
Transmitted by the expert from Japan

GRSP-58 -12-Rev.1

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agenda item 23(a))

Technical Standards on Fuel-Cell Motorcycles in Japan

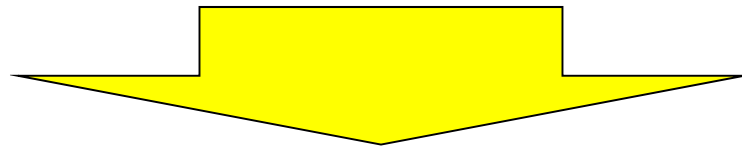
December 2015

Ministry of Land, Infrastructure, Transport and Tourism

Background

* Under the laws and regulations in force in Japan, the standards on fuel-cell vehicles are not applicable to motorcycles. This means one cannot get approval for compressed hydrogen gas containers for fuel-cell motorcycles nor get type approvals for fuel cell motorcycles.

⇒ Cannot commercially offer fuel-cell motorcycles to the public



* To promote the sale of fuel-cell motorcycles to the market, the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) started in 2013 studying how to develop safety regulations on motorcycles as part of the Road Vehicles Act and how to develop and establish a type approval system for fuel-cell motorcycles. The ministry plans to publish and enact a standard in February 2016 (The Ministry of Economy, Trade, and Industry (METI) plans to publish and enact a technical standard on hydrogen gas containers in September 2016).

Situation about regulation for Fuel-Cell Vehicles in Japan

regulation			Four wheelers	Motorcycles
Regulation	International regulation	Requirement regarding Hydrogen Fuel Cell devices	GTR13 and UNR134	<u>Not yet</u>
		Requirement regarding Electric devices	UNR100	UNR136 (based on UNR100, will be put into effect in January 20, 2016)
	Japanese regulation	Requirement regarding Hydrogen Fuel Cell devices	Same as GTR13 and UNR134(in Safety regulations for road vehicles, Attachment 100)	<u>To be established by February 2016</u>
		Requirement regarding Electric devices	Same as UNR100(in Safety regulations for road vehicles)	Plans to adopt UNR136

* The standard on the compressed hydrogen gas container and its accessory is under the jurisdiction of the METI. METI plans to establish a domestic standard by September 2016.

Outline of Technical Standard on Fuel-Cell Motorcycles

The technical standards prescribe the requirements shown below. Although based on GTR13, the standard also takes into account factors specific to motorcycles (overturning, straddling seat, small size of the body, etc.). Requirements for protection of passengers upon collision are not applied.

<Technical requirements>

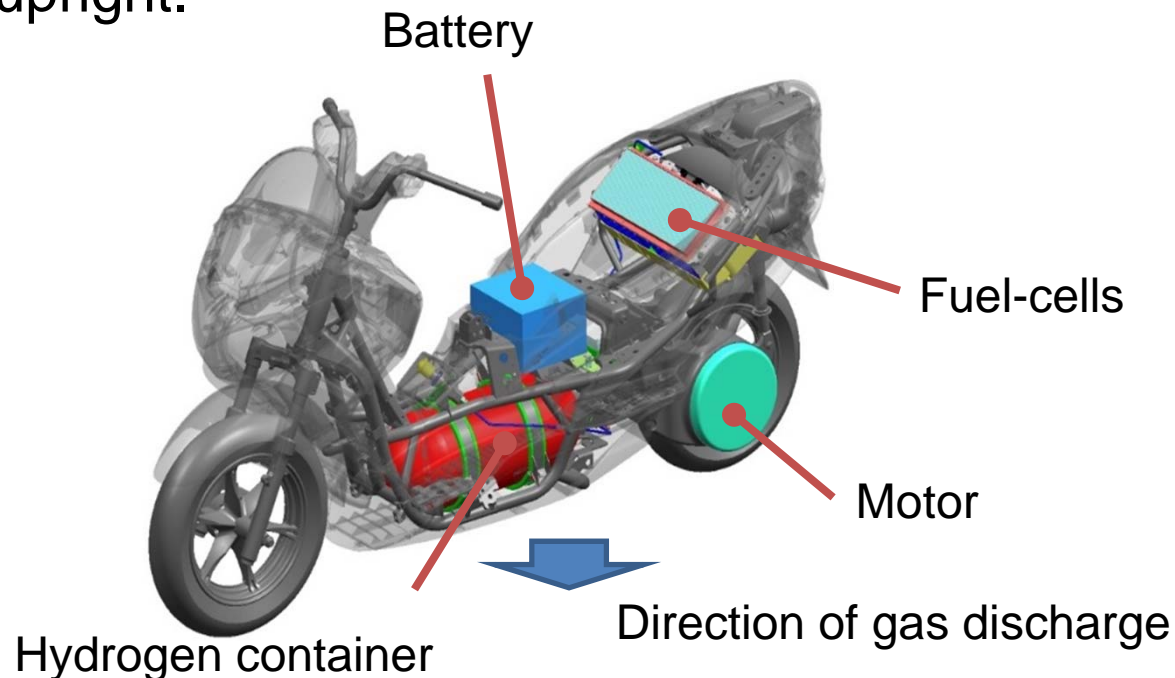
- Gas filling port
- Protection from high pressure
- Direction of hydrogen discharge*
- Requirements on purge
- Requirements for protection against inflammation
- Sealing performance of piping, etc.
- Warning device for the driver
- Requirements for protection of the gas container and its accessories*

