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### World Forum for Harmonization of Vehicle Regulations

### Working Party on Pollution and Energy

#### Eighty-fifth session

Geneva, 11–14 January 2022

## Report of the Working Party on Pollution and Energy (GRPE) on its eighty-fifth session

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## I. Attendance

1. The Working Party on Pollution and Energy (GRPE) held its eighty-fifth session from 11 to 14 January 2022, with André Rijnders (Netherlands) as Chair and Duncan Kay (United Kingdom of Great Britain and Northern Ireland) as Vice-Chair. Experts from the following countries participated in the work following Rule 1(a) of the Rules of Procedure of the World Forum for Harmonization of Vehicle Regulations (WP.29) (TRANS/WP.29/690, as amended): Australia, Canada, China, France, Germany, Hungary, India, Italy, Japan, Netherlands, Norway, Poland, Republic of Korea, Russian Federation, South Africa, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland (UK), United States of America. Experts from the European Commission (EC) also participated. Experts from the following non-governmental organizations (NGOs) took part in the session: American Automotive Policy Council (AAPC), Association for Emissions Control by Catalyst (AECC), European Association of Automobile Suppliers (CLEPA/MEMA/JAPIA), European Association of Internal Combustion Engine Manufacturers (EUROMOT), European Garage Equipment Association (EGEA), European Tyre and Rim Technical Organisation (ETRTO), Fédération Internationale de l'Automobile (FIA), Federation of European Manufacturers of Friction Materials (FEMFM), International Association for Natural Gas Vehicles (NGV Global), International Motorcycle Manufacturers Association (IMMA), International Motor Vehicle Inspection Committee (CITA), International Organization of Motor Vehicle Manufacturers (OICA), and Liquid Gas Europe. The representative from Clean Air Association was invited by the Chair.

## II. Adoption of the agenda (agenda item 1)

*Documentation:* ECE/TRANS/WP.29/GRPE/2022/1  
Informal documents GRPE-85-05-Rev.3, GRPE-85-06-Rev.1 and GRPE-85-08

2. Mr. Rijnders, Chair of GRPE, opened the meeting, held as hybrid session, with all participants attending virtually because of the still on-going sanitary situation, and welcomed the participants.

3. GRPE adopted the provisional agenda of the eighty-fifth session (ECE/TRANS/WP.29/GRPE/2022/1), as updated and consolidated in GRPE-85-05-Rev.3, and GRPE-85-06-Rev.1 as a tentative running order.

4. The informal documents distributed before and during the GRPE session are listed in Annex I. Annex II lists the informal meetings held in conjunction with this GRPE session. Annex III lists IWGs of GRPE, task forces and subgroups, giving details on their Chairs, Secretaries and the end of their mandates.

5. The secretariat introduced GRPE-85-08, announcing details for the next GRPE session. Following a request from the representatives from the UK, GRPE agreed to move the next session forward by one day. After consultation with colleagues to swap meetings (thanking them for their flexibility) and with conference services, the secretariat confirmed the next session would start on Monday 30 May 2022 at 2.00 p.m. and finish on Thursday 2 June 2022 at 12.30 p.m. He informed GRPE the corresponding deadline for the submission of official documents would therefore be Monday 7 March 2022.

## III. Report on the last session of the World Forum for Harmonization of Vehicle Regulations (WP.29) (agenda item 2)

*Documentation:* ECE/TRANS/WP.29/1161  
Informal document GRPE-85-07

6. The secretariat introduced GRPE-85-07 and reported on relevant items discussed during the 185th sessions of the World Forum for Harmonization of Vehicle Regulations

(WP.29). He referred to ECE/TRANS/WP.29/1161 for further details.

## IV. Light vehicles (agenda item 3)

### A. UN Regulations Nos. 68 (Measurement of the maximum speed, including electric vehicles), 83 (Emissions of M<sub>1</sub> and N<sub>1</sub> vehicles), 101 (CO<sub>2</sub> emissions/fuel consumption), 103 (Replacement pollution control devices) and [154] (Worldwide Light duty Test Procedure (WLTP))

*Documentation:* (ECE/TRANS/WP.29/2022/41)  
(ECE/TRANS/WP.29/2022/42)  
ECE/TRANS/WP.29/GRPE/2022/2,  
ECE/TRANS/WP.29/GRPE/2022/8,  
Informal documents GRPE-85-02, GRPE-85-09, GRPE-85-10,  
GRPE-85-12, GRPE-85-13, GRPE-85-14, GRPE-85-15, GRPE-85-16,  
GRPE-85-17, GRPE-85-18-Rev.2, GRPE-85-19-Rev.2, GRPE-85-20-Rev.2,  
GRPE-85-45, GRPE-85-46 and GRPE-85-48

7. The representative from OICA introduced ECE/TRANS/WP.29/GRPE/2022/2 and ECE/TRANS/WP.29/GRPE/2022/8 proposing to integrate requirements for Special Purpose Vehicles (SPVs) in the 06 and 07 series of amendments to UN Regulation No. 83 and Consolidated Resolution on the Construction of Vehicles (R.E.3). The representative from Spain proposed clarifications on ECE/TRANS/WP.29/GRPE/2022/8 to be included in any revised version (GRPE-85-48), and requested clarifications on ECE/TRANS/WP.29/GRPE/2022/2, as supported by the representative from Sweden.

8. The representative from Australia asked whether similar provisions should also be included in UN Regulation No. 154. The representative from France supported the proposals and requested to be cautious about exempting from Conformity of Production (CoP) requirements. The representative from the European Union, as supported by the representative from the Netherlands, needed a review on the deletion of the extension rule and requested additional time to consider the proposals.

9. The representative from OICA explained the rationale for the proposals, mainly to ease the way in some markets where a very limited number of vehicles falling under the definition of SPVs are registered, and where identifying vehicle to perform CoP tests would be very challenging. The representative from OICA also agreed for a delayed consideration of the proposals, and he proposed to improve the documents for a consideration in forthcoming sessions of GRPE.

10. The representative from OICA introduced GRPE-85-09 and GRPE-85-15 proposing to correct the recursive formula calculating pass/fail criteria of CoP in the 05, 06, 07 Series of Amendments to UN Regulation No. 83 and the 02 and 03 Series of Amendments to UN Regulation No. 154. The representative from the EU informed GRPE that the proposal did not impact the EU as they use a different approach to pass/fail criteria of CoP tests. The representative from India supported the proposals and asked whether UN GTR No.15 should also be amended in a similar way. GRPE agreed to consider GRPE-85-09 as a working document in forthcoming sessions of GRPE.

11. The secretariat proposed to adopt GRPE-85-15 and to include it in revisions to ECE/TRANS/WP.29/2022/41 and ECE/TRANS/WP.29/2022/42 to be considered by WP.29 and AC.1 in March 2022. He prepared GRPE-85-45 and GRPE-85-46 respectively. The representative from Japan supported the proposals and added that they were flexible on the timing of implementation of such proposals.

12. GRPE adopted GRPE-85-45 and GRPE-85-46 as ECE/TRANS/WP.29/2022/41/Rev.1 and ECE/TRANS/WP.29/2022/42/Rev.1 respectively and requested the secretariat to submit them to WP.29 and AC.1 for consideration and vote at their March 2022 sessions as draft 02 and 03 series of amendments to UN Regulation No. 154 respectively.

13. The representative from OICA introduced GRPE-85-10 proposing to allow for the specification of the test equipment allowed for UN Regulation No. 154 to also be allowed in the 05, 06, 07 Series of Amendments to UN Regulation No. 83. The representatives from France, Germany, The Netherlands, Spain and Sweden supported the proposal. The Chair requested the representative from OICA to prepare a working document for forthcoming sessions of GRPE.

