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Fuel cell electric vehicles – Onboard hydrogen system - Test methods

燃料电池电动汽车 车载氢系统

试验方法

[Including 2020XG1]

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Standardization Administration of China.

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Fuel cell electric vehicles –

Onboard hydrogen system - Test methods

1 Scope

This Standard specifies the test methods for onboard hydrogen system of fuel cell electric vehicles.

This Standard is applicable to fuel cell electric vehicles which use compressed hydrogen as fuel, of which the working pressure does not exceed 35 MPa when it works at 15°C of ambient temperature.

2 Normative references

The following referenced documents are indispensable for the application 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..

GB/T 24548 *Fuel cell electric vehicles - Terminology*

GB/T 24549 *Fuel cell electric vehicles - Safety requirements*

GB/T 26779-2011 *Fuel cell electric vehicles - Refuelling receptacle*

GB/T 26990-2011 *Fuel cell electric vehicles - Onboard hydrogen system - Specifications*

3 Terms and definitions

The terms and definitions defined in GB/T 24548 apply to this document.

4 Test conditions

4.1 Vehicle conditions

4.1.1 Onboard hydrogen system shall be manufactured according to product design and other technical documents approved by prescribed procedures. The certificate shall be provided.

6.1.1.3 When hydrogen storage container is mounted and fastened, respectively apply a force 8 times hydrogen storage vessel gravity full of nominal operating pressure hydrogen at X, Y and Z directions. Measure and check the relative displacement between hydrogen storage container and holder.

6.1.1.4 Check if the metal parts of supporting and securing pipeline are in contact with the piping, except the welding BETWEEN the piping AND supporter and fastener.

6.1.1.5 Check the neat arrangement of rigid pipeline. Check if the rigid pipeline is in contact with or rub with the adjacent parts. Check if the pipeline has seismic resistance and measures to eliminate the influence of thermal expansion and contraction. For bending pipes, measure its radius of the axis of curvature. Measure the interval distance between supporting points of piping.

6.1.1.6 Measure the distance between the installation location of the attachment of hydrogen storage vessel and vehicle edge.

6.1.1.7 Check the effect of hydrogen storage vessel, piping on its possible heat source. Check if there is appropriate insulation protection measures. For the hydrogen storage vessel and piping directly exposed to the sun, check if there is necessary coverings.

6.1.2 Hydrogen leakage

6.1.2.1 Hydrogen leakage: fill the hydrogen storage vessel in the test vehicle to 100% of working pressure, and put it in a hermetic space for 8 h according to provisions. Measure the hydrogen permeation rate.

6.1.2.2 Check if hydrogen detector is installed inside the enclosed or semi-enclosed spaces of the hydrogen system. Use standard gas mixture to check if the detector be able to perform the real-time detection on concentration of hydrogen leak and send the signal to the hydrogen leak warning device. Check if the hydrogen leak warning device be able to send different warning signals according to the concentration of hydrogen leak.

6.1.2.3 Check if the hydrogen leak warning device is installed at the place where driver can easily recognize.

6.1.2.4 Check if the hydrogen detector can send out failure warning signal to the driver when short circuit, open circuit failure happen to the detector.

6.1.3 Refuelling receptacle

6.1.3.1 Check if refuelling receptacle shape and size comply with the requirements of GB/T 26779-2011. Measure the installation place and height of

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