* Added as requirements specific to motorcycles
(Other requirements are similar to those of GTR13)

Requirements Specific to Motorcycles

1. Direction of hydrogen discharge while the container's safety valve is open

Motorcycles may be overturned when caught on fire. To help rescuers correctly identify the direction of hydrogen discharge while the container's safety valve is open even when the motorcycle is overturned, the standard requires that, under any circumstance, gas be discharged in a direction that is downward when the motorcycle is standing upright.



Requirements Specific to Motorcycles

2. Requirements for protection of the container

It is assumed that the rupture of the container can be avoided as far as the container surface does not suffer local, serious damage. Hence the standard prescribes requirements on resistance to abrasion that the motorcycle may suffer when it is overturned and requirements for mitigation of external impact.

3. Requirements for strength of the area the gas container is attached

Based on accidents statistics in Japan*1, the standard requires that, assuming the accidents shown below, the gas container stay fixed onto the vehicle body at least at one point when it is subject to the prescribed acceleration (Fig. 1: $\pm 426 \text{ m/s}^2$; Fig. 2: $\pm 617 \text{ m/s}^2$)*2:

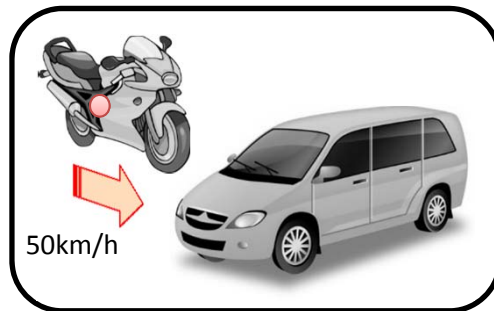


Fig. 1 Frontal collision
(The motorcycle hits a parked car broadside)

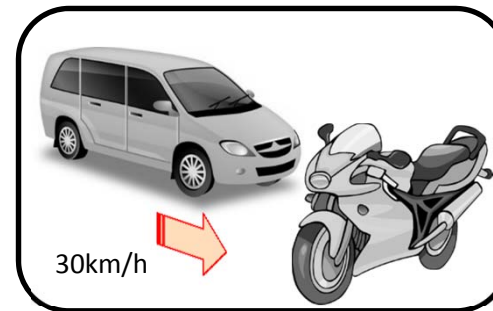


Fig. 2 Lateral collision
(A car hits the motorcycle broadside)

*1 Based on accident forms in accident statistics of past ten years and 95%ile of the risk perception speed.

*2 The maximum acceleration generated at the point the container is attached to upon the impact test

Schedule

- * Date of publication and enactment
February 2016 (Applicable to all motorcycles to be newly type-approved from February 2017 onward)

Thank you for your attention