14. The representative from OICA introduced GRPE-85-12 on amending Charge Depleting (CD) cycles from vehicle for the equivalent all-electric range (EAER) calculation in the 02 and 03 Series of Amendments to UN Regulation No. 154. The representative from Japan introduced GRPE-85-02 on potential consequence of implementing GRPE-85-12. The representative from JRC and Germany also sought clarifications on the proposal from OICA.

15. The representative from OICA agreed additional work was needed to finalize the proposal and invited all interested stakeholders to join separate discussions to take place in the forthcoming weeks. The representatives from France, Japan, Sweden and the UK showed interest in participating to such activities.

16. The representative from OICA introduced GRPE-85-13 and GRPE-85-14 to amend the original and 01 Series of Amendments to UN Regulation No. 154 (as well as UN GTR No. 15) to reflect the latest corrections and clarifications added to the 02 and 03 Series of Amendments to UN Regulation No. 154. The Chair asked whether such corrections tackling older version of documents was necessary in the case of UN Regulation No. 154. The representative from OICA confirmed some countries might be willing to adopt former version of UN Regulation No. 154 as allowed by the Revision 3 to the 1958 Agreement, so improving the older versions might still prove beneficial.

17. The representative from OICA confirmed the proposals would be finalized as supplements for forthcoming sessions for GRPE.

18. The representative from OICA introduced GRPE-85-16 and GRPE-85-17 proposing to amend the 01 Series of Amendments to UN Regulation No. 101 to address discharge speed requirements for OVC-HEV. The representative from the EC expressed no objections to the proposal.

19. The representative from Germany requested information about any effect on energy consumption or range from the proposed change. The representative from OICA clarified that the proposal only affected pre-conditioning, so no change on energy consumption nor range was expected. The representative from OICA also stated some information about why such provisions were originally included in UN regulation No. 101 would be sought and introduced together with a formal proposal at forthcoming sessions of GRPE.

20. The representative from OICA introduced GRPE-85-18-Rev.1, GRPE-85-19-Rev.1 and GRPE-85-20-Rev.1. proposing to take the new 7000Lux criterion for Daytime Running Lamps (DRL), as stipulated in the 08 Series of Amendments to UN Regulation No. 48, into account in the 06 and 07 series of amendments to UN Regulation No. 83, the 01 Series of Amendments to UN Regulation No. 101 and the original, 01, 02 and 03 series of amendments to UN Regulation No. 154.

21. The representative from the Netherlands requested some clarifications on the potential quantification of CO<sub>2</sub> emissions differences between rear lights on or off. The representative from the EC requested any information on the meaning of 7000 Lux and the share of typical driving below and above this threshold. The representative from OICA said no numbers about potential CO<sub>2</sub> emission differences were available at the time of the meeting. He also clarified that 7000 Lux condition corresponded to dusk conditions or very cloudy conditions. He agreed to prepare more evidence for future GRPE sessions.

22. The representative from the EC briefly explained that such rear light deactivation system was being considered to be included in eco-innovation lists of the EU, and therefore further discussions were needed before sharing a position on this proposal with GRPE.

23. The Chair agreed with the concern from the representative from OICA that a consistent approach was necessary for all laboratories performing the tests prescribed in UN Regulations Nos. 83, 101 and 154, and insisted that double counting of potential emissions

reduction benefits should be avoided. He invited the representative from OICA to revise the proposals to include possible cases in square brackets for GRPE deliberations during the next session of GRPE, and to provide more evidence on the expected impact on emissions differences with the rear light on and off, and the share of driving under each light conditions (below and above 7000 Lux). GRPE supported the approach proposed by the Chair.

## **B. UN Global Technical Regulations Nos. 15 on Worldwide harmonized Light vehicles Test Procedures (WLTP) and 19 (Evaporative emission test procedure for the Worldwide harmonized Light vehicle Test Procedures (WLTP EVAP))**

*Documentation:* Informal documents GRPE-85-21 and GRPE-85-22

24. The representative from OICA introduced GRPE-85-21 and GRPE-85-22 proposing to amend Annex 13 (Low Temperature Test Procedure) of Amendment 6 to UN GTR No. 15 with respect to Pure EVs. The representative from the Netherlands asked the timeline for the proposed update to UN GTR No. 15., and the representative from the EC added that updating UN GTR No. 15 was not a high priority for them. He suggested to collect all the points to be included in a forthcoming Amendment 7 to UN GTR No. 15.

25. GRPE agreed to compile all potential improvements and amendments to UN GTR No. 15 before considering a new Amendment to UN GTR No. 15 at forthcoming sessions of GRPE.

## **C. Worldwide harmonized Real Driving Emissions (RDE) test procedure**

*Documentation:* Informal document GRPE-85-44-Rev.1

26. The representative from the EC, Chair of the IWG on RDE, introduced GRPE-85-44-Rev.1 providing a brief update about the activities of the IWG, and invited new potential interested parties to contact the secretary of the IWG to be included in future communications.

27. She informed that activities on the finalization of the UN Regulation on RDE might conclude soon as a court decision was expected in the following days following the GRPE session.

## **V. Heavy duty vehicles (agenda item 4)**

### **A. UN Regulations Nos. 49 (Emissions of compression ignition and positive ignition (LPG and CNG) engines) and 132 (Retrofit Emissions Control devices (REC))**

*Documentation:* ECE/TRANS/WP.29/GRPE/2022/3  
Informal documents GRPE-85-28, GRPE-85-41 and GRPE-85-47

28. The representative from the UK introduced ECE/TRANS/WP.29/GRPE/2022/3 as amended by GRPE-85-47 and during the session, as reflected in Annex IV. The representative of France, the Netherlands, Spain, Sweden and the EC supported the proposal.

29. GRPE adopted Annex IV and requested the secretariat to submit it to WP.29 and AC.1 for consideration and vote at their June 2022 sessions as draft Supplement 1 to the 07 series of amendments to UN Regulation No. 49.

30. The representative from OICA introduced GRPE-85-28 and GRPE-85-41 on the addition of hydrogen (H<sub>2</sub>) as a fuel for internal combustion engines in UN Regulation No. 49. The representative from Germany sought clarifications on how Ugas factors were calculated in the case of H<sub>2</sub>. The representative from the EC added that the activity was held in common between OICA and the EC, also aiming at capturing potential decarbonization benefits to be included in the European VECTO tool. The representative from the EC, from the Joint Research Center (JRC), added that a validation exercise with OEMs was on-going, and close

collaboration with OEMs was needed as the technology was not available on the market at the present time. He added final results were expected by the end of 2022. The representative from the Netherlands was supportive of the intention of the proposal and asked for some editorials corrections to be included (for example on the need to separate gaseous from liquified H<sub>2</sub> in some instances).

31. The representative from OICA agreed the text was still in progress and informed GRPE that an update will be provided at the next GRPE session if a final proposal was not prepared on time for adoption by GRPE.

**B. UN Global Technical Regulations Nos. 4 (World-wide harmonized Heavy Duty Certification procedure (WHDC)), 5 (World-Wide harmonized Heavy duty On-Board Diagnostic systems (WWH-OBD)) and 10 (Off-Cycle Emissions (OCE))**

32. GRPE had not received any new proposals for discussion under this agenda item.

**C. Worldwide provisions for Heavy Duty vehicles Fuel Economy**

33. GRPE had not received any new proposals for discussion under this agenda item.

**VI. UN Regulations Nos. 24 (Visible pollutants, measurement of power of C.I. engines (Diesel smoke)), 85 (Measurement of the net power), 115 (LPG and CNG retrofit systems), 133 (Recyclability of motor vehicles) and 143 (Heavy Duty Dual-Fuel Engine Retrofit Systems (HDDF-ERS)) (agenda item 5)**

*Documentation:* ECE/TRANS/WP.29/GRPE/2022/4 and  
ECE/TRANS/WP.29/GRPE/2022/5  
Informal documents GRPE-85-11, GRPE-85-23, GRPE-85-24 and  
GRPE-85-25

34. The representative from OICA introduced ECE/TRANS/WP.29/GRPE/2022/4 proposing to align UN Regulation No. 24 with UN Regulation No. 85 and ISO 1585:2020. The representatives from France, Germany, Italy, Sweden and the UK supported the proposal.

