

Minutes of the Meeting
16th Meeting of the Informal Group on Gaseous Fuelled Vehicles (GFV)
15th December 2011
Brey Building
10.00-17.00

I. Welcome & Introductions

1. Mr. Rijnders welcomed the attendees and informed them that he has to pause for a telephone conference at 11.00 for a short period and Mr. Seisler will take over temporarily as Chair, to lead the discussion on the results of the Heavy Duty Dual-Fuel Task Force and the LNG Task Force

II. Approval of the Minutes of GFV-15

2. No remarks or changes so the minutes are adopted.

III. Approval of the agenda

3. The agenda items were reorganized to reflect the time Mr. Rijnders will be out of the meeting.

IV. GFV overview of all definitions related to gaseous fuelled vehicles (request from WLTP)

4. A document will be prepared for the next meeting in Geneva.
5. Regarding the proposals by AEGPL to re-define bi-fuel vehicles, the existing definitions and definitions of bi-fuel vehicles proposed by AEGPL can be brought forward for a presentation to the WLTP. But definitions of dual-fuel do not have to be included in the document since WLTP deals only with light duty vehicles.
6. A single document including LPG and natural gas will be produced in advance of the next GFV for circulation. The draft will be prepared by AEGPL and NGVA Europe.

V. Request from Commission on CH₄/THC limit

7. The GFV has been asked by the Commission to provide data, some of which has been collected via NGV Global from AEB (and an attempt with other vendors). TNO has also done previous work that can be used for the CH₄/THC limit value discussion.
8. Susanne Leifheit (VW) was tasked with the responsibility of preparing a document on this topic
9. The final proposal will not be brought to GRPE but rather, brought to the Commission since it is their request to provide data and discussion.
10. Background is for Euro 6 whether to remove methane as a pollutant. As such methane would be counted toward a greenhouse gas contribution (part of the CO₂ limit values). A further issue is whether THC can be removed (the preference of many stakeholders) or if a methane 'cap' is created (also not a preference of the group).
11. There could be a two step approach: align the regulation with heavy duty and then correct the light duty regulations; or deal directly with light duty regulations.
12. The Commission indicates that CH₄, while identified as a pollutant, is not regulated as a greenhouse gas. Also, DG Climate has been dealing with greenhouse gas emissions while DG Enterprise has dealt with emissions limits and emissions regulations.
13. Mr. Rijnders suggests that one possibility is to create a three tier approach: Step 1: establish limit values for NMHC and methane in the same proportions as NMHC and CH₄ is for HDVs; Step 2 possibility: remove CH₄ from pollution regulation for both LDVs

and HDVs (also similar for dual-fuel, which makes this simpler); Step 3: Re-allocate CH₄ as a greenhouse gas to be included in the CO₂/global warming regulations.

