Considerations for transposing EVS-GTR Phase 1

Specifications of two items below in EVS-GTR Phase1 are different from those in current UNR100.

1. Application/Scope
2. Marking

Japan’s opinion
Discussions for clarification and considerations are necessary for UN-R100 revision.
1. Application/Scope

**Current text in UN R100**

1. Scope

1.1. Part I: Safety requirements with respect to the electric power train of road vehicles of categories M and N1, with a maximum design speed exceeding 25 km/h, equipped with one or more traction motor(s) operated by electric power and not permanently connected to the grid, as well as their high voltage components and systems which are galvanically connected to the high voltage bus of the electric power train.

**Application**

**Vehicle propulsion system and its galvanically connected components**
1. Application/Scope

**Current text in UN R100**

1.2. **Part II**: Safety requirements with respect to the Rechargeable Energy Storage System (REESS), of road vehicles of categories M and N equipped with one or more **traction motors** operated by electric power and not permanently connected to the grid.

Part II of this Regulation does **not apply to** REESS(s) whose primary use is to supply power for **starting the engine** and/or **lighting** and/or other **vehicle auxiliaries systems**.

**Application_ REESS for vehicle propulsion (no voltage range is specified).**

**REESS in the Scope**

- Traction battery
- Inverter
- MOT

**REESS out of the Scope**

- **MOT**
- Battery
- Load
  - Starter Motor
  - Electrical Power Steering
  - Lighting system

**No voltage requirement**
1. Application/Scope

2. Application/Scope

2.1 This regulation applies to vehicles of Category 1 and Category 2 with a maximum design speed exceeding 25 km/h, equipped with electric power train containing high voltage bus, excluding vehicles permanently connected to the grid.

Current text in EVS-GTR

Vehicle in the Scope

High voltage propulsion system

Vehicle out of the Scope

Low voltage propulsion system
### Comparison between EVS-GTR and UN R100

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Discussion #1

Clarification of the scope of EVS-GTR Phase1 is necessary.

EVS-GTR

It is not clear whether the domestic socket outlet in passenger compartment is excluded or not.

Isolated connection

The socket outlet cannot meet the IPXXD requirement in EVS-GTR.

If the requirements are applied to the socket outlet, the vehicle is non-compliant to EVS-GTR.

UNR100

UNR100 mentions that “galvanically connected to the electric power train” and the socket outlet isolated from vehicle propulsion system is out of the scope.
Discussion #2

Scope for REESS needs to be discussed and clarified.

**EVS-GTR**

The batteries in the low voltage propulsion system is out of the scope of EVS-GTR Phase 1.

**UNR100**

No voltage range of REESS is specified in the scope of UNR100.

Regardless of voltage, the batteries for vehicle propulsion have to meet the safety requirements in UNR100.
2. Marking

**Current text in UN R100**

5.1.1.5.2.
The symbol shall also be visible on enclosures and barriers, which, when removed expose live parts of high voltage circuits. This provision is optional to any connector for high voltage buses. This provision shall not apply to any of the following cases:
a. Where barriers or enclosures cannot be physically accessed, opened, or removed; unless other vehicle components are removed with the use of tools;
b. Where barriers or enclosures are located underneath the vehicle floor.

*Current text in EVS-GTR*

5.1.1.4.2.
The symbol shall be visible on enclosures and electrical protection barriers, which, when removed, expose live parts of high voltage circuits. This provision is optional to any connectors for high voltage buses. This provision shall not apply to the case where electrical protection barriers or enclosures cannot be physically accessed, opened, or removed; unless other vehicle components are removed with the use of tools.

Exemption for underneath the floor is not included in EVS-GTR Phase1.
2. Marking

**Discussion #1**

For the labels located underneath the vehicle floor, it is difficult to ensure durability over the vehicle service life.

Practical requirements for marking need to be developed.

**Related information**

ISO 6469-3 DIS draft (May, 2017)

5.2.1 Marking of voltage class B electric components

The symbol W 012 in accordance with ISO 7010 shown in Figure 1 shall be visible on protective barriers and protective enclosures, which, when removed, expose hazardous live parts of voltage class B electric circuits. Accessibility and removability of protective barriers/protective enclosures should be considered when evaluating the requirement for the symbol. **The symbol may be embossed or engraved in accordance with Figure 1. In this case color is not required.**

For a protective enclosure consisting of several parts, one symbol is sufficient when visibility of the symbol is given.
Purpose of Marking
To inform people that there are high voltage buses inside or the other side of barriers/enclosures with high voltage symbols.

Situation to be considered
If a maintenance lid exists underneath the vehicle floor and it can be accessed and removed with using tools, the high voltage symbol is necessary on the lid.

Issues
If a yellow color symbol is required, the symbol is printed on a label.

It is difficult to ensure durability of the label over the vehicle service life.