35. GRPE adopted ECE/TRANS/WP.29/GRPE/2022/4 and requested the secretariat to submit it to WP.29 and AC.1 for consideration and vote at their June 2022 sessions as draft Supplement 8 to the 03 series of amendments to UN Regulation No. 24 (Visible pollutants, measurement of power of C.I. engines (Diesel smoke)).

36. The representative from OICA introduced ECE/TRANS/WP.29/GRPE/2022/5 and GRPE-85-11 proposing to align UN Regulation No. 85 with ISO 1585:2020. The representative from the UK proposed alternative wording to clarify the proposed provisions, as amended during the session and reflected in Annex V.

37. GRPE adopted Annex V and requested the secretariat to submit it to WP.29 and AC.1 for consideration and vote at their June 2022 sessions as draft Supplement 11 to UN Regulation No. 85 (Measurement of the net power and the 30 min. power).

38. The representative from OICA introduced GRPE-85-23 and GRPE-85-24 proposing to widen test fuel specifications to local requirement in UN Regulations Nos. 24 and 85. The representative from the UK suggested the wording of the proposed amendment could be clarified. GRPE agreed to consider a revised proposal at forthcoming session of GRPE.

39. The representative from OICA introduced GRPE-85-25 proposing to add hydrogen fuel and associated specifications in UN Regulation No. 85. The representative from AAPC requested more information about the time when market fuel specifications would be

determined, whether at type approval or at the time of the test. The representative from OICA clarified that fuel specifications would be determined at the time of the test.

40. The representative from the EC asked whether it should be Grade I or Grade II hydrogen as specified in GRPE-85-28; moreover, he informed GRPE that there is no reference to ISO 14687 in UN Regulation No. 154 that already covers hydrogen. The Chair proposed to resume the discussions on this item at the next session of GRPE. GRPE supported that proposal.

## **VII. Agricultural and forestry tractors, non-road mobile machinery (agenda item 6)**

### **A. UN Regulations Nos. 96 (Diesel emission (agricultural tractors)) and 120 (Net power of tractors and non-road mobile machinery)**

41. The Chair requested the view of stakeholder involved with Non-Road Mobile Machinery (NRMM) about the inclusion of hydrogen as a fuel in UN Regulation No. 96, as has been proposed by the representative from OICA for UN Regulations Nos. 49 and 85 earlier in the session (paras 0. and 0.). The representative from EUROMOT informed GRPE that a drafting group is working on this for European legislation and that draft proposals to include H<sub>2</sub> in UN Regulations Nos. 96 and 120 were expected to be ready for the next session of GRPE in June 2022.

### **B. UN Global Technical Regulation No. 11 (Non-road mobile machinery engines)**

42. GRPE had not received any new proposals for discussion under this agenda item.

## **VIII. Particle Measurement Programme (PMP) (agenda item 7)**

*Documentation:* ECE/TRANS/WP.29/GRPE/2021/17  
Informal documents GRPE-85-04-Rev.1 and GRPE-85-37-Rev.1

43. The representative from the EC, Chair of the IWG on PMP, introduced GRPE-85-37-Rev.1 giving a status report of the activities of the IWG on PMP. He started with all topics related to exhaust particulates measurement and explained that the consideration of ECE/TRANS/WP.29/GRPE/2021/17, as amended by GRPE-85-04-Rev.1, as reflected in Addendum 1, was ready for a consideration by GRPE.

44. The representative from Germany requested more information about the test procedure included in the draft resolution. The Chair of the IWG on PMP clarified that the draft proposal of a new Consolidated Resolution to allowed for SPN10 of SPN23 for Heavy Duty as per the procedure adopted for light duty vehicles (as specified in Amendment 6 to UN GTR No. 15).

45. The Chair asked about a timeline to include the content of the resolution into a UN Regulation or UN GTR. The Chair of the IWG on PMP informed that the first step was to gain experience with the procedure before including it within legally binding regulations.

46. GRPE adopted Addendum 1 and requested the secretariat to submit it to WP.29 for consideration at their June 2022 sessions as draft Consolidated Resolution concerning Exhaust Ultra-Fine Particle Number Measurement For Heavy Duty Engines.

47. The Chair of the IWG on PMP then informed about non-exhaust activities on brake wear and tyre wear emissions. The Chair informed GRPE about the outcome of discussions held with the Chair of GRBP during the November session of WP.29, where both Chairs agreed to create a joint task force between GRBP and GRPE to work on the issue of tyre abrasion and the associated microplastics emissions. The representatives from France and the UK informed they would be involved from both GRBP and GRPE sides.



## **IX. Motorcycles and mopeds (agenda item 8)**

### **A. UN Regulations Nos. 40 (Emission of gaseous pollutants by motorcycles) and 47 (Emission of gaseous pollutants of mopeds)**

48. GRPE had not received any new proposals for discussion under this agenda item.

### **B. UN Global Technical Regulations Nos. 2 (World-wide Motorcycle emissions Test Cycle (WMTC)), 17 (Crankcase and evaporative emissions of L-category vehicles) and 18 (On-Board Diagnostic (OBD) systems for L-category vehicles) and [XX] (Durability)**

*Documentation:* ECE/TRANS/WP.29/GRPE/2022/6  
ECE/TRANS/WP.29/GRPE/2022/7  
Informal documents GRPE-85-38 and GRPE-85-39

49. The Co-Chair of the IWG on EPPR introduced ECE/TRANS/WP.29/GRPE/2022/6 and GRPE-85-38, as reflected in Addendum 2, containing the latest draft for Amendment 5 to UN GTR No. 2. He added that the final report was still missing and that, upon GRPE agreement, would be submitted directly to the June 2022 session of WP.29, and GRPE would get a chance to review it at its next session. The Chair required a confirmation that the part II of Addendum 2 would not be modified by the time it is considered by WP.29. The Co-Chair and Secretary of the IWG on EPPR confirmed that part II would not be modified, except for minor editorial improvements.

50. GRPE adopted Addendum 2 and requested the secretariat to submit it to WP.29 and AC.3 for consideration and vote at their June 2022 sessions as draft Amendment 5 to UN GTR No. 2. GRPE agreed to have the final report to be submitted directly to WP.29 by the sponsors of the UN GTR.

51. The Co-Chair of the IWG on EPPR introduced ECE/TRANS/WP.29/GRPE/2022/7 and GRPE-85-39, as reflected in Addendum 3, containing the latest draft for a new UN GTR on durability of pollution-control devices for two- and three-wheelers. He added that the final report and the technical rationale (part I of the UN GTR text) were still missing and that, upon GRPE agreement, would be submitted directly to the June 2022 session of WP.29, and GRPE would get a chance to review it at its next session. The Chair required a confirmation that the part II of Addendum 3 would not be modified by the time it is considered by WP.29. The Co-Chair and secretary of the IWG on EPPR confirmed that part II would not be modified, except for minor editorial improvements.

52. GRPE adopted Addendum 3 and requested the secretariat to submit it to WP.29 and AC.3 for consideration and vote at their June 2022 sessions as a draft new UN GTR on durability of pollution-control devices for two- and three-wheelers. GRPE agreed to have the final report and the technical rationale to be submitted directly to WP.29 by the sponsors of the UN GTR.

