# Commission Implementing Decision (EU) 2020/1102 of 24 July 2020 on the approval of the technology used in a 48 Volt efficient motor-generator combined with a 48 Volt/12 Volt DC/DC converter for use in conventional combustion engine and certain hybrid electric passenger cars and light commercial vehicles as an innovative technology pursuant to Regulation (EU) 2019/631 of the European Parliament and of the Council and by reference to the New European Driving Cycle (NEDC) (Text with EEA relevance)

## COMMISSION IMPLEMENTING DECISION (EU) 2020/1102

## of 24 July 2020

## on the approval of the technology used in a 48 Volt efficient motor-generator combined with a 48 Volt/12 Volt DC/DC converter for use in conventional combustion engine and certain hybrid electric passenger cars and light commercial vehicles as an innovative technology pursuant to Regulation (EU) 2019/631 of the European Parliament and of the Council and by reference to the New European Driving Cycle (NEDC)

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2019/631 of the European Parliament and of the Council of 17 April 2019 setting $CO_2$ emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011[(1)], and in particular Article 11(4) thereof,

Whereas:

(1) On 24 October 2019, the manufacturers Audi AG, Bayerische Motoren Werke AG, Daimler AG, FCA Italy S.p.A, Ford-Werke GmbH, Honda Motor Europe Ltd, Hyundai Motor Europe Technical Center GmbH, Jaguar Land Rover LTD,, Renault, Volkswagen AG, Volkswagen Nutzfahrzeuge and the suppliers Valeo Electrical systems and Mitsubishi Electric Corporation submitted a joint application (‘the first application’) for the approval as an innovative technology of the technology used in a 48 Volt efficient motor-generator combined with a 48 Volt/12 Volt DC/DC converter for use in passenger cars and light commercial vehicles with an internal combustion engine powertrain running on petrol or diesel (conventional ICE powertrain) and in certain not-off-vehicle charging hybrid electric vehicles (NOVC-HEVs) of those categories.

(2) On 8 November 2019, the supplier Valeo Electrical systems submitted an application (‘the second application’) for the approval of the same technology, i.e. the technology used in a 48 Volt efficient motor-generator combined with a 48 Volt/12 Volt DC/DC converter, for use in vehicles of the same categories and powertrains.

**Changes to legislation:** *There are outstanding changes not yet made to Commission Implementing Decision (EU) 2020/1102. Any changes that have already been made to the legislation appear in the content and are referenced with annotations. (See end of Document for details) View outstanding changes*

(3) Both applications have been assessed in accordance with Article 11 of Regulation (EU) 2019/631, Commission Implementing Regulations (EU) No 725/2011[(2)] and (EU) No 427/2014[(3)] and the Technical Guidelines for the preparation of applications for the approval of innovative technologies pursuant to Regulation (EC) No 443/2009 of the European Parliament and of the Council[(4)] and (EU) No 510/2011 of the European Parliament and of the Council[(5)](July 2018 version[(6)]). In accordance with Article 11(3) of Regulation (EU) 2019/631, the applications were accompanied by a verification report of an independent and certified body.

(4) Both applications refer to $CO_2$ emission savings that may not be demonstrated by measurements performed in accordance with the New European Driving Cycle (NEDC) as set out in Commission Regulation (EC) No 692/2008[(7)].

(5) Considering that both applications refer to the same innovative technology and that the same conditions should apply for its use in the vehicles concerned, it is appropriate to address both applications in one single decision.

(6) The 48 Volt motor-generator may operate as either an electric motor converting electrical energy into mechanical energy, or as a generator converting mechanical energy into electrical energy, i.e. as a standard alternator. The 48 Volt/12 Volt DC/DC converter enables the 48 Volt motor-generator to provide electric energy at the voltage required to power the 12 Volt electric power board of the vehicle and/or charging the 12 Volt battery.

(7) The Commission has already approved the high efficient 48 Volt motor-generator combined with a 48 Volt/12 Volt DC/DC converter supplied by SEG Automotive Germany GmbH as an innovative technology for use in conventional ICE powered passenger cars and light commercial vehicles and certain NOVC-HEVs of those categories by its Implementing Decisions (EU) 2019/313[(8)] and (EU) 2019/314[(9)].

(8) Based on the experience gained from the assessment of the applications submitted by SEG Automotive Germany GmbH, together with the information provided with the present applications, it has been satisfactorily and conclusively demonstrated that a 48 Volt efficient motor-generator combined with a 48 Volt/12 Volt DC/DC converter meets the criteria referred to in Article 11(2) of Regulation (EU) 2019/631 and the eligibility criteria specified in Article 9(1)(a) of Implementing Regulations (EU) No 725/2011 and (EU) No 427/2014.

(9) The innovative technology should be used in conventional ICE passenger cars or light commercial vehicles, or only in such NOVC-HEVs of those categories for which uncorrected measured fuel consumption and $CO_2$ emission values may be used in accordance with Annex 8 to Regulation No 101 of the Economic Commission for Europe of the United Nations[(10)].

(10) Both applications propose a testing methodology that is based on the ‘separate method’ set out in point 3 of the Annex to the respective Implementing Decisions (EU) 2019/313 and (EU) 2019/314.

