

Minutes of the 4th MAC-TP meeting

GRPE Informal working group on the Mobile Air Conditioning Test Procedure (MACTP)

Meeting held : Tuesday 05 June 2012 at United Nations, Geneva

1 Welcome:

The Chairman, Mr Rijnders (NL) welcomed everyone to the meeting.

Noted

- i) All presentations will be available on the MACTP informal group website.
- ii) All documents relating to the European project are available on the European Commission CIRCA website.
<http://circa.europa.eu/Members/irc/enterprise/wltp/library>

2 Adoption of the Agenda (GRPE-IG-MACTP-04-01).

Agenda adopted with no changes.

3 Adoption of the minutes of 3rd meeting in January 2012 (GRPE-IG-MACTP-03-05).

Minutes of the 3rd meeting adopted with no changes.

4 Presentations on developments in MAC efficiency testing

a. Japan (Ministry of Land, Infrastructure, Transport and Tourism, MLIT) (GRPE-IG-MACTP-04-02)

Mr Kajiwara (MLIT) presented the results of a MAC test study in Japan. He explained that the study background is that whilst fuel efficiency has been improving, consumers are more aware of divergence between test results and actual fuel efficiency.

MLIT has a dual motivation to study MAC for consumer information and to drive manufacturers to improve MAC systems.

MAC usage in Japan during the Summer, has been investigated using an internet based questionnaire covering 6000 people over 18 who drive more than once a week, equally split male / female. The results are still under discussing regarding shaping the test itself and the information to be provided to the consumer. The questionnaire results are summarised in slide 13 of the MLIT presentation.

The impact of a number of parameters such as blower air mass on the fuel efficiency was investigated. Results show that fuel efficiency decreases as test cell specific enthalpy (related to temperature and relative humidity) increases. Fuel efficiency also decreases proportionally to compressor working ratio.

The MAC testing involved 9 passenger cars at one laboratory, run over the dynamic JC08 cycle at various conditions (temperature / humidity) with a preconditioning of 30 minutes at 60 kmh⁻¹. Testing conducted by JARI, sponsored by MLIT and JAMA. Testing conducted with MAC on, then MAC off to determine the impact due to MAC.

This testing should be considered as a feasibility study. A number of temperature / humidity conditions were tested 2 or 3 times. MLIT reported that repeatability using the JC08 dynamic test is good when the preconditioning was used although more explanation of the repeatability analysis and correction factors for environmental conditions was requested by the European Commission.

The Japanese test procedure will be further developed during 2012 and further information will be provided at the next MACTP meeting in Jan 2013.

**b. Europe MAC-TP pilot test phase (Consortium; TNO/TUG/LAT)
(GRPE-IG-MACTP-04-03)**

Mr Willar Vonk (TNO) presented the update of the draft MAC test procedure and MAC pilot test phase on behalf of the consortium.

The MAC efficiency project contains two test phases :

- A- Multi lab pilot test (to solve open issues) – testing now completed
- B- Multi lab (4) round robin with golden vehicle.

Documents are available on CIRCA website.

Mr Vonk noted that the results of the pilot study (phase A) will be presented to stakeholders on 11 June 2012 and apologised that he was unable to provide the results in advance of the stakeholder meeting. He promised to check with the stakeholders and if possible to share the information directly with MACTP.

Pilot phase involved 8 labs, 17 vehicles and 89 tests to address the open issues and further refine the draft test procedure

Open issues :

- Sensitivities to gearshift – GSI vs fixed shift points
- Soak temperature
- Drive cycle @ min/max speed (dyno power)
- Ambient temperature / humidity

The gearshift sensitivities have not been addressed as no data was provided.

Next steps :

- European MAC efficiency meeting 11 June 2012 in Brussels on pilot phase results. Participation from MACTP members by webconference / audio also available, registration via Mr Vonk / Mr Steininger in advance
- Fine tuning of test procedure
- Round Robin (July – Oct 2012)
- Procedure finalised and technical annex to regulation developed during end 2012 / early 2013.

Round Robin

Will cover 3-4 labs, using golden vehicle and golden engineer.
Laboratory will be responsible for running the test to their understanding of the procedure, olden engineer will note where test procedure has lack of clarity and will request repeat tests if the procedure used deviated from the 'ideal' procedure and the experience used to ensure the test procedure is better defined where necessary.

5 Other information from the regions –regulatory steps

The chairman asked Mr Steininger of the European Commission about next regulatory steps in Europe. Mr Steininger reported that the European Commission intends to introduce the MAC test procedure into Euro 5 & 6, that the values will be measured at Type Approval and the value communicated on the CoC (Certificate of Conformity).

Mr Steininger reminded the group that DG-ENTR is responsible for the technical content, DG-CLIMA remains responsible for how the information is used. It might be that they consider a bonus / malus system to promote efficient MAC systems or a faster approach only looking into labelling.

Next step or parallel could be an update to Regulation 101. The EU draft could be shared with the MACTP group and discussed at the next meeting in Jan 2013.

Japan expressed some concerns that the intention of the MACTP group was to adopt the EU MAC procedure as a global harmonised test procedure into a GTR.

Mr Steininger explained that the idea is to adopt in the short term into Regulation 101 as an optional procedure.

The chairman reminded the group that the purpose of MACTP is to promote information exchange on regional / national activities and that WLTP is perhaps a better route for considering fully global harmonised procedures.

6 Next Meeting

The group agreed to meet again during the January 2013 GRPE session for ½ day, avoiding clash with HDH informal group if possible and to continue information exchange.