EVE IWG 29th	
Date	January 9th 2019
Location	Palais des Nations, Geneva, Switzerland
Time	9:30 to 13:30 CET
Title	EVE 29th IWG – Sub-Group on Hybrid System Power

Minutes

The EVE (Elecric Vehicles and the Environment) IWG Session #29 was held in Geneva on 8-9 January 2019. The EVE IWG sub-group on hybrid system power met on January 9.
Due to the lapse of appropriation most services of the U.S. government have been shut down. As a consequence the chairs of the EVE IWG group and power hybrid system sub-group could not attend the meeting in Geneva or participate remotely.
The hybrid system power determination sub-group meeting took place as scheduled. JRC helped to organize the documents for the discussion during the meeting.

1	**List of Documents discussed/presented**
	• Doc1_Japan's analysis on system power of TP1 and TP2.pdf • Doc2_K_Factor.pdf • Doc3_KATRI_JRC_comparison.pdf • Doc4_maximum power operation condition.pdf • Doc5_Japan's analysis on ECCC_report (002).pdf • Concerns from the Validation results.pdf • JRC_Jan2019_PowerHybridValidationTests.pdf • EPA validation test report_2018_04_12.pdf • ECCC-Power Determination Report – Volt.pdf • Power Determination Report – TESLA.pdf (received but not distributed to the group; Kendelle/Mike' action)

JRC_Jan2019_PowerHybridValidationTests.pdf

The meeting started with a presentation from JRC (Paffumi Elena) on the validation tests, with the support of OICA. The presentation and draft report are still under approval and cannot be posted on line. The discrepancies between method TP1 and TP2 normalised results were shown, without and with tire slippage corrections.
The percentage variation in the tests repetitions was also brought to the attention of the discussions, particularly for some of the test repetition.
There was a suggestion from Abe-San and Kubodera-San to analyse the vehicle speed versus dyno speed within a test sequence to explain the large variation of the fourth repetition.
A question was raised if one of the two methods, TP1 or TP2, gives better results or if another method has to be proposed.
Doc1_Japan's analysis on system power of TP1 and TP2.pdf
Doc2_K_Factor.pdf
Doc3_KATRI_JRC_comparison.pdf

Doc4_maximum_power operation_condition.pdf
Doc5_Japan's analysis_on ECCC_report (002).pdf

Documents 1 to 5 of the list reported above were presented by Abe-San and Kubodera-San.

- Both JARI and KATRI results have been presented.
- Attention was given in illustrating the pro and cons of each of the two methods, TP1 and TP2, especially the influence that both the gear box efficiency coefficient and the K factor from electrical power to mechanical power conversion can have on the results.
- Document 1 focuses on TP2 gear box efficiency coefficient:
  - There is not a standard method to evaluate the gear box efficiency.
  - Question regarding OEMs declaration of gear box efficiency: if different from the proposed values in the draft GTR, can this be considered appropriate from a regulation point of view if it cannot be measured and verified by third party?
  - If chassis dyno is used in TP2 method, tire slippage correction is needed and this is not straight forward to be evaluated, not being it uniquely given.
- Document 2 focuses on the K-factor:
  - The conversion factor from electrical power to mechanical power can be measured; measuring conditions are described in ISO and/or SAE
  - KATRI conducted some measurement of the K-factor that was illustrated by Japan
  - Uncertainties remain for TP1 ICE power estimates from UN R85 curves.
- Document 3:
  - Illustration of the comparison between JRC and KATRI tests.
  - The influence that the gear shifting and vehicle speed have on the power determination have been illustrated.
- Document 4:
  - Focuses instead on the influence of the vehicle system operational mode on the power results
  - Third party should receive the information of the operational mode from OEMs. Various measuring methods such as sweep method (SAE) can be conducted to assess the operational mode.
- Document 5:
  - Focuses on the analysis of the ECCC results with some questions to pose to Canada related to the measurements recorded during the tests
  - Given the large variation among CAN data and measured value power results the question was related to the HV REESS power exact measurement point and correction (DCDC converter power) and to the torque values from the CAN used in the calculation
- Document ECCC-Power Determination Report – Volt.pdf:
  - Illustration to support the discussion and clarify the questions from Japan, with attention to the results without and with tire slippage corrections and torque meters measurements.
- Document Concerns from the Validation results.pdf:
  It was used as based for the discussion on the several parameters influencing both TP1 and TP2 methods and the pro and against of each method.

Concerns from the Validation_results.pdf

During the last part of the meeting the pro and cons list of the document was used as based for the discussion on several parameters influencing both TP1 and TP2 methods. Due to the time constraint the discussion was postponed to the next meeting.

Conclusion/next steps:

- It was agreed to discuss all the identified points and issues together as soon as US-EPA colleague Mike Safoutin will be available again. A web meeting will be organized.
- It was agreed to report to GRPE that the validation has been carried out in line with the schedule, but extra time is however needed to complete the GTR due to the results of the tests in the different laboratories.