

PROJECT

## DOMUS

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

**Funding:** European (Horizon 2020)

**Duration:** Nov 2017 - Apr 2021

**Status:** Complete

**Total project cost:** €8,958,010

**EU contribution:** €8,958,010



[CORDIS RCN : 212373](#)

#### Objectives:

The DOMUS project aims to change radically the way in which vehicle passenger compartments and their respective comfort control systems are designed so as 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.

#### Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

**Institute type:** Public institution

**Institute name:** European Commission

**Funding type:** Public (EU)

#### Lead Organisation:

##### **Idiada Automotive Technology Sa**

**Address:**

L Albornar  
43710 Santa Oliva  
Spain

**EU Contribution:** €847,813

## Partner Organisations:

### Coventry University

**Address:**

Priory Street  
Coventry  
CV1 5FB  
United Kingdom

**EU Contribution:** €389,750

### Volvo Personvagnar Ab

**Address:**

Avd 50090 Hb3S  
405 31 Goteborg  
Sweden

**EU Contribution:** €90,188

### Agc Glass Europe Sa

**Address:**

AVENUE JEAN MONNET 4  
1348 LOUVAIN-LA-NEUVE  
Belgium

**Organisation Website:**

<http://www.agc-flatglass.eu/>

**EU Contribution:** €946,000

### Centro Ricerche Fiat - Societa Consortile Per Azioni

**Address:**

Strada Torino, 50  
10043 ORBASSANO (TO)  
Italy

**Organisation Website:**

<http://www.crf.it>

**EU Contribution:** €1,099,750

### Toyota Motor Engineering & Manufacturing Europe

**Address:**

Bourgetlaan 60  
1140 EVERE (BRUXELLES)  
Belgium

**Organisation Website:**

<http://www.toyota.eu>

**EU Contribution:** €846,286

### Rheinisch-Westfaelische Technische Hochschule Aachen

**Address:**

Templergraben  
52062 Aachen  
Germany

**Organisation Website:**

<http://www.rwth-aachen.de>

**EU Contribution:** €478,970

**Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.v.****Address:**

HANSASTRASSE 27C  
80686 MUNCHEN  
Germany

**Organisation Website:**

<http://www.fraunhofer.de>

**EU Contribution:** €408,500

**Fundacion Tecnalia Research & Innovation****Address:**

PARQUE CIENTIFICO Y TECNOLOGICO DE GIPUZKOA PASEO MIKELETEGI 2  
20009 DONOSTIA/SAN SEBASTIAN (GIPUZKOA)  
Spain

**Organisation Website:**

<http://www.tecnalia.com>

**EU Contribution:** €234,449

**Luxembourg Institute Of Science And Technology****Address:**

5 Avenue Des Hauts Fourneaux  
4362 Esch Sur Alzette  
Luxembourg

**Organisation Website:**

<https://www.list.lu/>

**EU Contribution:** €300,148

**lee International Electronics & Engineering Sa****Address:**

RUE PIERRE RICHARDOT 12  
6468 ECHTERNACH  
Luxembourg

**EU Contribution:** €411,858

**Kompetenzzentrum - Das Virtuelle Fahrzeug Forschungsgesellschaft M.b.h.****Address:**

Inffeldgasse 21a / 1. Stock  
8010 GRAZ  
Austria

**Organisation Website:**

<http://www.v2c2.at>

**EU Contribution:** €587,813

**Uniresearch**

**Address:**

DELFTECHPARK 37 J  
2628 XJ DELFT  
Netherlands

**Organisation Website:**

<http://www.uniresearch.nl>

**EU Contribution:** €155,688

**Denso Thermal Systems S.p.a.****Address:**

Frazione Masio 24  
10046 Poirino (To)  
Italy

**Organisation Website:**

<http://www.denso-ts.com>

**EU Contribution:** €803,300

**Hutchinson Sa****Address:**

Rue Balzac 2  
75008 Paris  
France

**EU Contribution:** €652,750

**Faurecia Sièges D'automobile****Address:**

2 RUE HENNAPE  
92000 NANTERRE  
France

**Organisation Website:**

<http://www.faurecia.com>

**EU Contribution:** €704,750

**Technologies:**

Energy efficiency

EV passenger compartments and energy efficiency

**Development phase:** Research/Invention

Transport

**STRIA Roadmaps:** electrification

**Transport mode:** Road transport

**Transport sectors:** Passenger transport

**Transport policies:** Environmental/Emissions aspects, Decarbonisation

**Geo-spatial type:** Other