Discussion Points for HD Battery Durability

Prepared by Japan
EVE-54-XXe

Relevant Paragraph	HD unique circumstances and/or Discussion Points	how to make a decision ?	IWG Decisions	JAPAN Positions	(ref) LD
II. Text of the GTR			need to be fixed by the end of 2022 for next step	plan to provide JPN positions when necessary	
2. Scope and application					
vehicle technologies	NOVC-HEV NOVC-FCHV OVC-HEV OVC-FCHV PEV	1. same as LD application 2. consider HD unique situations (a) impact on NOVC-HEV CO2 (b) focus on currently available technologies (c) others			NA (consider power fade at later stage) NA ✓ NA ✓
Small Volume Manufacturers	definition of "small volume" for HD	1. follow LD scheme 2. consider HD unique situations			per CP decision but no definition of "Small Volume Manufacturers"
3. Definitions					
3.3 3.4. 3.5. Usable Battery energy (UBE)	No test procedure is available in EU/US/JPN as of February 2022 JPN plans to introduce the test procedure in where UBE/Range for OVC-HEV and PEV are defined (base test procedure is GTR#4)	1. develop test procedure to derive UBE and Range (base procedure is GTR#4) 2. develop new parameter for HD battery durability with new test procedure which consider ISC verification test 3. others			defined in the currently available test procedure (UNR154、CFR)
3.6. 3.7. 3.8. Electric Range	↑	↑			↑
5. Requirements					
5.1. SOCR and SOCE monitors	no specific parameter is available due to no test procedure	depends on 3.3.~3.8.			SOCR SOCE
algorithm	few real-world study is performed	1. same as LD = OEM responsibility 2. others			OEM responsibility
5.2. Battery Performance Requirements	purpose hard to set an appropriate required performance due to few real-world study	1. follow LD scheme 2. consider HD unique situations 1. monitoring phase as a first step, then set the standard based on monitoring results 2. same as LD standard with HD unique useful life 3. set based on social needs			preventing substandard products from entering the market SOCE：80%@5年/100K㎞ 70%@10年160K㎞ SOCR：monitoring at first phase
V2X usage (virtual distance)	one of required functions on some HDs	1. exempt 2. adopt			adopted
6. In-Use Verification					
6.1. Family					
6.1.1. For Part A: Verification of Monitors	consider more difficulty to procure the customer vehicles than LDs	1. follow LD scheme 2. consider HD unique situations			defined
6.1.2. For Part B: Verification of Battery Durability	depend on required unit (family basis or each vehicle basis)	in case of family basis 1. follow LD scheme 2. consider HD unique situations in case of each vehicle basis no family definition is necessary			↑

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6.3. Part A: Verification of SOCR/SOCE monitors			need to be fixed by the end of 2022 for next step	plan to provide JPN positions when necessary	
6.3.1. Frequency of verifications	consider more difficulty than LDs 1. to procure the customer vehicles 2. to arrange physical test site (depend on newly developed test procedure)	1. follow LD scheme 2. consider HD unique situations			every two years per family
6.3.2. Verification procedure	pre-check	1. follow LD scheme 2. consider HD unique situations			define 1. exemption criteria (Annex 1) 2. pre-conditioning prior to testing
	test procedure	depend on test procedure to be newly developed			same as homologation test procedure
6.3.3. Statistical Method for Pass/Fail decision for a sample of vehicles	<tolerance> hard to set an appropriate tolerance due to few real-world study	1. monitoring phase as a first step, then set the tolerance based on monitoring results 2. same as LD tolerance if algorithm is almost identical with LDs 3. set based on social needs			allow up to 5%
	<number of tests> consider more difficulty than LDs 1. to procure the customer vehicles 2. to arrange physical test site (depend on newly developed test procedure)	1. follow LD scheme 2. consider HD unique situations			at least 3 vehicles up to 16
6.4. Part B: Verification of Battery Durability					
6.4.1. Frequency of verifications		1. follow LD scheme 2. consider HD unique situations			every year per family
6.4.2. Pass/Fail Criteria for the battery durability family	unit	1. per family 2. per each vehicle			per family
	criteria	1. monitoring phase as a first step, then set the tolerance based on monitoring results 2. same as LD tolerance if algorithm is almost identical with LDs 3. set based on social needs			more than 10% vehicles do not satisfy MPR
6.4.3. Corrective Measures for the Battery Durability Family		1. follow LD scheme 2. consider HD unique situations			with the agreement of the responsible authority
Annex 1 Vehicle Survey		depends on Part A procedure			
Annex 2 Values to be read from vehicles		1. same as LD (deterioration value : depend on 5.1.) 2. consider HD unique situations			define 10 parameters
Annex 3 Determination of Performance Parameter during Part A Test Procedure		depends on 3.3.~3.8.			
others, if necessary					