Towards a more resource-efficient and decarbonized transportation

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Highly EFFICIENT and reliable electric drivetrains based on modular, intelligent and highly integrated wide band gap power electronics modules

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Project Overview

HiEFFICIENT aims for a resource-efficient and decarbonized transportation system, supported by the use of highly reliable and integrated wide-bandgap (WBG) technologies in electronic power circuits and systems of electrified vehicles and charging infrastructures.

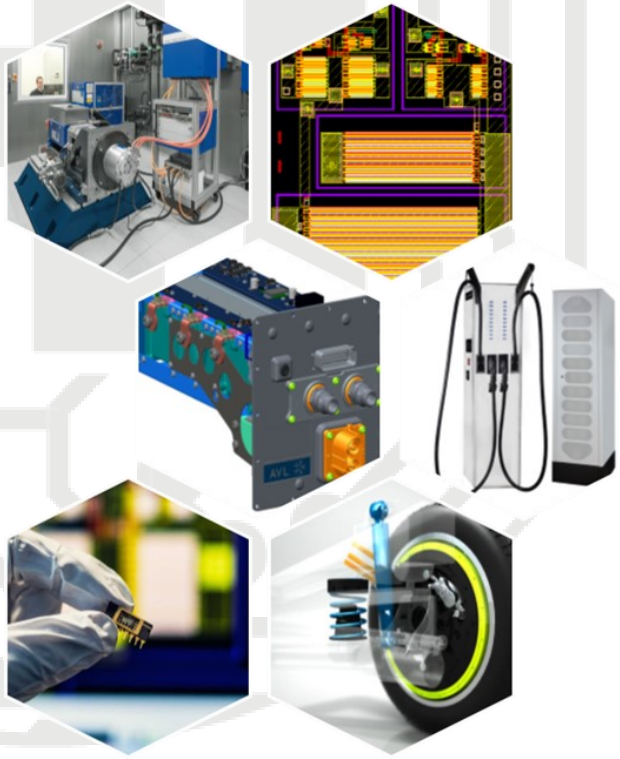
In the HiEFFICIENT project, 33 partners from 9 European countries are cooperating in this 3-year project with a total budget of 42 M€. The consortium of this project is an outstanding combination of well-known European industrial companies and research institutes, being located along the whole value chain, starting from semiconductors industry and ending up with OEMs. The project started on May 1st, 2021.

HiEFFICIENT is driven by 10 industrial use cases (UCs). They include, amongst others, modular inverters with different voltage levels (such as 48V and 400V), flexible on- and multi-use off-board chargers for different voltage levels, multi-purpose DC/DC converters and test systems for power electronics' lifetime testing. These UCs are led by OEMs and other industrial partners, who define requirements and specifications for the envisioned systems.

Integration — Efficiency — Reliability

Within HiEFFICIENT the partners will work towards next generation of WBG semiconductors in the area of smart mobility. To boost this development and the market introduction in automotive applications, HiEFFICIENT partners have set ambitious goals to gain higher acceptance and achieve the maximum benefit in using WBG semiconductors:

- Reduction in volume of 40%, by means of integration on all levels (component-, subsystem- and system level),
- Increase efficiency beyond 98%, while reducing losses of up to 50%,
- Increase reliability of WBG power electronic system to ensure a lifetime improvement of up to 20%.



Objectives

- O1: Integration and volume reduction
- O2: Increase efficiency and reduction of losses
- O3: Lifetime improvement
- O4: Intelligent power modules

Key Facts

Partners: 33
Countries: 9
Budget: 42 Mio €
JU Funding: 12 Mio €
National Funding: 12 Mio €
Project Start: May 1st, 2021
Duration: 36 months