14. Timing of this process is still in question but it will be sooner than later. Commission anticipates mid-to-end of January 2012.
 15. The European Commission staff stresses that technical arguments are important (the industry has already prepared these). It may be sensible politically to look at a higher cap for methane and not leave CH₄ unregulated for a period of time until it can be brought into the GHG regulation.
 16. Question: Can the Commission justify creating a higher cap for methane as part of this process? Answer from Commission is that it is difficult at this moment. A higher cap may be more acceptable to DG Climate, keeping CH₄ as a pollutant and in future try to include CH₄ as a GHG (with other pollutants, notably N₂O). (The auto industry has already indicated concerns/opposition to this approach since they believe that including CH₄ as a GHG adds further pressure to reduce the CO₂ limits to 2020.)
 17. The NGV advocates will check the status of the US approach to CH₄ and GHG.
 18. AEB is reworking a document with data on methane emissions to help provide support for a quantifiable 'cap'.
 19. TNO has data to be used from engine-out methane numbers and post-catalyst numbers.
- VI. LNG Task Force Report (NGV Global, presentation by Jeff Seisler, co-secretariat to LNG TF) (See document GFV-16-05)**
20. Discussion regarding the regulatory strategy to develop a completely new L-NGV regulation or create amendments to R.110: The group tends to be in favor of amending R.110 with the aspects specific to LNG become another 'part' of R.110, for LNG only. Having done that, moving to a Global Technical Regulation (GTR) would be easier. There cannot be an annex but could be done in a separate part. One part would have a common branch with CNG and another part would be LNG-specific.
 21. Timing becomes one of the key issues. A new regulation would take an additional two years to create due to the fact that it would have to be approved by the European Union. From the equipment suppliers' view the timing of a final regulation into 2015 is 'not acceptable' (or preferable). It might be better to have something that moves toward worldwide harmonization through R.110. This also could lead later to the development of a Global Technical Regulation (GTR) if this would help in the marketplace.
 22. Discussion about boil-off versus venting, and concerns about vehicles parked inactive for days without driving, particularly if they are in a closed garage. From a presentation by Westport at the LNG Task Force the distinction was made that, "The vapours created due to the ambient heat input (while maintaining constant pressure in the storage vessel) are called "boil-off". The discharge of these vapours out of the storage container is called venting. The question of how or if to regulate the boil-off in R.110 is discussed at length:
 - Clearly venting is a safety concern but boil-off is an operational consideration and, as such, might not be appropriate to regulate in R.110.
 - Should the 'holding time' be specified in the regulation since this relates to the 'performance' of the LNG tank?
 - Could specify a 'not-to-exceed' pressure in a tank, although venting is the technical measure designed to prevent excessive pressure and does not need to be regulated.
 - A question is raised about the effects of ambient temperature on the tanks, which is a factor, however, the heavily insulated cryogenic tanks are designed to mitigate and diminish the effects of ambient temperatures. Such effects would need to be verified.

- 'Educated management' of the cryogenic systems is more important sometimes in determining 'holding-time.' Different volumes of fuel in the tank also will affect holding time.
- It is suggested that R.110 could specify that the manufacturers provide guidance through a user manual on holding-time, boil-off, and venting.
- Carriage of LNG trucks on ferries becomes a challenge in light of venting considerations.
- Since vehicle owners see venting as money going (literally) into the air, there is an automatic motivation to limit venting as well as boil-off.
- Mr. Renaudin will attend the next meeting of the LNG TF where this issue will be discussed again.
- Mr. Renaudin suggests that we fully support harmonization of the LNG regulations with the US requirements, to the best extent possible.

23. Vehicle Labelling

Labelling of vehicles was an issue discussed at the LNG TF, noting that car manufacturers do not like labels on their vehicles but trucks already are labeled so it is not a problem for HDVs. It is noted that, for regulatory purposes, amendment language has been set already dealing with engine labels and that is deemed enough.

VII. CH4 correlation factor (Cummins)

24. The data must be reviewed again prior to making a report to the GFV. Peter Williams (Cummins) was not available to present the case for this regulation.

VIII. Dual Task Force report and amendments

25. A new proposal would be made by the end of 2012. Comments at this stage will be reviewed at the next meeting of the HDDF TF (16th January 2012). The results will be presented at the GFV meeting the next day, hopefully for approval as an informal document. Also they will have a similar document for Euro 5 but perhaps not at the same stage of finalization. There will be some new proposals regarding aspects of the emissions test (i.e. dry vs. wet testing).

26. Next meeting following will be on 8th February to finalize Appendix 4 and 5 as well as Annex 11. There will be a need for another two day meeting to finalize a document, hopefully in March (first or second week) to finalize the document. There will be a great deal of time consuming work to be done, looking at the variety of cross-references.

