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MOBILE AIRCONDITIONING TEST PROCEDURE

Status report

65th GRPE January 2013

Meetings MACTP

- Tuesday 15 January 2013 at United Nations, Geneva
- The Chairman, Mr. Rijnders (NL)
- Secretary Ms. Hosier (OICA),
 - All presentations will be available on the MACTP informal group website.
 - All documents relating to the European project are available on the European Commission CIRCABC website.

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- 1 presentations on the European developments on the MAC efficiency program

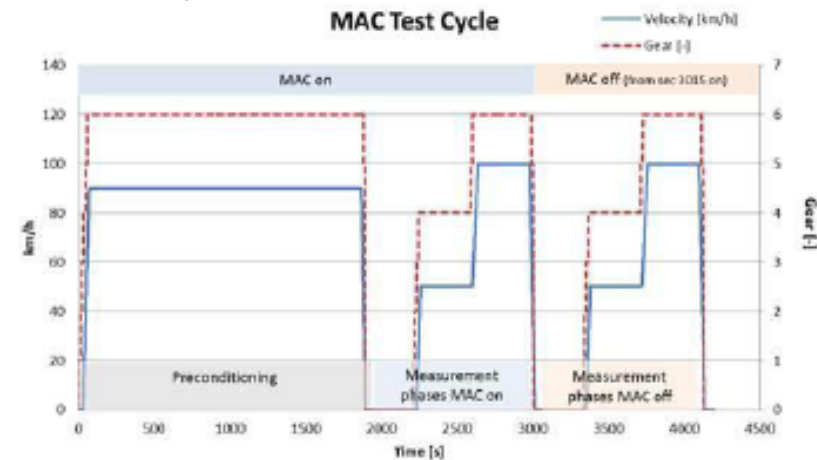
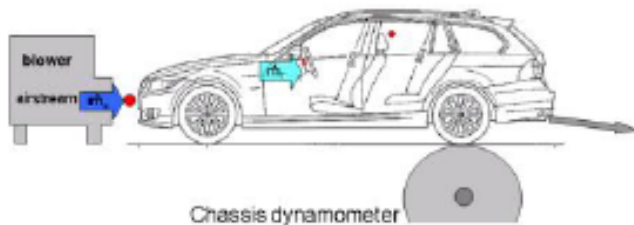
EU MAC Pilot program (Consortium; TNO/TUG/LAT) (GRPE-IG-MACTP-05-02)

Mr. Robin Vermeulen (TNO)

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EU MAC Pilot program

- › Emission test of the complete system of vehicle + MAC
- › To be performed in an emission laboratory
- › Driving the test vehicle on a chassis dynamometer
- › Driving a driving cycle, preceded by a soak phase. The cycle has a phase for:
 - › Conditioning/ stabilization of the cabin temperature
 - › Three steady state situations with MAC on (idle, 50, 100km/h)
 - › The same three steady state situations with MAC off
- › Ambient conditions are moderate ($45 \pm 5\%$ @ $25 \pm ^\circ\text{C}$)



EU MAC Pilot program

The 2 MAC efficiency two test phases are completed:

- A Multi-lab Pilot test phase-A
(improve procedure and cover open issues) ~ 11 labs
- B Multi-lab Round Robin test phase-B with “golden vehicle”
(reproducibility, sensitivity and repeatability)

Current status

- Data review
- Procedure evaluation to final procedure
- Write technical annex to regulation

EU MAC Pilot program

Mr. Vermeulen noted:

- Correction functions are introduced for a range of variables to improve stability of the results or to minimize test burden (power, ambient conditions, cabin size, glazing and electric energy)
- Idea of introduction of a feature check (bonus) of MAC deactivation below 18 °C

Results:

- In general the procedure is found to be robust (with correction functions)
- Some items are still open and need discussion or further investigation:
 - Reproducibility (intra-lab variation) is not satisfying (10-40%); solution is to increase the number of tests to 3 to improve statistical variance

Next steps :

- Fine tuning of the procedure
- Analyses intra-lab variations
- Survey remaining open issues

- Meetings to develop and complete the technical annex, starting 29th of January 2013

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Information from the regions

- Japan
 - Investigate and develop a MAC test procedure based on whole vehicle driving over a dynamic cycle.
 - Currently they are testing manual a/c systems and including both stop-start vehicles and electric vehicles.
 - The test phase concludes at the end of March 2014, after which they will start to define a dynamic driving test procedure.
 - More information at a later date and noted that they are continually challenging the reproducibility within their own testing.

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- Europe

- MAC procedure is a part of the integrated approach. The original 120 g/km CO₂ fleet target was adjusted to 130 g/km on the basis of certain other measures such as TPMS (tyre pressure monitoring systems), GSI (gearshift indicators) biofuels, tyre rolling resistance and MAC efficiency.
- The MAC-TP (more complex than expected – some delay)
- DG-ENTR is responsibility to develop a test procedure and DG Climate is responsibility of how to use it in terms of labelling (information to the costumers/users)
- Initially proposal to make a specific MAC efficiency legislation (no agreement-contradict to CO₂ vehicle fleet average approach)
- After the MAC test procedure in Europe is completed a decision will be made for a separate AC label or a combination with the existing vehicle CO₂ emission label.

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Next steps for MACTP

- After the European test procedure is ready the MAC-TP group would review the transposition of this protocol as a voluntary ECE test procedure in either ECE-R-101 or ECE-R-83.
- The current mandate for the MAC-TP is for information sharing and to learn from each other prior to harmonization activities
- Open for the future could be to discuss a global harmonized procedure

Next Meeting

- Because of room restrictions during the June 2013 GRPE session, the group will plan a next meeting when new information need to be shared or when the final European test procedure can be reviewed.