### **C. Environmental and Propulsion Performance Requirements (EPPR) for L-category vehicles**

*Documentation:* Informal document GRPE-85-03

53. The Co-Chairs of IWG on EPPR presented a status report (GRPE-85-03). They updated GRPE on the latest activities of the group from the time he was elected Co-Chair, and was thankful of the support from the other Co-Chair from South Africa and the members of the IWG on EPPR.

## **X. Electric Vehicles and the Environment (EVE) (agenda item 9)**

### **A. UN GTR No. 21 (DEVP) and [XX] on in-vehicle battery durability**

54. GRPE had not received any new proposals for discussion under this agenda item.

### **B. Other activities of IWG on EVE**

*Documentation:* Informal documents GRPE-85-35, GRPE-85-36, GRPE-85-42 and GRPE-85-43.

55. The Chair of IWG on EVE presented the status report introducing the latest activities of the group (GRPE-85-42). He explained that after the intense period of activity to finalize the proposal for a new UN GTR on in-vehicle battery durability, the IWG would resume its activity in the forthcoming weeks, with potential updates to UN GTR No. 21 and extended scope for the UN GTR on in-vehicle battery durability.

56. The representative from OICA sought clarification on the potential activity on life cycle assessment that GRPE is contemplating and the link with the IWG on EVE activity on “stating energy consumption of EVs”. The Chair of the IWG on EVE reminded GRPE that the IWG on EVE thought the activity on “stating energy consumption of EVs” was not best suited to EVE and that the IWG was focusing on a collaboration with the Group of Expert on Energy Efficiency (GEEE) of the Energy Division of the UNECE. The secretariat added that in the follow-up of the workshop organized in May 2021, the secretariat had reached out to the International Electrotechnical Commission (IEC) as advised by the group discussion during the workshop. He added that further investigations were on-going to assess potential activities of interest to IEC, GRPE and the IWG on EVE.

57. The representative from OICA introduced GRPE-85-35 on the future of UN GTR No. 21. The representative from Germany confirmed, following test performed according to UN GTR No. 21, that some clarifications and revisions to UN GTR No. 21 would be needed, especially for high powered vehicles. GRPE agreed to keep this item on this agenda for the following session of GRPE.

58. The representative from OICA introduced GRPE-85-36 introducing its view on the forthcoming activity on heavy duty battery durability. The Chair of the IWG on EVE asked, according to the view of the representative from OICA, whether some part of the UN GTR developed for light duty vehicles would potentially be usable for heavy duty applications, or a whole new UN GTR would be needed. The representative from OICA said a new UN GTR would probably be more appropriate, with some elements from the light duty UN GTR potentially be used.

59. The Chair of the IWG on EVE introduced GRPE-85-43 as revised Terms of References (ToRs) for the IWG, with clarifications added to the leadership team of the IWG. GRPE adopted GRPE-85-43.

## **XI. Mutual Resolution No. 2 (M.R.2) (agenda item 10)**

60. GRPE had not received any new proposals for discussion under this agenda item.

## **XII. International Whole Vehicle Type Approval (IWVTA) (agenda item 11)**

*Documentation:* Informal documents GRPE-85-01 and GRPE-85-33

61. The GRPE ambassador to the IWG on IWVTA introduced GRPE-85-01 and GRPE-85-33 to initiate discussions in GRPE about the implementation of the Unique Identifier (UI) in UN Regulations pertinent to GRPE. The representative from CITA, secretary of the IWG on Periodic Technical Inspection (PTI), underlined the importance of

broad access to reliable information, especially for PTI centres that are the first users of approval markings. He asked the ambassador that GRPE-85-01 be also introduced to the IWG on PTI.

62. The representative from the EC sought further clarification on user access to UI. The representative from Australia asked if the work on UI should prioritize UN Regulations included in UN Regulations No. 0.

63. The GRPE ambassador to the IWG on IWVTA noted all requests for further information and agreed to raise them during the next meeting of the IWG on DETA, to be held in March 2022 and to report back during the next session of GRPE.

### **XIII. Vehicles Interior Air Quality (VIAQ) (agenda item 12)**

*Documentation:* Informal document GRPE-85-26

64. The Chair of IWG on Vehicles Interior Air Quality (VIAQ) presented a status report on the ongoing activities of the group (GRPE-85-26). He informed GRPE about the latest progress and the items agreed during the last IWG meetings.

65. GRPE acknowledged the good progress made by IWG on VIAQ and welcomed the new member in the IWG and the new Co-Chair from Korea.

### **XIV. Lifetime compliance (agenda item 13)**

*Documentation:* Informal documents GRPE-85-30, GRPE-85-31, GRPE-85-34 and GRPE-85-40

66. The representative from CITA introduced GRPE-85-30 and GRPE-85-31 presenting the main outcomes of a report on emissions tampering using an urea emulator installed in an Euro VI A heavy truck. The representative from OICA stated that they fully oppose the sale and use of emulators, which is bad for the reputation of car manufacturers; He called for a holistic picture to be considered to mitigate the potential for tampering, highlighting that increased stringency during PTI tests might not be sufficient, with some actors proposing to temporarily revert the tampering to pass PTI tests. The representative from CITA agreed and supported the statement from the representative from OICA, and insisted that tampering is a technical and also behavioural issue, and recalled that inspection and approval performed in isolation were not effective to fully prevent tampering.

67. The representative from the EC called for the existing provision on anti-tampering to be effectively enforced, inviting countries to forbid the sale and use of such emulators. The representative from OICA gave the example of the Swiss law which seemed effective with high penalties and strong enforcement.

68. The Co-Chair from the IWG on PTI called for more expertise needed in the IWG on PTI and suggested to create a task force between GRPE and the IWG on PTI to initiate activities on the issue. The Chair highlighted the need for more collaboration between type approval, certification and PTI, and supported the proposal for the Co-Chair from the IWG on PTI to put together ideas towards the creation of a task force during the next session of GRPE.

69. The Co-Chair of the IWG on PTI introduced GRPE-85-40 introducing the draft Framework Document on Vehicle Whole-Life Compliance (ECE/TRANS/WP.29/2021/148). The representative from CITA supported the proposal. The representative from the EC highlighted some inconsistencies in the diagram shown and sought clarifications on the intention of the document. The Chair also highlighted some differences between EU and UN legislative framework which might lead to misinterpretation of the document.

70. The Co-Chair of the IWG on PTI agreed the document could be improved and agreed that it would be beneficial to present the discrepancies between different countries/regions to

improve the harmonization offered by the activities developed within WP.29 and its subsidiary bodies.

71. The secretariat proposed to report to WP.29 that GRPE identified potential improvements to the draft Framework Document on Vehicle Whole-Life Compliance, and that a proposal for improvement would be formalized during the next session of GRPE in June 2022 and communicated to WP.29 during its June 2022 session. The representatives from Sweden, the UK, and OICA as well as the Co-Chair of the IWG on PTI supported that approach. GRPE agreed to keep this item on the agenda for its next session.

72. The representative from the EC introduced GRPE-85-34 on the particle number measurement during Periodic Technical Inspection (PTI) tests. The Chair recommended to harmonize the activities between the EC and the IWG on PTI that is working on similar issues. He also informed GRPE that the Co-Chair of the IWG on PTI from the Netherlands agreed to table the proposed amendment to R.E.6. in GRPE prior to WP.29 submission. The representative from the EC expected to release a first draft of their recommendations to European authorities one month after the GRPE session and agreed to share and collaborate with the IWG on PTI.

