

Starting note for the WLTP IG meeting in Vienna, 26-28 March 2014**OIL #13 (+ #11):****Wind conditions and on-board anemometry for road load determination**

Main open issue: progress on the on-board anemometry method depends on budget available for running the validation program. Further definition of work packages will only start with the prospect of budget availability.

Wind conditions during coast down tests for road load determination strongly influence coast down times and ultimately the road load settings of the chassis dynamometer. To overcome this dependency wind condition corrections are part of the WLTP-gtr. Wind speeds and directions can be measured by a stationary or an on-board anemometer. In principle on-board anemometry is a good method as it directly measures actual wind conditions at the vehicle. Stationary anemometry is most commonly used, and it is considered sufficient for low wind speeds (average < 5 m/s, peaks < 8 m/s). Measuring during higher wind speeds (average < 7 m/s, peaks < 10 m/s) is only allowed using on-board wind speed measurement. These maximum permissible wind speed conditions were discussed at length in WLTP Phase 1a. It was recognized that the on-board anemometry methodology has to be further elaborated to make it a robust, non-intrusive, and equivalent option for measuring wind conditions and applying wind corrections, to be ready at the end of WLTP Phase 1b. It was concluded that a validation program should be a vital and inseparable part of this process. The planning is to present an initial proposal to the WLTP IG in meeting #8 and to have a final decision by WLTP IG in meeting #10.

To obtain a robust, non-intrusive, and equivalent on-board anemometry the following work packages will be distinguished:

1. Further considerations of the Phase 1a gtr text
2. Validation of the equivalency of wind speeds and directions
3. Validation of the equivalency of wind condition corrections on the road load parameters

| Work package | Start | End | Lead | Assessment |
|---|-------|-------------|------------|--------------|
| 1 Further considerations of the Phase 1a gtr text Selected items: - requirements) <ul style="list-style-type: none"> - Requirements for on-board anemometer (size, response time, boom length and location, air-drag correction for boom-type anemometer, alternatively the use of Pitot tube with vane) - Air-drag fitting procedure (4th order polynomial, underlying principles, velocity-by-velocity approaches) - Interactions wind-vehicle-ground - Wind correction methodology missing (like 4.5.3 for stationary)? | asap | Meeting #10 | tbd | OIL#13-group |

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| | - Consistency of wording | | | | |
| 2 | <p>Validation of the equivalency of wind speeds and directions</p> <ul style="list-style-type: none"> - ToR validation program - Provisional list of items: <ul style="list-style-type: none"> - Experiences with calibration of methods - Measurements simultaneously with stationary and on-board anemometer – full wind speed range (i.e.: at 10 m/s 25% correction) – variety of anemometers - Comparison of results - If appropriate text proposals for gtr | ToR test program in meeting #7 | Meeting #10 | Tbd (OICA member?) | OIL#13-group |
| 3 | <p>Validation of the equivalency of wind condition correction on road load parameters</p> <ul style="list-style-type: none"> - ToR validation program - Provisional list of items: <ul style="list-style-type: none"> - Measurements coast down times w/wo on-board anemometer - Comparison of road load parameters for stationary and on-board approach - If appropriate text proposals for gtr | ToR test program in meeting #7 | Meeting #10 | Tbd (OICA member?) | OIL#13-group |

Expert group members:

Contact persons

- Rob Cuelenaere (TNO)
- Caroline Hosier (Ford)

Members

- Mark Guenther (Ford)
- Iddo Riemersma (expert)
- Norbert Ligterink (TNO)
- Toshi Yamaguchi (JASIC)
- Open for new members