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Electrically propelled road vehicles — Determination of power for propulsion of hybrid electric vehicle

Véhicules routiers à propulsion électrique — Détermination de la puissance de propulsion des véhicules hybrides

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Foreword

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This document was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 37, *Electrically propelled vehicles.*

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Introduction

It is necessary for vehicle manufacturers to show the reasonable value of the power of hybrid-electric vehicle (HEV) system and compare it with the value of the internal combustion engine (ICE) power measured in the existing test methods such as ISO 1585 and UN Regulation No. 85. But at present, there is no international evaluation method for the power of HEV systems available. Vehicle manufacturers indicate the power of HEVs in their catalogues based on their individual calculation method. With the method in this document, it is possible to measure and compare the power of any HEV topology with those of internal combustion engine vehicles (ICEV).

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Electrically propelled road vehicles — Determination of power for propulsion of hybrid electric vehicle

1 Scope

This document specifies measurement methods for the maximum system propulsion power of hybrid-electric vehicles (HEV).

The results can be compared with the data of internal combustion engine vehicles (ICEV) power measured with the relevant current method.

NOTE ISO 1585 and UN Regulation No. 85, for example.

This document applies only to the vehicles with the following characteristics:

— HEVs with an internal combustion engine (ICE) and one or more electric motors powered by one or more rechargeable energy storage systems (RESS) for propulsion;

— vehicles classified as passenger cars or light duty trucks.

This document does not apply to fuel cell vehicles.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1585, *Road vehicles — Engine test code — Net power*

ISO 23274 (all parts), *Hybrid-electric road vehicles — Exhaust emissions and fuel consumption measurements*

ISO/TR 8713, *Electrically propelled road vehicles — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1585, ISO 23274 (all parts), ISO/TR 8713 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
hybrid-electric vehicle
HEV
vehicle with both a *rechargeable energy storage system* (3.3) and a fuelled power source for propulsion

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3.2
externally chargeable HEV
hybrid-electric vehicle (3.1) with a *rechargeable energy storage system* (3.3) that is intended to be charged from an external electric energy source

Note 1 to entry: External charge for the purpose of conditioning of the RESS is not included.

Note 2 to entry: Externally chargeable HEVs are widely known as plug-in HEVs (PHEVs).

3.3
rechargeable energy storage system
RESS
system that stores energy for delivery of electric power and which is rechargeable

EXAMPLE Batteries or capacitors.

4 Symbols and abbreviated terms

AWD all wheel drive

ICE internal combustion engine

ICEV internal combustion engine vehicle

SOC state of charge

UN United Nations

5 Test condition

5.1 Test instrumentation

5.1.1 Chassis dynamometer

The chassis dynamometer shall have the absorption capacity for the vehicle propulsion power by fixed speed control.

5.1.2 Test room

Conditions of the test room shall be adjusted as follows:

— reference temperature: 298 K ± 10 K (25 °C ± 10 °C);

— test atmospheric conditions, Pd: 80 kPa < Pd < 110 kPa.

5.1.3 Cooling fan

Fans shall be used to cool the vehicle to maintain the proper operating temperature. However, excessive cooling is prohibited. Air speed in front of the vehicle shall not be higher than the vehicle speed.

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