73. The representative from Spain, supported by the representative from CITA, called for in-depth harmonization of the methodology and not-to-exceed limits, which the Chair fully supported; The Chair also suggested an updated Type 2 test might be need in type approval legislation to provide a basis for comparison at PTI tests. GRPE agreed to keep this item on the agenda for forthcoming sessions of GRPE.

## **XV. Priority topics for GRPE activities (agenda item 14)**

*Documentation:* Informal document GRPE-85-29-Rev.1

74. The representative from Japan introduced GRPE-85-29-Rev.1 as Life Cycle Assessments (LCA) Methodology for Automobiles under GRPE. The Chair supported the idea of a workshop during the next session of GRPE and invited the secretariat to briefly introduce a possible concept for such workshop.

75. The secretariat described that a potential workshop could have a similar approach as the “GRPE workshop on low- and zero-emissions heavy duty vehicles” which took place during the June 2021 session of GRPE. He added the workshop would feature contracting parties and stakeholder usually attending GRPE, but also other institutions and initiatives working on the issue of LCA for automobiles, such as the European Green NCAP or the World Business Council on Sustainable Development (WBCSD) carbon transparency partnership.

76. The representative from the EC supported the proposal and called for a final decision on the creation of a potential IWG on LCA only after the workshop. The representative from the US supported the proposal and was eager to hear about other Contracting Parties plans to include LCA into their legislative process. The representative from Russia also supported the idea and showed interest in participating to share the experience of the country on the issue.

77. The representative from OICA supported the idea and was ready to cooperate to the workshop if need be.

78. GRPE agreed to host a one-day workshop and to further discuss the inclusion of the issue of LCA into its list of priorities and the creation of a dedicated IWG during its next session in June 2022.

## **XVI. Any other business (agenda item 15)**

*Documentation:* Informal documents GRPE-85-27 and GRPE-85-32

79. The representative from the Clean Air Association introduced GRPE-85-27 and GRPE-85-32 as a presentation of the Clean Air Association, as requested by AC.2 (ECE/TRANS/WP.29/1161, para 19.). The representative from OICA sought clarifications about an acronym used in the presentation. GRPE noted GRPE-85-27 and GRPE-85-32 and thanked the Clean Air Association for introducing those to GRPE.

80. The representative of Spain, Mr. José Pablo Laguna Gomez, informed GRPE that he would retire in the following weeks and that this was his last GRPE session, after 32 years of continuous GRPE attendance. GRPE gave a heartfelt tribute to the representative from Spain and wished him a great and successful retirement.

## **XVII. Provisional agenda for the next session**

### **A. Next GRPE session**

81. The next GRPE session, including IWG meetings, is scheduled to be held as a hybrid meeting, with physical and remote participation, from Monday 30 May 2022 2.30 p.m. to Thursday 2 June 2022 12.00 p.m. Interpretation services would be provided.

### **B. Provisional agenda for the next proper GRPE session**

82. GRPE agreed on the following provisional agenda for its next session:

1. Adoption of the agenda.
2. Report on the last sessions of the World Forum for Harmonization of Vehicle Regulations (WP.29).
3. Light vehicles:
  - (a) UN Regulations Nos. 68 (Measurement of the maximum speed, including electric vehicles), 83 (Emissions of M<sub>1</sub> and N<sub>1</sub> vehicles), 101 (CO<sub>2</sub> emissions/fuel consumption), 103 (Replacement pollution control devices) and 154 (WLTP);
  - (b) UN Global Technical Regulations Nos. 15 (Worldwide harmonized Light vehicles Test Procedures (WLTP)) and 19 (Evaporative emission test procedure for the Worldwide harmonized Light vehicle Test Procedure (WLTP EVAP));
  - (c) Worldwide harmonized Real Driving Emissions test procedure.
4. Heavy duty vehicles:
  - (a) UN Regulations Nos. 49 (Emissions of compression ignition and positive ignition (LPG and CNG) engines) and 132 (Retrofit Emissions Control devices (REC));
  - (b) UN Global Technical Regulations Nos. 4 (World-wide harmonized Heavy Duty Certification procedure (WHDC)), 5 (World-Wide harmonized Heavy Duty On-Board Diagnostic systems (WWH-OBD)) and 10 (Off-Cycle Emissions (OCE));
  - (c) Worldwide provisions for Heavy Duty vehicles Fuel Economy.
5. UN Regulations Nos. 24 (Visible pollutants, measurement of power of C.I. engines (Diesel smoke)), 85 (Measurement of the net power), 115 (LPG and CNG retrofit systems), 133 (Recyclability of motor vehicles) and 143 (Heavy Duty Dual-Fuel Engine Retrofit Systems (HDDF-ERS)).

6. Agricultural and forestry tractors, non-road mobile machinery:
  - (a) UN Regulations Nos. 96 (Diesel emission (agricultural tractors)) and 120 (Net power of tractors and non-road mobile machinery);
  - (b) UN Global Technical Regulation No. 11 (Non-road mobile machinery engines).
7. Particle Measurement Programme (PMP).
8. Motorcycles and mopeds:
  - (a) UN Regulations Nos. 40 (Emission of gaseous pollutants by motor cycles) and 47 (Emission of gaseous pollutants of mopeds);
  - (b) UN Global Technical Regulations Nos. 2 (World-wide Motorcycle emissions Test Cycle (WMTC)), 17 (Crankcase and evaporative emissions of L-category vehicles), 18 (On-Board Diagnostic (OBD) systems for L-category vehicles) and [XX] (Durability);
  - (c) Environmental and Propulsion Performance Requirements (EPPR) for L-category vehicles.
9. Electric Vehicles and the Environment (EVE);
  - (a) UN GTR No. 21 (DEVF) and [XX] on in-vehicle battery durability;
  - (b) other activities of IWG on EVE.
10. Mutual Resolution No. 2 (M.R.2).
11. International Whole Vehicle Type Approval (IWVTA).
12. Vehicles Interior Air Quality (VIAQ).
13. Lifetime Compliance.
14. Priority topics for GRPE activities.
15. Election of officers
16. Any other business.

**C. Informal meetings scheduled to be held in conjunction with the next GRPE session**

83. The informal meetings in conjunction with the next GRPE sessions are expected to be virtual and held in the days prior to GRPE, if need be.
84. The agendas of these meetings will be prepared by the respective Technical Secretaries and distributed to the members of each group prior to each meeting.