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(11) The methodology proposed in the first application differs from the 'separate method' set out in those Decisions with regard to the voltage level to be used for the efficiency measurement of the 48 Volt motor-generator, which is proposed to be set to 48 Volt instead of 52 Volt. In addition, in both applications it is proposed to modify the output current for the efficiency measurement of the 48 Volt/12 Volt DC/DC converter so that the output current is defined as half the nominal power of the DC/DC converter divided by 14,3 Volt, instead of the nominal power of the DC/DC converter divided by 14,3 V. Moreover, in both applications it is proposed to introduce a run-in procedure for the 48 Volt motor-generator.

(12) With regard to the changes proposed to the 'separate method' set out in Implementing Decisions (EU) 2019/313 and (EU) 2019/314 regarding the voltage level of the efficiency measurement of the 48 Volt motor-generator and the output current of the efficiency measurement of the 48 Volt/12 Volt DC/DC converter, it is found that those changes may lead to less conservative results in terms of $CO_2$ savings. The applicants have claimed that the changes are justified as they would be more representative of real world driving conditions. The evidence provided in support of that claim can, however, not be considered sufficient, in particular due to the limited studies performed in support of the application and the absence of evidence supporting the change of the output current for the efficiency measurement of the 48 Volt/12 Volt DC/DC converter. Against that background, it is considered that these aspects of the 'separate method' set out in point 3 of the Annex to the respective Implementing Decisions (EU) 2019/313 and (EU) 2019/314 should not be changed based on the information provided in the applications.

(13) With regard to the proposed addition to the testing methodology of a run-in procedure for the motor-generator, neither of the two applications set out with sufficient precision the details for how such run-in should be performed nor how the run-in effect should be taken into account. As the efficiency of the 48 Volt efficient motor-generator combined with a 48 Volt/12 Volt converter is determined on the basis of the average of the measurement results, any run-in effects, positive or negative, may be adequately taken into account in the final efficiency determination, where necessary by increasing the number of measurements. Against that background, it is not appropriate to complement the testing methodology with an additional specific run-in procedure such as the ones proposed in the applications.

(14) Against that background, it is considered appropriate that the 'separate method' set out in point 3 of the Annex to the respective Implementing Decisions (EU) 2019/313 and (EU) 2019/314 should apply also for the purpose of this Decision.

(15) Manufacturers should have the possibility to apply to a type-approval authority for the certification of $CO_2$ savings from the use of the innovative technology where the conditions laid down in this Decision are met. Manufacturers should for that purpose ensure that the application for certification is accompanied by a verification report from an independent and certified body confirming that the innovative technology complies with the conditions laid down in this Decision and that the savings have been determined in accordance with the testing methodology referred to in this Decision.

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(16) In order to facilitate a wider deployment of the innovative technology in new vehicles, a manufacturer should also have the possibility to submit a single application for the certification of the $CO_2$ savings from several 48 Volt efficient motor generators combined with a 48 Volt/12 Volt DC/DC converters. It is, however, appropriate to ensure that, where that possibility is used, a mechanism is applied that incentivises the deployment of only those eco-innovations that offer the highest $CO_2$ savings.

(17) It is the responsibility of the type-approval authority to verify thoroughly that the conditions for certifying the $CO_2$ savings from the use of an innovative technology as specified in this Decision are met. Where the certification is issued, the responsible type-approval authority should ensure that all elements considered for the certification are recorded in a test report and kept together with the verification report and that this information is made available to the Commission on request.

(18) For the purpose of determining the general eco-innovation code to be used in the relevant type-approval documents in accordance with Annexes I, VIII and IX to Directive 2007/46/EC of the European Parliament and of the Council[(11)], it is necessary to attribute an individual code to the innovative technology.

(19) From 2021, manufacturers' compliance with their specific $CO_2$ emission targets under Regulation (EU) 2019/631 is to be established on the basis of the $CO_2$ emissions determined in accordance with the Worldwide Harmonised Light Vehicle Test Procedure (WLTP) set out in Commission Regulation (EU) 2017/1151[(12)]. $CO_2$ savings from the innovative technology certified by reference to this Decision may therefore be taken into account for the calculation of manufacturers' average specific $CO_2$ emissions only for the calendar year 2020,

HAS ADOPTED THIS DECISION:

*Article 1*

**Innovative technology**

The technology used in 48 Volt efficient motor-generators combined with 48 Volt/12 Volt DC/DC converters is approved as an innovative technology within the meaning of Article 11 of Regulation (EU) 2019/631, taking into account that the $CO_2$ savings it delivers are only partially covered by the standard test procedure set out in Regulation (EC) No 692/2008, provided that the technology conforms to the following:

(a) it is fitted in passenger cars ($M_1$) or light commercial vehicles ($N_1$) powered by internal combustion engines running on petrol or diesel (conventional ICE powered $M_1$ and $N_1$ vehicles) or in not-off-vehicle charging hybrid electric vehicles of category $M_1$ or $N_1$ for which uncorrected measured fuel consumption and $CO_2$ emission values may be used in accordance with Annex 8 to Regulation No 101 of the Economic Commission for Europe of the United Nations;

(b) its efficiency, which is the product of the efficiency of the 48 Volt motor-generator and the efficiency of the 48 Volt/12 Volt DC/DC converter, determined in accordance with point 3.3 of the Annex to Implementing Decision (EU) 2019/313 or point 3.3 of the Annex to Implementing Decision (EU) 2019/314, is at least: