Valéo is launching a new generation of 48V electric motors, a key solution for the affordable electrification of urban mobility. This new technology aims to support the launch of new electric/hybrid vehicles at an affordable cost for car manufacturers.

Starting date of the project	2019
Project Localisation Places of implementation of the project at this stage and targeted geography if replicable.	This project involves six Valeo sites in France (Etaples, Isle d'Abeau, Sablé-sur-Sarthe, Sainte-Florine) and R&D sites (Créteil, Cergy-Pontoise).
Project objectives Type of climate innovation of the project with a description of the problem/issue addressed	The project objective is to promote the reduction of CO2 emissions linked to mobility, particularly in urban areas.
Detailed project description	As the world leader in vehicle electrification solutions (1 in 3 electric vehicle launches is equipped with a Valeo system), Valeo has chosen to locate its production and R&D capacity for the new generation of 48V electric motors in France, which aims to electrify all vehicles in urban segments (a potential market of €60 billion by 2030). This new technology aims to support the launch of new affordable electric/hybrid vehicles by automakers in order to meet the CO2 emission standards for vehicles set by the European Commission. Valeo aims to produce 3 million 48V solutions per year from 2022/2023 (when the 48V project enters its full production phase). This new technology reduces fuel consumption and CO2 emissions of individual vehicles by offering an affordable electrification solution for the vehicle's powertrain. This system opens up a new path for the future of mobility in cities: • An intelligent solution, perfectly adapted to urban mobility • A unique low-voltage electrical solution • More economical than existing high voltage solutions • A maximum speed of 100km/h and a range of 100km Valeo's solution includes an additional 12V lithium-ion battery, a 12-48V power converter and a new 48V starter-alternator with new functions: • Energy recovery during braking, which is stored in the 48V lithium-ion battery. • Torque assistance: the 48V starter-alternator helps the engine during acceleration phases thanks to the recovered energy. • Power supply: the energy stored in the 48V lithium-ion battery is sent to the 12-48V power converter to supply the vehicle's electrical network This development project launched by Valeo aims at the localization of R&D and industrial activities (creation of production lines in line with market needs) and concerns the transformation of 5 French Valeo and R&D sites over the period 2019 - 2023 (date at which the production capacity will be effective and reach its full capacity).
Main project's drivers for reducing the greenhouse gas emissions	

Reduction levers	**Details on the aspects of the project**
☒ Energy and resource efficiency (including behaviour)	Reduction in the number of thermal cars in favour of electric vehicles.
☒ Energy Decarbonisation	Evolution of the share of integration of renewable energy production and reduction (for some countries of the energy impact consumed for the needs of electric vehicles).
☐ Energy efficiency improvements	
☐ Improving efficiency in non-energy resources	
☐ Emissions absorption: creation of carbon sinks, negative emissions (BECCS, CCU/S, ...)	
☐ Financing low-carbon producers or disinvestment from carbon assets	
☐ Reduction of other greenhouse gases emission	

Emission scope(s) on which the project has a significant impact and quantification of GHG emission reductions per emission scope

	Aspects of the project contributing to the reduction of emissions by emission category	Quantification of associated GHG emissions by emission category Please follow the quantification methodology used in the Afep guidelines.
Reduction of the company's carbon dependency		
Scope 1 *Direct emissions generated by the company's activity.*		
Scope 2 *Indirect emissions associated with the company's electricity and heat consumption.*		
Scope 3 *Emissions induced (upstream or downstream) by the company's activities, products and/or services in its value chain.*		
Increase of carbon sinks		
Emissions Absorption *Carbon sinks creation, (BECCS, CCU/S, …)*		
GHG emissions avoided by the company at third parties		
Avoided Emissions *Emissions avoided by the activities, products and/or services in charge of the project, or by the financing of emission reduction projects.*	Electric motor type iBSG 48v	1,1 Mt eq CO2

Clarification on the calculation or other remarks:
Valeo aims to be the market leader in 48V electric motors, enabling the progressive electrification of vehicle sales on an annual basis.

The model developed by Valeo (48V motor or iBSG) targets an emission reduction of 1.1 Mt of CO2 avoided by 2025 (based on a 2019 baseline).

This figure is based on a model integrating (i) the nominal gain of the iBSG in real world conditions (not WLTP), based on the calculation of the nominal gain carried out by the European Commission (cf. the gain credited to the technology by the European Commission; see below the decision of the Joint Research Center of the European Commission); (ii) a sales projection for the year 2025 (confidential figure), in line with Valeo's business plan.

Modality of verification of the quantification.

Calculation standard used (ADEME base, GHG protocol, etc.): The nominal gain of an electric motor (iBSG technology) is the subject of an eco-innovation of the European Commission (see Decision 2020/1167 of August 6, 2020), within the framework of the rules of calculation was set by the competent services (Joint Research Center - JRC - of the European Commission).

Verification of the calculation (internal or external): This data is reviewed as part of the calculation of the carbon impact indicator for Valeo's products in their use phase (Scope 2 product use), which is included in Valeo's Carbon Neutrality Plan (published on February 4, 2021) and is externally reviewed by the auditing firm EY (as part of the review of the extra-financial performance declaration, this indicator has been revised).

Other environmental and social benefits of the project

This new technology contributes to the following SDGs:

- SDG 11 Sustainable Cities and Communities
- SDG Climate change

This project contributes to the reduction of CO2 emissions from vehicles, air quality (electric mobility) and affordable mobility.

Project maturity level

☐ Prototype laboratory test (TRL 7)
☐ Real life testing (TRL 7-8)
☐ Pre-commercial prototype (TRL 9)
☐ Small-scale implementation
☒ Medium to large scale implementation

Remarks:

1. Developing and industrializing in France the various electronic elements linked to the traction and energy management chain (from TRL 4 to TRL 7).
2. Developing in parallel the future generation with breakthrough technologies (from TRL 3 to TRL 5/6)

Capacity and conditions of the project reproducibility, with

Given the importance of the market addressed, 48V technology is subject to a strong competitive environment.

associated climate impact mitigation potential	
Amount of investment made (in €)	Not communicated
Economic profitability of the project (ROI)	☒ ST (0-3 years) ☐ MT (4-10 years) ☐ LT (> 10 years) **Remarks:** This market represents an important global volume (60 billion €), structured in 2 levels: • A market for car manufacturers, worth €15Bn, representing 34 million 48V vehicles in 2030, • The new mobility market (or alternative mobility), estimated at €44 billion in 2030, for more than 110 million vehicles (two-wheelers, three-wheelers, delivery droids, etc.). Valeo aims to capture 40% of the automaker's market share
Engaged partnerships	Partnerships have been established with an ecosystem of French and foreign suppliers to cover production needs.
Open comments from the project owner	/
More about the project	
Contact the company carrying the project	Jean Baptiste Burtscher jean-baptiste.burtscher@valeo.com
Project URL links	https://pfa-auto.fr/wp-content/uploads/2020/07/PFA-48V-electromobility-Valeo.pdf
Illustrations of the project