## Annex I

### List of informal documents (GRPE-85- ) distributed without an official symbol before and during the session

<i>No.</i>	<i>(Author) Title</i>	<i>Follow-up</i>
1	(IWVTA Ambassador) Proposal for extension of DETA to improve the use of the unique identifier for UN Regulations	A
2	(Japan) Proposals for Future Amendments to UN Regulation No. 154	A
3	(EPPR) Status report of the IWG on EPPR	A
4r1	(PMP) Proposed amendments to ECE/TRANS/WP.29/GRPE/2021/17	B
5r3	(Secretariat) Provisional annotated agenda	A
6r1	(Chair) Draft running order	A
7	(Secretariat) Highlights of the WP.29 Session of November 2021	A
8	(Secretariat) General Information, 86th session of GRPE	A
9	(OICA) Proposal for correction to CoP formula error in the 05, 06 and 07 Series of Amendments to UN Regulation No. 83	C
10	(OICA) Proposal for a new supplement to the 05, 06 and 07 Series of Amendments to UN Regulation No. 83	C
11	(OICA) Proposed amendments to ECE/TRANS/WP.29/GRPE/2022/5	B
12	(OICA) Supportive document to GRPE-84-12: Explanation on RCDC rules in UN Regulation No. 154	C
13	(OICA) Proposal for further transposition of content of the 02 and 03 Series of Amendments to UN Regulation No. 154	A
14	(OICA) Example of transposition of the 02 and 03 Series of Amendments to UN Regulation No. 154 into the original and 01 Series of Amendments to UN Regulation No. 154	C
15	(OICA) Proposal for correction to CoP formula error in the 02 and 03 Series of Amendments to UN Regulation No. 154	B
16	(OICA) Proposal for a new Supplement to the 01 series of Amendments to UN Regulation No. 101	C
17	(OICA) Supportive document to GRPE-85-16 on UN Regulation No. 101	A
18r2	(OICA) Implementation of 7000Lux criterion- update to the 06 and 07 series of amendments to UN Regulation No. 83	C
19r2	(OICA) Implementation of 7000Lux criterion- update to the 01 series of amendments to UN Regulation No. 101	C
20r2	(OICA) Implementation of 7000Lux criterion- update to the original, 01, 02 and 03 series of amendments to UN Regulation No. 154	C
21	(OICA) comments on Annex 13 (Low Temperature Test Procedure) of Amendment 6 to UN GTR No. 15	C
22	(OICA) Supportive document to GRPE-85-21 on Annex 13 (Low Temperature Test Procedure) of Amendment 6 to UN GTR No. 15	A
23	(OICA) Proposal for a new Supplement to UN Regulation No. 24	C
24	(OICA) Proposal for a new Supplement to UN Regulation No. 85	C
25	(OICA) Proposal for the inclusion of Hydrogen in UN Regulation No. 85	C
26r1	(VIAQ) Status report of the IWG on VIAQ	A
27	(Clean Air Association) Introduction to the Clean Air Association	A
28	(OICA) Proposal for the inclusion of Hydrogen in UN Regulation No. 49	C
29r1	(Japan and Korea) Life Cycle Assessments (LCA) Methodology for Automobiles under GRPE	A

<i>No.</i>	<i>(Author) Title</i>	<i>Follow-up</i>
30	(CITA) Full report on emissions tampering using an urea emulator installed in an Euro VI A heavy truck	A
31	(CITA) Supportive document to GRPE-85-30 on emission tampering of trucks	A
32	(Clean Air Association) Request letter to participate to WP.29/GRPE meetings	A
33	(IWVTA Ambassador) Supportive document to GRPE-85-01 Thoughts of the IWVTA ambassador to GRPE 85	A
34r1	(EC JRC) New Periodic Technical Inspection – Particle Number Measurement	A
35	(OICA) Comments on UN GTR No. 21	A
36	(OICA) Position on HD Battery Durability	A
37r2	(PMP) Status report of the IWG on PMP	A
38	(EPPR) Proposed amendments to ECE/TRANS/WP.29/GRPE/2022/6	B
39	(EPPR) Proposed amendments to ECE/TRANS/WP.29/GRPE/2022/7	B
40	(IWG on PTI) Proposal for a Framework Document on Vehicle Whole-Life Compliance	A
41	(OICA) Supportive document to GRPE-85-28 Regulatory needs for H2 ICE HDV	A
42	(EVE) Status report of the IWG on EVE	A
43	(EVE) Terms of Reference for IWG on Electric Vehicles and Environment (EVE)	B
44r1	(RDE) Status report of the IWG on RDE	A
45	(Secretariat) Proposed amendments to ECE/TRANS/WP.29/2022/41: 02 Series of Amendments to UN Regulation No. 154	B
46	(Secretariat) Proposed amendments to ECE/TRANS/WP.29/2022/42: 03 Series of Amendments to UN Regulation No. 154	B
47	(EC) Proposed amendments to ECE/TRANS/WP.29/GRPE/2022/3: new Supplement to the 07 Series of Amendments to UN Regulation No. 49	B
48	(Spain) Proposed amendments to ECE/TRANS/WP.29/GRPE/2022/8	C

*Notes:*

- A Consideration by GRPE completed or to be superseded;  
 B Adopted;  
 C Further consideration on the basis of a revised proposal;



## **Annex II**

### **Informal meetings held in conjunction with the GRPE session**

Virtual meetings had been held in the weeks prior to GRPE in order to accommodate the different time zones. The planning can be shown on the IWG wiki calendar available in:

<https://wiki.unece.org/pages/viewpage.action?pageId=917779>

**Annex III****List of GRPE informal working groups, task forces and subgroups**

<i>Name (Acronym) (Status)</i>	<i>Chair or Co-chairs</i>	<i>Secretaries</i>	<i>End of mandate</i>
Environmental and Propulsion Performance Requirements of L-category vehicles (EPPR) (group)	Niels den Ouden, NdenOuden@rdw.nl  Joseph Mashele, joseph.mashele@nracs.org.za	Daniela Leveratto, d.leveratto@immamotorcycles.org	June 2022
Electric Vehicles and the Environment (EVE) (group)	Michael Olechiw, Olechiw.Michael@epamail.epa.gov  Panagiota Dilara, Panagiota.DILARA@ec.europa.eu  Chen Chunmei (Vice-Chair), chencm@miit.gov.cn  Hajime Ishii (Vice-Chair), ishii@ntsel.go.jp	Andrew Giallonardo, Andrew.Giallonardo@canada.ca	January 2024
Particle Measurement Programme (PMP) (group)	Barouch Giechaskiel, barouch.giechaskiel@ec.europa.eu	Rainer Vogt rvogt@ford.com	June 2023
Vehicle Interior Air Quality (VIAQ) (group)	Andrey Kozlov, a.kozlov@nami.ru  Inji Park (Co-Chair), coolinji@kotsa.or.kr	Andreas Wehrmeier Andreas.Wehrmeier@bmw.de	November 2025
Global Real Driving Emissions (RDE) (group)	Panagiota Dilara, Panagiota.DILARA@ec.europa.eu  Michael Olechiw, Olechiw.Michael@epamail.epa.gov  Shinya Yamamura (Vice-Chair), yamamura-s2zh@mlit.go.jp  Hyoung Gu Kim (Vice-Chair), hyoung35@kotsa.or.kr	Noriyuki Ichikawa (co-Technical Secretary), noriyuki_ichikawa@mail.toyota.co.jp Giustino Manzo (co-Technical Secretary), giustino.manzo@cnhind.com	June 2023

## Annex IV

### Adopted amendments to ECE/TRANS/WP.29/GRPE/2022/3

Adopted on the basis of GRPE-85-47, as amended during the session (see para. 0)

### A new Supplement to the 07 series of amendments to UN Regulation No. 49

Throughout Annexes 2A, 2B, 2C and Appendix 2 to Annex 13 and their corresponding Table of Contents entries, replace “06 series” by “07 series”

Annex 2A

Table 7, amend to read:

<i>Test number</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
Measured engine speed (rpm)							
Measured fuel flow (g/h)							
Measured torque (Nm)							
Measured power (kW)							
Barometric pressure (kPa)							
Water vapour pressure (kPa)							
Intake air temperature (K)							
Power correction factor							
Corrected power (kW)							
Auxiliary power (kW) <sup>1</sup>							
Net power (kW)							
Net torque (Nm)							
Corrected specific fuel consumption (g/kWh)							

Annex 2B

Section II, amend to read:

“Section II

1. Additional information (where applicable): **see Addendum**
2. Technical Service responsible for carrying out the tests
3. Date of test report
4. Number of test report
5. Remarks (if any): **see Addendum**
6. Place
7. Date
8. Signature

**Attachments: Information package.**

**Test report.”**

Annex 2B

Insert a new Addendum, to read:

**"Addendum to type approval communication No ...  
concerning the type approval of a vehicle type with an  
approved engine with regard to the emission of pollutants  
emissions pursuant to Regulation No. 49, 07 series of  
amendments**

1. Additional information
  - 1.1. Particulars to be completed in relation to the type approval of a vehicle with an approved engine installed
    - 1.1.1. Make of engine (name of undertaking)
    - 1.1.2. Type and commercial description (mention any variants)
    - 1.1.3. Manufacturer's code as marked on the engine
    - 1.1.4. Category of vehicle
    - 1.1.5. Category of engine: Diesel/Petrol/LPG/NG-H/NG-L/NG-HL/Ethanol (ED95)/ Ethanol (E85)/dual-fuel <sup>(1)</sup>
      - 1.1.5.1. Type of dual-fuel engine: Type 1A/Type 1B/Type 2A/Type 2B/Type 3B <sup>(1)</sup>  
<sup>(df)</sup>
    - 1.1.6. Name and address of manufacturer
    - 1.1.7. Name and address of manufacturer's authorised representative (if any)
  - 1.2. Vehicle
    - 1.2.1. Type approval number of the engine/engine family <sup>(1)</sup>
    - 1.2.2. Engine Control Unit (ECU) software calibration number
  - 1.3. Particulars to be completed in relation to the type approval of an engine/engine family <sup>(1)</sup> as a separate technical unit (conditions to be respected in the installation of the engine on a vehicle)
    - 1.3.1. Maximum and/or minimum intake depression
    - 1.3.2. Maximum allowable back pressure
    - 1.3.3. Exhaust system volume
    - 1.3.4. Restrictions of use (if any)
  - 1.4. Emission levels of the engine/parent engine <sup>(1)</sup>  
Deterioration Factor (DF): calculated/fixed <sup>(1)</sup>  
Specify the DF values and the emissions on the WHSC (if applicable) and WHTC tests in the table below.  
  
In case of engines tested on different reference fuels, the tables shall be reproduced for each reference fuel tested.  
  
In case of Type 1B and Type 2B dual-fuel engines, the tables shall be reproduced for each mode tested (dual-fuel and diesel modes).

<sup>1</sup> Delete where not applicable (there are cases where nothing needs to be deleted when more than one entry is applicable)

<sup>df</sup> Dual fuel engines

## 1.4.1. WHSC test

**Table 4**  
**WHSC test**

<i>WHSC test (if applicable) *,**</i>							
<b>DF</b>	<b>CO</b>	<b>THC</b>	<b>NHMC (‡)</b>	<b>NO<sub>x</sub></b>	<b>PM Mass</b>	<b>NH<sub>3</sub></b>	<b>PM Number</b>
<b>Mult/add<sup>(1)</sup></b>							
<b>Emissions</b>	<b>CO</b> <b>(mg/kWh)</b>	<b>THC</b> <b>(mg/kWh)</b>	<b>NHMC (‡)</b> <b>(mg/kWh)</b>	<b>NO<sub>x</sub></b> <b>(mg/kWh)</b>	<b>PM Mass</b> <b>(mg/kWh)</b>	<b>NH<sub>3</sub></b> <b>ppm</b>	<b>PM Number</b> <b>(#/kWh)</b>
<b>Test result</b>							
<b>Calculated with DF</b>							
<b>CO<sub>2</sub> emissions (mass emission, g/kWh)</b>							
<b>Fuel consumption <sup>(d)</sup> (g/kWh)</b>							

\* In the case of engines considered in paragraphs 4.6.3. and 4.6.6. of this Regulation, repeat the information for all fuels tested, when applicable.

\*\* In the case of dual-fuel engines of Type 1B, Type 2B, and type 3B, types as defined in Annex 15 to this Regulation, repeat the information in both dual-fuel and diesel mode.

‡ In the cases laid down in Table 1 of Annex 15 to this Regulation for dual-fuel engines, and for positive ignition engines

## 1.4.2. WHTC Test

**Table 5**  
**WHTC Test**

<i>WHTC test</i>								
<b>DF</b>	<b>CO</b>	<b>THC</b>	<b>NMHC (‡)</b>	<b>CH<sub>4</sub> (‡)</b>	<b>NO<sub>x</sub></b>	<b>PM Mass</b>	<b>NH<sub>3</sub></b>	<b>PM Number</b>
<b>Mult/add<sup>1</sup></b>								
<b>Emissions</b>	<b>CO</b> <b>(mg/kWh)</b>	<b>THC</b> <b>(mg/kWh)</b>	<b>NMHC (‡)</b> <b>(mg/kWh)</b>	<b>CH<sub>4</sub> (‡)</b> <b>(mg/kWh)</b>	<b>NO<sub>x</sub></b> <b>(mg/kWh)</b>	<b>PM Mass</b> <b>(mg/kWh)</b>	<b>NH<sub>3</sub></b> <b>ppm</b>	<b>PM Number</b>
<b>Cold start</b>								
<b>Hot start w/o regeneration</b>								
<b>Hot start with regeneration<sup>1</sup></b>								
<b>k<sub>r,u</sub></b> <b>(mult/add)<sup>1</sup></b>								
<b>k<sub>r,d</sub></b> <b>(mult/add)<sup>1</sup></b>								
<b>Weighted test result</b>								
<b>Final test result with DF</b>								
<b>CO<sub>2</sub> emissions <sup>(d)</sup> (mass emission, g/kWh)</b>								
<b>Fuel consumption <sup>(d)</sup> (g/kWh)</b>								

‡ In the cases laid down in Table 1 of Annex 15 to this Regulation for dual-fuel engines, and for positive ignition engines.

<sup>d</sup> When required by this Regulation.

## 1.4.3. Idle test

**Table 6**  
**Idle test**

<i>Test</i>	<i>CO value</i> (%vol)	<i>Lambda</i> <sup>1</sup>	<i>Engine speed</i> (min <sup>-1</sup> )	<i>Engine oil temperature</i> (°C)
Low idle test		N/A		
High idle test				

## 1.4.4. PEMS demonstration test

**Table 6a**  
**PEMS demonstration test**

Vehicle type (e.g. M <sub>3</sub> , N <sub>3</sub> and application e.g. rigid or articulated truck, city bus)						
Vehicle description (e.g. vehicle model, prototype)						
Pass Fail Results <sup>2</sup> :	CO	THC	NMHC	CH <sub>4</sub>	NO <sub>x</sub>	PM number
Work window conformity factor <sup>5</sup>						
CO <sub>2</sub> mass window conformity factor <sup>5</sup>						
Trip information:	Urban		Rural		Motorway	
Shares of time of the trip characterised by urban, rural and motorway operation as described in paragraph 4.5. of Annex 8						
Shares of time of the trip characterised by accelerating, decelerating, cruising and stop as described in paragraph 4.5.5. of Annex 8						
	Minimum			Maximum		
Work window average power (%)						
CO <sub>2</sub> mass window duration (s)						
Work window: percentage of valid windows						
CO <sub>2</sub> mass window: percentage of valid windows						
Fuel consumption consistency ratio						

<sup>5</sup> CF<sub>final</sub> needs to be stated, if applicable

## 1.5. Power measurement

## 1.5.1. Engine power measured on test bench

<sup>2</sup> Delete as appropriate.

