

EUROPEAN COMMISSION

HORIZON 2020 PROGRAMME - TOPIC H2020-GV-05-2017
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 D 4.2 Weight & Thermal- optimized seats

Change Log

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1.1	Chapter 2.1.1 Seat frame updated with FEA load cases generic frame has been simulated; update capture 6 risk register; update task 2.2.3 heating/ventilation description	Ekrem Kececi	2020-11-11
1.2			2020-12-07
1.3	Abbreviation list completed; Chapter 1.2.2 updated with latest design results; Chapter 2.2.3 weight information added; Chapter 3.1 layout of diagrams updated; Chapter 3.3 temperature scale added; Chapter 6 risk register updated; Chapter 9 Appendix 1 updated with contact names	Ekrem Kececi	2021-02-28
1.4	Incorporate all the additional comments from HUT and CRF	Ekrem Kececi	2021-03-11
1.5	Agreed upon the weight reductions contents	Ekrem Kececi	2021-04-07

Disclaimer/ Acknowledgment



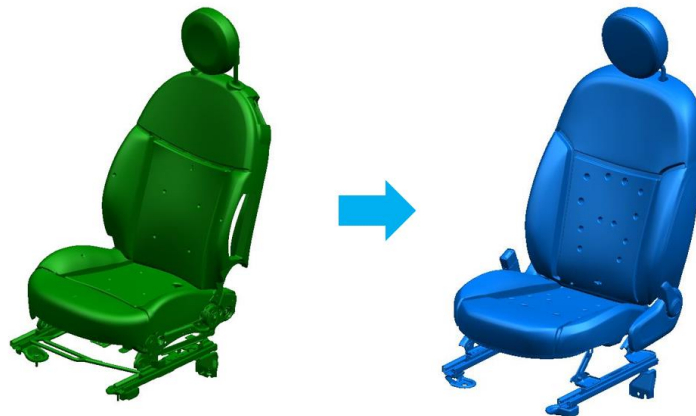
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Abstract

In order to meet the task and the objectives of the DOMUS project, the original Fiat 500 driver and passenger seats were replaced by completely new designed seats. The outer design (STO) of trim is almost same as serial seats. By only exchanging individual components, the desired weight targets would not have been achieved. In the new design, however, the primary goal of saving weight was ensured while at the same time guaranteeing comfort and meeting the legal safety requirements.



The weight targets were achieved by using high-strength steel with minimal wall thickness and components with reduced volume, using new formulation for density-reduced foams and the use weight-reduced materials in the covers with a low thermal inertia.

In order to increase the thermal comfort and reduce the energy needed by the vehicle's AC system, the driver & passenger seats were also equipped with a combined seat air conditioning system that offers automatic comfort control via integrated sensors and ECU.

Seat implemented innovation

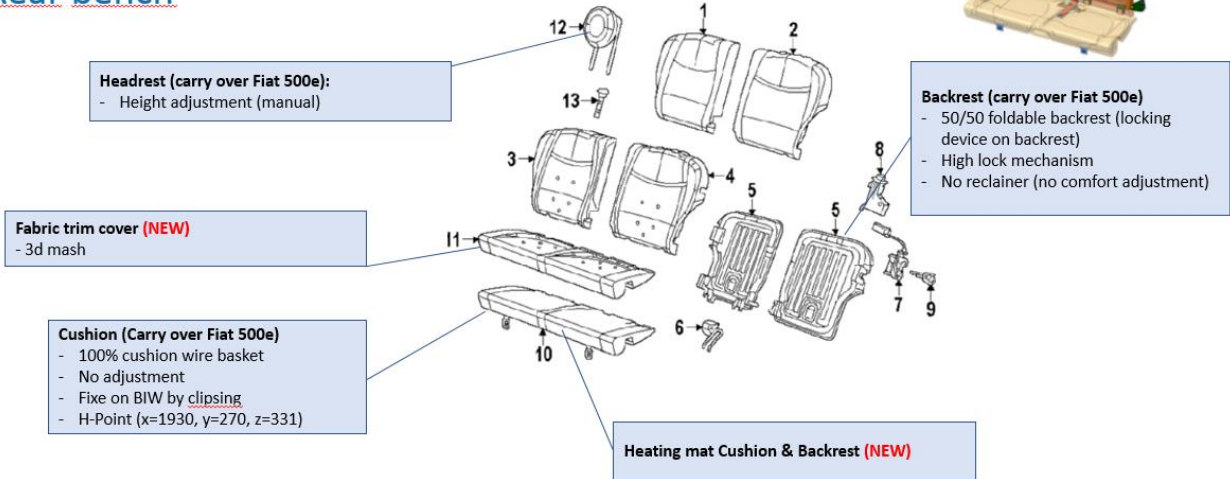
Front seats



For thermal comfort of 2nd row passenger heating mats in cushion and backrest were installed. In addition, radiant heating was also integrated behind the backrest of front seats as radiant back panel. Which supports to heat by radiant effect the foot room of 2nd row passengers.

Seat implemented innovation

Rear bench



Driver / Passenger Prototype seats build in Stadthagen



Front seat trimmed



7 Acknowledgement

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Project partners:

#	Partner	Partner Full Name
1	IDIADA	IDIADA AUTOMOTIVE TECHNOLOGY SA
2	CRF	CENTRO RICERCHE FIAT SCPA
3	TME	TOYOTA MOTOR EUROPE
4	Volvo Cars	VOLVO PERSONVAGNAR AB
5	AGC	AGC GLASS EUROPE SA
6	DNTS	DENSO Thermal Systems S.p.A.
7	Faurecia	Faurecia Sieges d'Automobile
8	HUTCH	HUTCHINSON SA
9	IEE	IEE International Electronics & Engineering S.A.
10	LIST	LUXEMBOURG INSTITUTE OF SCIENCE AND TECHNOLOGY
11	COV	COVENTRY UNIVERSITY
12	Fraunhofer	FRAUNHOFER GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG E.V.
13	IKA	RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN
14	TECNALIA	FUNDACION TECNALIA RESEARCH & INNOVATION
15	VIF	Kompetenzzentrum - Das Virtuelle Fahrzeug, Forschungsgesellschaft mbH
16	UNR	UNIRESEARCH BV
17	FIS	Faurecia Interieur Industrie
19	FCA	Fiat Chrysler Automobiles Italy SPA



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8 Appendix A – Quality Assurance

The following questions should be answered by all reviewers (WP Leader, peer reviewer 1, peer reviewer 2 and the technical coordinator) as part of the Quality Assurance Procedure. Questions answered with NO should be motivated. The author will then make an updated version of the Deliverable. When all reviewers have answered all questions with YES, only then the Deliverable can be submitted to the EC.

NOTE: For public documents this Quality Assurance part will be removed before publication.

Question	Peer reviewer 2	Technical Coordinator
	Helder Felipe de Campos Garcia (HUT)	IDIADA
1. Do you accept this deliverable as it is?	Yes	Yes
2. Is the deliverable completely ready (or are any changes required)?	Yes	Yes
3. Does this deliverable correspond to the DoW?	Yes	Yes
4. Is the Deliverable in line with the DOMUS objectives?	Yes	Yes
a. WP Objectives?	Yes	Yes
b. Task Objectives?	Yes	Yes
5. Is the technical quality enough?	Yes	Yes