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**Electrically propelled road vehicles —  
Vocabulary**

*Véhicules routiers électriques — Vocabulaire*

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Published in Switzerland

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## Foreword

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ISO/TR 8713 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 21, *Electrically propelled road vehicles*.

This first edition cancels and replaces the second edition (ISO 8713:2005) which has been revised as a Technical Report.

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# Electrically propelled road vehicles — Vocabulary

## 1 Scope

This Technical Report establishes a vocabulary of terms and the related definitions used in ISO/TC 22/SC 21 standards. These terms are specific to the electric propulsion systems of electrically propelled road vehicles, i.e. battery-electric vehicles (BEV), hybrid-electric vehicles (HEV, PHEV), and (pure and hybrid-electric) fuel cell vehicles (FCV, FCHEV).

## 2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 2.1

#### **air processing system**

system that processes the incoming air for the fuel cell system

EXAMPLE Filters, meters, conditions, and pressurizes.

### 2.2

#### **auxiliary electric system**

on-board vehicle system, other than the propulsion system, which operates on electric energy

### 2.3

#### **balance of electric power system**

remaining portion of a voltage class B (2.72) electric circuit when all RESS (2.61) and fuel cell stacks are disconnected

### 2.4

#### **barrier**

part providing protection against direct contact from any usual direction of access

### 2.5

#### **basic insulation**

insulation applied to live parts for protection against direct contact under fault-free conditions

NOTE Basic insulation does not include insulation used exclusively for functional purposes.

### 2.6

#### **basic protection**

protection against direct contact with live parts under fault-free conditions

### 2.7

#### **battery cell**

basic rechargeable energy storage device, consisting of electrodes, electrolyte, container, terminals and usually separators, that is a source of electric energy obtained by direct conversion of chemical energy

**2.8**  
**battery control unit**  
**BCU**

electronic device that controls or manages or detects or calculates electric and thermal functions of the battery system and that provides communication between the battery system and other vehicle controllers

**2.9**  
**battery-electric vehicle**  
**BEV**

electrically propelled vehicle with only a traction battery as power source for vehicle propulsion

NOTE The abbreviation BEV is often shortened to EV.

**2.10**  
**battery pack**

mechanical assembly comprising battery cells and retaining frames or trays, and possibly components for battery management

**2.11**  
**battery system**

energy storage device that includes cells or cell assemblies or battery pack(s) as well as electrical circuits and electronics, e.g. BCU (2.8), contactors

NOTE Battery system components can also be distributed in different devices within the vehicle.

**2.12**  
**capacity**

total number of ampere-hours that can be withdrawn from a battery under specified conditions

**2.13**  
**cell electronics**

electronic device that collects and possibly monitors thermal and electric data of cells or cell assemblies and contains electronics for cell balancing, if necessary

NOTE The cell electronics may include a cell controller. The functionality of cell balancing may be controlled by the cell electronics or it may be controlled by the BCU (2.8).

**2.14**  
**charge balance of battery**

change of charge in battery during fuel consumption measurement

NOTE Normally expressed in Ah.

**2.15**  
**charger**

set of equipment to condition the power of the external electric energy source for charging the RESS (2.61)

**2.16**  
**clearance**

shortest distance in air between conductive parts (2.17)

**2.17**  
**conductive part**

part capable of conducting electric current

**2.18**  
**coulomb efficiency**  
**Ah efficiency**

efficiency of the battery based on electricity (Coulomb) for a specified charge/discharge procedure, which is expressed by output electricity divided by input electricity

**2.19****creepage distance**

shortest distance along the surface of a solid insulating material between two conductive parts (2.17)

**2.20****direct contact**

contact of persons with live parts

**2.21****double insulation**

insulation comprising both basic insulation and supplementary insulation

**2.22****driving enabled mode**

the only mode in which the vehicle can be moved by its own propulsion system(s)

**2.23****electric chassis**

conductive mechanical structure of the vehicle whose potential is taken as reference

**2.24****electric drive**

combination of traction motor, power electronics and their associated controls for the conversion of electric to mechanical power and vice versa

**2.25****electric power train**

power train, consisting of electric drive (2.24) and drive train

**2.26****electric shock**

physiological effect resulting from an electric current passing through a human body

**2.27****electrically propelled vehicle**

vehicle with at least one electric drive (2.24) for vehicle propulsion

**2.28****enclosure**

part providing protection of equipment against direct contact from any direction

**2.29****energy balance of battery**

change of energy in battery during fuel consumption measurement

NOTE 1 Normally expressed in Wh.