**Table 7**  
**Engine power measured on test bench**

<i>Test number</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
Measured engine speed (rpm)							
Measured fuel flow (g/h)							
Measured torque (Nm)							
Measured power (kW)							
Barometric pressure (kPa)							
Water vapour pressure (kPa)							
Intake air temperature (K)							
Power correction factor							
Corrected power (kW)							
Auxiliary power (kW) <sup>1</sup>							
Net power (kW)							
Net torque (Nm)							
Corrected specific fuel consumption (g/kWh)							
<b>1.5.2.</b>	<b>Additional data</b>						
<b>1.6.</b>	<b>Special provisions</b>						
<b>1.6.1.</b>	<b>Granting approvals for vehicles for export (see paragraph 13.4.1. of this Regulation)</b>						
<b>1.6.1.1.</b>	<b>Approvals granted for vehicles for export in line with paragraph 1.6.1.: Yes/No (²)</b>						
<b>1.6.1.2.</b>	<b>Provide a description of approvals granted in paragraph 1.6.1.1., including the series of amendments of this Regulation and the level of emission requirements to which this approval applies</b>						
<b>1.6.2.</b>	<b>Replacement engines for vehicles in use (see paragraph 13.4.2. of this Regulation)</b>						
<b>1.6.2.1.</b>	<b>Approvals granted for replacement engines for vehicles in use in line with paragraph 1.6.2.: Yes/No (²)</b>						
<b>1.6.2.2.</b>	<b>Provide a description of approvals for replacement engines for vehicles in use granted in paragraph 1.6.2.1. including the series of amendments of this Regulation and the level of emission requirements to which this approval applies</b>						
<b>1.7.</b>	<b>Alternative approvals (see Annex 9A, paragraph 2.4.)</b>						
<b>1.7.1.</b>	<b>Alternative approvals granted in line with paragraph 1.7.: Yes/No (²)</b>						
<b>1.7.2.</b>	<b>Provide a description of alternative approvals in line with paragraph 1.7.1. "</b>						

*Final paragraph, amend to read:*

"In the case of an extension to the type approval of a vehicle with a reference mass exceeding 2,380 kg but not exceeding 2,610 kg, the reporting of the CO<sub>2</sub> emissions (g/km) and fuel consumption (l/100 km) shall be included in accordance with ~~Annex 8 of Regulation No. 101~~ **Appendix 1 to Annex 12.** "

*Annex 2C*

*Table 7, amend to read:*

<i>Test number</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
Measured engine speed (rpm)							
Measured fuel flow (g/h)							
Measured torque (Nm)							
Measured power (kW)							
Barometric pressure (kPa)							
Water vapour pressure (kPa)							
Intake air temperature (K)							
Power correction factor							
Corrected power (kW)							
Auxiliary power (kW) <sup>1</sup>							
Net power (kW)							
Net torque (Nm)							
Corrected specific fuel consumption (g/kWh)							

*Final paragraph, amend to read:*

"In the case of an extension to the type approval of a vehicle with a reference mass exceeding 2,380 kg but not exceeding 2,610 kg, the reporting of the CO<sub>2</sub> emissions (g/km) and fuel consumption (l/100 km) shall be included in accordance with ~~Annex 8 of Regulation No. 101~~ **Appendix 1 to Annex 12.** "

*Annex 3*

*Table 1, amend to read:*

“

<i>Character</i>	<i>NO<sub>x</sub> OTL<sup>1</sup></i>	<i>PM OTL<sup>2</sup></i>	<i>CO OTL<sup>6</sup></i>	<i>IUPR<sup>13</sup></i>	<i>Reagent quality</i>	<i>Additional OBD monitors<sup>12</sup></i>	<i>Power threshold requirements<sup>14</sup></i>	<i>Cold start and PM number</i>	<i>Implementation dates: new types</i>	<i>Date when Contracting Parties may refuse type approval</i>
A <sup>9 10</sup> B <sup>10</sup>	Row "phase-in period" of Tables 1	Performance monitoring <sup>3</sup>	N/A	Phase-in <sup>7</sup>	Phase-in <sup>4</sup>	N/A	20%	N/A	<b>27 January 2013</b>	01 September 2015 <sup>9</sup>



	and 2 of Annex 9A									31 December 2016 <sup>10</sup>
...										
E	Row "general requirements" of Tables 1 and 2 of Annex 9A	Row "general requirements" of Table 1 of Annex 9A	Row "general requirements" of Table 2 of Annex 9A	General <sup>8</sup>	General <sup>5</sup>	Yes	10%	Yes	<b>14 January 2022<sup>15</sup></b>	

Throughout the text and example approval marks, replace “06” with “07”

Annex 4, paragraph 9.3.2.1., amend to read:

“9.3.2.1. Introduction

Paragraphs 9.3.2.2. to ~~9.2.3.7.~~ **9.3.2.7.** describe the measurement...”

Appendix 1 to Annex 12

Paragraphs A.1.2.1.2. and A.1.2.1.3., delete.

## II. Justification

1. Currently, Annex 2B (communication concerning the approval of a vehicle type with an approved engine with regard to the emission of pollutants) does not include an addendum, unlike Annex 2A (communication concerning the approval of an engine type or family as a separate technical unit) and Annex 2C (communication concerning the approval of a vehicle type). Addendum for Annex 2A and Annex 2C provide relevant information that add on the administrative information required in the main body of Annex 2A and Annex 2C. Adopting a similar approach to Annex 2B (*id est* including an addendum modelled on the existing addendum to Annex 2A and Annex 2C) would therefore provide relevant additional information for the case of the approval of a vehicle type with an approved engine.

2. Annex 2B and Annex 2C reference Annex 8 of Regulation No. 101 for the reporting of the CO<sub>2</sub> emissions and fuel consumption in vehicles with a reference mass exceeding 2,380 kg but not exceeding 2,610 kg. The recent 07 series of amendments introduced provisions relating to CO<sub>2</sub> determination from Annex A1 of Regulation No. 154 as new requirements for the above mentioned vehicles (as set out in Appendix 1 to Annex 12), amending the previous requirements based on provisions from Regulation No. 101. Amendment of Annex 2B and Annex 2C to reference Appendix 1 to Annex 12 instead of Annex 8 of Regulation No. 101 would therefore provide alignment with the 07 series of amendments.

3. Paragraph A.1.2.1. in the 06 series of amendments to UN Regulation No. 49 included the following text: “... shall meet the requirements of Regulation No.101 with the exceptions specified below”. Those exceptions were provided in paragraphs A.1.2.1.2. and A.1.2.1.3. (NB: there is no paragraph A.1.2.1.1.). In the 07 series of amendments the reference in paragraph A.1.2.1. to UN Regulation No. 101 was deleted and replaced with references to UN Regulation No. 154. This means that paragraphs A.1.2.1.2. and A.1.2.1.3. are now obsolete and so should be deleted.

## Annex V

**Adopted amendments to ECE/TRANS/WP.29/GRPE/2022/5 Adopted on the basis of GRPE-85-11, as amended during the session (see para. 0)**

### **A new Supplement to UN Regulation No. 85**

#### **I. Proposal**

*Paragraph 1.3.*, amend to read:

"1.3. The electric drive trains are composed of controllers and motors ~~and which~~ are used for propulsion of vehicles as the sole mode of propulsion, **at least for part of the time.**"

*Annex 5, Paragraph 4.7.*, amend to read:

"4.7. ~~Pressure~~ **Depression** in intake duct (see note 1a to table 1)  
± 50 Pa"

*Annex 6, Paragraph 1.*, amend to read:

"1. These requirements apply for measuring the maximum net power and the maximum 30 minutes power of electric drive trains used for propelling pure electric road vehicles **or electric drive trains which are used as the sole mode of propulsion of hybrid electric vehicles, at least for part of the time.**"

#### **II. Justification**

1. "Alignment" with ISO 1585:2020, i.e. through usage of the word "depression" to clarify that the measurement point is different between naturally aspirated and pressure charged engines.
  2. There has been confusion whether Annex 6 of this Regulation applies only to pure electric vehicles as stated in paragraph 1 of that annex.
  3. There is an interpretation that paragraph 1.3. also applies Annex 6 to the traction electric motors of hybrid electric vehicles providing they are capable of pure electric driving.
  4. A statement of the maximum 30 minutes power of a traction electric motor is required by some regions for certain hybrid electric vehicles.
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