IX. Regulations 115 & 83: Retrofit systems for direct injection engines: new definitions and provisions for bi-fuel vehicles (AEGPL) (Salvatore Piccolo) (reference document GFV-16-02 (Powerpoint) and GFV-16-03 and GFV 16-04 written documentation)

27. The proposal of AEGPL aims to introduce modifications to bi-fuel vehicle definitions in order to permit the simultaneous use of gas and petrol in the gas mode:
- To avoid over-use of petrol, provisions are provided to limit its use in duration (60 seconds maximum in starting-up) and/or amount (minimum limit to gas energy ratio);
 - A calculation method for gas energy ratio is provided basing on the conservative assumption that only gas is burned during the driving cycle (see GFV-16-02 for technical details); this assumption is in line with the present requirements for fuel consumption (FC) as well as for pollutant emissions, even if a certain use of petrol is already allowed (max 60 seconds over the cycle);
 - As for pollutants, no adaptation of correction factors are needed just in force of the conservative hypothesis that the test cycle is driven only on gas; the errors committed are also negligible (see GFV-16-02 for technical details) .

28. TNO believes that the combined application of a maximum timeframe for starting-up the engine and a minimum limit to the gas energy ratio over the cycle is clearer and more stringent, closing the loopholes that the present regulations offers when setting only a time limit.
29. During the discussion it is highlighted that, according to the proposals, the requirement on the gas energy ratio would be applied to all the system types, so even to those that do not need to use petrol beyond the start-up phase: the addition of a safeclause derogating such systems is evaluated;
30. With regard to the involvement of NG vehicles in the proposed adaptation of the two regulations, it is noted that also NG bi-fuel vehicles – factory built or retrofit – basically equipped with a direct injection petrol engine requires the use of a gas system capable to keep the petrol injectors cool, as with the LPG systems. The result can be achieved either by NG direct injection with the same petrol injectors (LNG direct injection is under development) or managing a limited use of petrol in the gas mode under certain circumstances, i.e. the solution in question;
31. Question for GFV: Do we have a positive feeling about the proposal to make it an informal document for the next GRPE or as a second option, to make it a formal document for the GRPE in June. After discussion about the procedural aspects of introducing this new approach advocated by AEGPL and having been considered in-depth by the GFV, it is decided that the document will be presented as a GFV informal document in the next GRPE. It is intended, therefore, to involve more input from others not participating in the GFV directly and attempt to explain the new approaches to achieve support for it. The informal document should be provided to the GFV in the next weeks for final approval; Mr. Rijnders will send it to the GRPE secretariat to submit to the GRPE January meeting.

X. Preparation of 17th GFV meeting Geneva (17th January 2012)

32. Agenda will include the same first five agenda items for the next GFV; not CH4 correlation factor nor the CH4/THC limit discussion (since the CH4/THC is more a European issue). The work with Ms. Leifheit still must be accomplished,
33. For the CH4/THC discussion, AEB will work with NGVAE to create a new document, and including NGV Global for a review, in preparation of materials that can be supplied to VW for presentation to the Commission.
34. Dual fuel for Euro 5 and one for Euro 6 will be presented as will Regulations 115 and 83 on a new informal document.
35. Another meeting of the GFV in the March-April timeframe will be proposed by AEB/Landi Renzo in Bologna, as an afternoon meeting on one day and a morning continued meeting on the second day, including a tour of the technical facilities of the companies, with members being able to travel home later in the afternoon on day two.

XI. Other items

36. No new items

XII. Next meeting(s)

37. The next meeting is scheduled for 17 January 2012 in Geneva at 14.00 in Palais Nations. Further items about the agenda are elaborated in the discussed in Item X (above).

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Attendees

André Rijnders (RDW)
 Jeff Seisler (NGV Global)
 Jaime Del Alamo (NGVA Europe)
 Lance Follett (Westport)
 Henk Dekker (TNO)

Jean-François Renaudin (Volvo)
Salvatore Picollo (Federchimica/AEGPL)
Alberto Castagnini (AEB)
Francesco Cagnolatti (Landi Renzo)