NOTE 2 For practical use, the following is an approximate definition: charge balance of battery multiplied by the nominal voltage, normally expressed in Wh.

**2.30****energy density**

amount of stored energy related to the battery pack (2.10) or system volume

NOTE 3 Expressed in Wh/l.

NOTE 4 The battery pack or system includes the cooling system, if any, to the point of a reversible attachment of the coolant lines or air ducts, respectively.

**2.31**  
**energy efficiency**  
**Wh efficiency**

efficiency of the battery based on energy, for a specified charge/discharge procedure, which is expressed by output energy divided by input energy

**2.32**  
**exposed conductive part**

conductive part (2.17) of the electric equipment that can be touched by an IPXXB test finger after removing barriers/enclosures which can be removed without using tools and which is not normally live, but which may become live under fault conditions

NOTE For the specification of the IPXXB test finger, see ISO 20653.

**2.33**  
**excess flow valve**

valve which automatically shuts off, or limits, the gas flow when the flow exceeds a set design value

**2.34**  
**externally chargeable HEV**

HEV (2.42) with RESS (2.61) that is intended to be charged from an external electric energy source

NOTE Externally chargeable HEVs are widely known as plug-in HEVs (PHEVs).

**2.35**  
**fuel cell**  
**FC**

electrochemical device that generates electricity by the conversion of fuel and an oxidant without any physical or chemical consumption of the electrodes or electrolyte

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**2.36**  
**fuel cell hybrid-electric vehicle**  
**FCHEV**

electrically propelled vehicle (2.27) with an RESS (2.61) and a fuel cell (2.35) system as power source for vehicle propulsion

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**2.37**  
**fuel cell stack**

assembly of two or more fuel cells (2.35)

**2.38**  
**fuel cell system**

system containing the fuel cell stack (2.37), air processing system (2.1), fuel processing system (2.40), thermal management, water management, and their control system

**2.39**  
**fuel cell vehicle**  
**FCV**

electrically propelled vehicle (2.27) with a fuel cell system (2.38) as power source for vehicle propulsion

NOTE An FCV can additionally have an RESS (2.61) or another power source for vehicle propulsion [FCHEV (2.36)].

**2.40**  
**fuel processing system**

system that converts (if necessary) and/or conditions the fuel, as stored in the on-board fuel storage, into fuel suitable for operation in the fuel cell stack (2.37)

**2.41**  
**fuel system**

combination of the on-board fuel storage and the fuel processing system (2.41)



**2.42****hybrid-electric vehicle  
HEV**

vehicle with both a rechargeable energy storage system and a fuelled power source for propulsion

EXAMPLE Internal combustion engine or fuel cell systems are typical types of fuelled power sources.

**2.43****hybrid power train**

power train of an HEV (2.42), consisting of a fuelled power source and an electric power train (2.25)

**2.44****hybrid vehicle**

vehicle with two (or more) different power sources for vehicle propulsion

NOTE Examples of power sources for vehicle propulsion are RESS (2.61), FC systems (2.38), internal combustion engine etc.

**2.45****isolation resistance**

resistance between live parts of the voltage class B (2.72) electric circuit and the electric chassis as well as the voltage class A (2.71) system

**2.46****isolation resistance monitoring system**

system which periodically or continuously monitors the isolation resistance between live parts and the electric chassis

**2.47****live part**

conductor or conductive part (2.17) intended to be electrically energized in normal use

**2.48****main hydrogen shut-off valve**

valve designed to automatically isolate the high pressure hydrogen source

**2.49****maximum allowable working pressure****MAWP**

maximum working pressure at which a component or system may be normally operated without damage including leakage and deformation

NOTE The maximum allowable working pressure is used in determining the setting of pressure-limiting/relieving devices installed to protect the part or system from accidental over-pressurizing.

**2.50****maximum working voltage**

highest value of a.c. voltage rms or of d.c. voltage which may occur in an electric system under any normal operating conditions according to manufacturer's specifications, disregarding transients

**2.51****nominal voltage**

suitable approximate value of a voltage used to designate or identify a component or a system

**2.52****nominal working pressure****service pressure****NWP**

pressure level at which a component or system typically operates