

<b>EVE IWG</b>	
<b>Date</b>	November 21, 2022 – November 22, 2022
<b>Time</b>	09h00 – 17h00 Central European Summer time
<b>Title</b>	EVE IWG Session #58
<b>Informal Document</b>	EVE-58-09e – meeting report-minutes

Submitted by the EVE Secretariat

## Report of the 58<sup>th</sup> Session

Electric Vehicles and the Environment Informal Working Group

Location:	WebEx
Date and Time:	November 21, 2022 at 5:30 – 8:00 CEST November 22, 2022 at 5:30 – 8:00 CEST
Chair and Co-Chair:	Mr. Michael Olechiw (USA) [Present] Ms. Panagiota Dilara (European Commission) [Present]
Vice-Chair(s):	Mr. Hisakazu Suzuki (Japan) [Present] Ms. Chen Chunmei (China) [Present]
Secretary:	Ms. Kendelle Anstey (Canada) [Present]

*\*This meeting was held virtually and all presence is virtual*

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**Agenda Items**

Introductions, review and changes to agenda, EVE IWG meeting updates and review meeting minute highlights and comments, updates on actions items ..... 3

Review of priority action items for refresher/as needed ..... 3

Updates on GTR No 21..... 3

Updated comments on GTR No 21 and 22 ..... 3

GTR No 21. Updates – OICA..... 4

New..... 4

HDV GTR formal document, Timelines and updates on terms of references and HDV drafting group updates..... 4

Other HDV planning/discussion items such as power fade ..... 4

HD discussion items ..... 5

Review of GTR No. 22 text..... 5

GTR No 22: Discussion of MPR category 2..... 5

GTR No 22: Inputs on category 2 vehicles ..... 6

GTR No 22: Annex 2 and other open items ..... 6

Review of priority action items for refresher/as needed ..... 6

Other updates (as available): swappable batteries, EU battery regulation, other action items ..... 6

Final remarks, next EVE IWG meeting, other business ..... 6

- BD – Battery durability**
- BMS – battery management system**
- CARB – California air resources board**
- EC – European Commission**
- EPA – U.S. Environmental Protection Agency**
- HD or HDV – heavy duty vehicles**
- MPR – Measured performance requirement**
- JRC – Italy’s Joint Research Centre**
- SAE – Society of Automotive Engineering**

Day 1

1	05:30 – 06:00	Introductions, review and changes to agenda, EVE IWG meeting updates and review meeting minute highlights and comments, updates on actions items	Chair Secretary	EVE-58-01e EVE-58-02e EVE-57-16e
<p><i>Agenda changes</i></p> <ul style="list-style-type: none"> <li>Two additions added to agenda.</li> </ul> <p><i>Review of meeting minutes</i></p> <p>Comments during review discussion</p> <ul style="list-style-type: none"> <li>EVE IWG will review potential revisions for GTR No 21 and further hold discussion on topics such as family concept at the next GTR No 21 drafting review session (January 2023)</li> </ul>				
2	06:00 – 06:15	Review of priority action items for refresher/as needed	Co-Chair	EVE-57-04e
3	06:15 – 6:45	Updates on GTR No 21.	Japan	EVE-58-03e
<p>Japan noted the following items for discussion</p> <ul style="list-style-type: none"> <li>In cases where construction of a power system due to a highly integrated system makes it difficult to physically obtain a reading, Japan is suggesting to use on-board data. The difficulties that integrated power systems present is still a topic of interest to EVE IWG members.</li> <li>OICA noted that discussion should continue on this item on ways to measure as they would prefer not to default to on-board data.</li> <li>Family definition requirements to harmonize with GTR No 21 and 22 are still under discussion. As of current EVE IWG discussion, EVE IWG members do not necessarily see a need to harmonize them yet.</li> </ul> <p>Action item: EVE IWG to discuss family definitions for next meeting agenda</p>				
4	06:45 – 07:00	Updated comments on GTR No 21 and 22	OICA	EVE-58-04e EVE-58-07e
<ul style="list-style-type: none"> <li>The EVE IWG discussed harmonising GTR No. 22 definitions. OICA checked if same definitions for use in GTR No. 21 are appropriate.</li> <li>The recommendation under discussion from OICA is to evaluate each criterion because some definitions from GTR No 22. are not relevant for GTR No 21 and the EVE IWG will need to discuss if there is a benefit to harmonising all definitions.</li> <li>The U.S. EPA agreed with the bullet point presented that priority should be focused on applying appropriate criteria that allow families to have a reasonable test burden. In other words, overall, family definitions can manage the test burden and prevent identical testing</li> </ul>				

