. 769902



Design OptiMisation for efficient electric vehicles based on a
User-centric approach

DOMUS – Deliverable Report

Deliverable 8.4 Project main results Month 18

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| Written By | Ines Muñoz (IDIADA) Maarten Weide (UNR) | 2019-12-30 |
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Publishable summary

The DOMUS project aims to change radically the way in which vehicle passenger compartments and their respective comfort control systems are designed to optimise energy use and efficiency while keeping user comfort and safety needs central. Although a more thorough understanding of thermal comfort over recent years has led to significant increases in energy efficiency through better insulation and natural ventilation, substantial room for improvement still exists. With Electric Vehicles (EVs) in particular, which are emerging as the most sustainable option for both satisfying the future mobility needs in Europe and reducing the impact on the environment, inefficiencies must be minimized due to their detrimental effect on the range.

Starting with activities to gain a better understanding of comfort, combined with the development of numerical models which represent both the thermal and acoustic characteristics of the passenger compartment, DOMUS aims to create a validated framework for virtual assessment and optimization of the energy used. In parallel, innovative solutions for glazing, seats, insulation and radiant panels, will be developed along with controllers to optimize their performance individually and when operating in combination, the optimal configuration of which will be derived through numerical simulation.

The aim is that the combined approach of innovating at a component level together with optimising the overall configuration will deliver at least the targeted 25% improvement in EV range without compromising passenger comfort and safety. Furthermore, the project will demonstrate the key elements of the new approach in a real prototype vehicle. As such DOMUS aims to create a revolutionary approach to the design of vehicles from a user-centric perspective for optimal efficiency, the application of which will be key to increasing range and hence customer acceptance and market penetration of EVs in Europe and around the world in the coming years.

This report (deliverable D8.4 'Project main results Month 18') is a compilation of the non-confidential main results of all DOMUS' Work Packages in the first 18 months of the project, running from 01/11/2017 to 30/04/2019.

At the end of the project in month M42 (April 2021) this report will be followed up by deliverable report D8.5 'Main project results Month 42'.