Japanese Reply of Action Items Resulting from the Fifth Meeting of SGS

7. Japan: Check the original work on the equation of state (fit of NIST data) for the ranges of temperature and pressure for which this curve-fitted equation is applicable (so that it is not used outside the appropriate range(s)). Citation

The OICA-proposed Equation 2, where ρ_0 and ρ_{60} are determined, is an improved version of the equation in Japan 100; i.e., the Japan 100 equation only covers vehicles with the rated filling pressure of 35 MPa, whereas OICA's Equation 2 covers vehicles with the rated filling pressure of 70 MPa as well.

10. Japan: research the inclusion of the container check valve requirement (TUV section 1.3.2) and report to the group

Japan 100 3–1–3 merely describes the normal functions of the check valve; therefore, it can be moved to the section of Definitions.

21. Japan: provide its test procedure, test data and, if possible, rationale for not including 3-second interval in the current National Regulation for HFCV

The operational conditions were selected for the following two reasons:

1. When Japan 100 was developed, a fuel cell vehicle was driven according to the 11 Mode (start with cold engine, followed by mode-driving) and 10-15 Mode (start with warm engine, followed by mode-driving) in the Japanese emissions test procedures, and the hydrogen concentration in the discharged gas was measured. As a result, it was demonstrated that, by setting the dilution rate for various vehicle operational conditions (cold engine, warm engine, start, idle, acceleration/deceleration, cruising, stop, etc.), engineers of vehicle manufacturers are able to ensure that no

gas in excess of 4% of hydrogen concentration will be discharged into the atmosphere.

2. The discharged gas containing hydrogen would pose most danger to the surroundings not during the vehicle's running, such as acceleration/deceleration or cruising, but during the following three operations: engine start in the stationary state, idling, and stopping. This is because pedestrians can approach the vehicle during these three operations. And, during these operations, the engine is warm most of the time.

At present, there is a proposal to use, as the hydrogen concentration in discharged gas, the average concentration in any moving 3 seconds time interval. However, no discussion on using the 3-second moving average arose from the results of measurement in the fuel cell vehicle conducted when the Japanese standard was developed (Figure 3).

25. Japan: submit its test procedure for compliance for fuel cell vehicle exhaust system for consideration

The same as No. 21.