<p>on models, but, also, if having the same families between two GTR's creates test burden or complexity then it doesn't make sense to have those definitions in each GTR be identical.</p> <ul style="list-style-type: none"> <li>The EVE IWG looked at ways to compare each definitions with the help of Japan's work on a comparison table. This excel sheet will be distributed at a later time when available.</li> </ul>				
	07:00 – 07:15	<b>Coffee break</b>		
5	07:15 – 07:30	<p>GTR No 21. Updates – OICA New</p> <p>HDV GTR formal document, Timelines and updates on terms of references and HDV drafting group updates</p>	EVE IWG	EVE-57-15e
<p>Continuation of GTR No. 21 (OICA)</p> <ul style="list-style-type: none"> <li>The beginning of this meeting timeslot was spent concluding topics on GTR No. 21. OICA went through presentation (EVE-58-07e) which focused on challenges they experienced when conducting validation testing on GTR No. 21</li> <li>More discussion on these topics is needed going forward.</li> <li>Action item: These topics will be added to a list of open items for discussion. Open items will need to also include the urgency need on each suggested change.</li> <li>Action: A drafting meeting will be scheduled to follow up on these topics.</li> </ul> <p>Heavy duty vehicle new GTR timelines (EVE leadership)</p> <ul style="list-style-type: none"> <li>Timeline correction for submitted date will be at the June WP. 29, not March ( on current schedule)</li> <li>Next EVE IWG meeting will be at GRPE on the Tuesday with drafting group meeting on GTR No 21 in the morning.</li> <li>EVE IWG also discussed need of putting in new HDV timeline into the current ToR. This can be added in as an informal document.</li> </ul> <p>HD discussion</p> <ul style="list-style-type: none"> <li>U.S. EPA is drafting phase 3 of their regulations. They will take action item to see about introducing HD regulations.</li> </ul> <p>Presentation from JRC on new HD drafting group</p> <ul style="list-style-type: none"> <li>JRC presented highlights from the first HD drafting group</li> <li>There are still open items and ones of the biggest discussion items is deciding the appropriate level of resolution for use cases as the one approach will not exactly work for all vehicle types.</li> </ul>				
6	07:30 – 08:00	Other HDV planning/discussion items such as power fade	EVE IWG	

Day 2

	Time	Agenda item	Lead	Working Paper #																							
8	05:30 – 05:45	HD discussion items	OICA	EVE-58-05e																							
<ul style="list-style-type: none"> <li>OICA provided a short update since the last meeting with some thoughts on MPR</li> <li>Proposed to add N1 also because of mileage One EVE IWG member thought that the concepts on slide 4 add more complexity instead of looking range and thought that the most simple approach is sufficient.</li> <li>OICA thought to mention MC1 for safety purposes but also mentioned it could be excluded</li> </ul>																											
9	05:45 – 06:00	Review of GTR No. 22 text	Co-Chair	<a href="#">ECE TRANS 180a 22e corrections on GTR NO 22.docx</a>																							
<ul style="list-style-type: none"> <li>GTR No 22 changes are reflected in the link above.</li> </ul>																											
10	06:00 – 06:30	GTR No 22: Discussion of MPR category 2	Japan	EVE-58-06e																							
<ul style="list-style-type: none"> <li>Japan provided recommendations for JRC’s study on Category 2 vehicles for determining the MPR.</li> <li>Japan is unable to provide technical evidence since their technical study and market experience is currently limited.</li> <li>Japans comments recommendations reflected below</li> </ul> <p style="text-align: center;"><u>Confirmations/Recommendations</u></p> <table border="1"> <tr> <td>Starting Point</td> <td colspan="2">JRC study applies TEMA model which identifies the Category 1 MPR, that’s why 15% reserve is included</td> </tr> <tr> <td colspan="3">↓ then, consider <b>extra factors</b> related to Category2 features compared with Category1</td> </tr> <tr> <td>extra factors</td> <td>Confirmations/Recommendations</td> <td>overall</td> </tr> <tr> <td>1. Driving distance</td> <td>Statistical data for <b>only Category2 shall be used</b> for the analysis</td> <td rowspan="5">TEMA model well covers the extra factors (please refer to appendix) to determine the extra impact on battery degradation for each vehicle architectures (e-Van1~4).  Appreciate if <b>each vehicle data is provided.</b></td> </tr> <tr> <td>2. Payload</td> <td><b>What is payload value</b> for this study ? (in the WLTP world : Cate.1=15, Cate.2=28%)</td> </tr> <tr> <td>3. Battery temperature</td> <td><b>What kind of battery cooling architecture</b> is considered to determine the battery temp. ? Is the <b>energy consumption</b> also considered ?</td> </tr> <tr> <td>4. SOC profile</td> <td>well-covered</td> </tr> <tr> <td>5. Charging strategies</td> <td>well-covered</td> </tr> <tr> <td>(1+2): Energy throughput</td> <td colspan="2">heavily affected by <b>real-world energy consumption</b> in addition to distance and payload → can TEMA model provide also “energy throughput” data for further analysis ?</td> </tr> </table> <ul style="list-style-type: none"> <li>JRC doesn’t refer to specific architecture. JRC offered to help with more information relating to the vehicle.</li> </ul>					Starting Point	JRC study applies TEMA model which identifies the Category 1 MPR, that’s why 15% reserve is included		↓ then, consider <b>extra factors</b> related to Category2 features compared with Category1			extra factors	Confirmations/Recommendations	overall	1. Driving distance	Statistical data for <b>only Category2 shall be used</b> for the analysis	TEMA model well covers the extra factors (please refer to appendix) to determine the extra impact on battery degradation for each vehicle architectures (e-Van1~4).  Appreciate if <b>each vehicle data is provided.</b>	2. Payload	<b>What is payload value</b> for this study ? (in the WLTP world : Cate.1=15, Cate.2=28%)	3. Battery temperature	<b>What kind of battery cooling architecture</b> is considered to determine the battery temp. ? Is the <b>energy consumption</b> also considered ?	4. SOC profile	well-covered	5. Charging strategies	well-covered	(1+2): Energy throughput	heavily affected by <b>real-world energy consumption</b> in addition to distance and payload → can TEMA model provide also “energy throughput” data for further analysis ?	
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OICA continued presenting the second half of their presentation from yesterday (EVE-58-04e)																											

- OICA proposed to discuss the parameters 11-13 when the EU battery regulation is finalized and published with the criteria as their views are not finalized. OICA wanted to discuss the technical feasibility within the EVE IWG. On capacity, discussions from members at OICA are suggesting to not adopt the bottom parameters.

Background on MPR for category 2 vehicles noted by OICA

- UNECE EVE IWG agreed, that the MPR for Category 2 vehicles shall be for monitoring in phase 1
- During EVE IWG 56 in June 2022 EU Commission indicated, that it will take to long to wait for monitoring data from phase 1
- At EVE IWG 57 in September, JRC presented a first proposal as discussion starter
- The Euro 7 draft was published recently with an MPR for N1 (Category 2) vehicles as presented by JRC

11	06:30 – 06:45	GTR No 22: Inputs on category 2 vehicles	ACEA	EVE-58-05e
<ul style="list-style-type: none"> <li>• EVE IWG discussed virtual mileage concepts for commercial vehicles with the outcome that it would not work for all commercial vehicle types as some vehicles would use the battery energy for work related tools. Much of the discussion points refer to different approaches based on different commercial vehicle needs and whether same principles that are already within the GTR can be applied. Energy throughput was thought to be a better approach in discussion although there were some concerns on whether this can be accurately verified. Verification was another point of concern for discussion.</li> <li>• Discussions also discussed temperature as a big factor affecting virtual mileage.</li> <li>• Manufacturers want to design these vehicles to suit customer needs.</li> <li>• This topic needs further discussion for a conclusion to be reached with possibility to look at unique solutions. There is a preference to maintain a simple concept approach which could come down to looking at profiles of UBE to set an MPR.</li> </ul>				
	06:45 – 07:00	<b>Coffee break</b>		
12	07:00 – 07:15	GTR No 22: Annex 2 and other open items	EVE IWG	
13	07:15 – 07:30	Review of priority action items for refresher/as needed	Co-Chair	EVE-57-04e
14	07:15 -07:30	Other updates (as available): swappable batteries, EU battery regulation, other action items	EVE IWG	
<ul style="list-style-type: none"> <li>• EC does not have the appropriate colleague available yet to present on the EU battery regulation but will discuss this topic when the expert is next available.</li> <li>• Action item: Conduct poll for EVE IWG meeting dates</li> </ul>				
15	07:45 – 08:00	Final remarks, next EVE IWG meeting, other business		