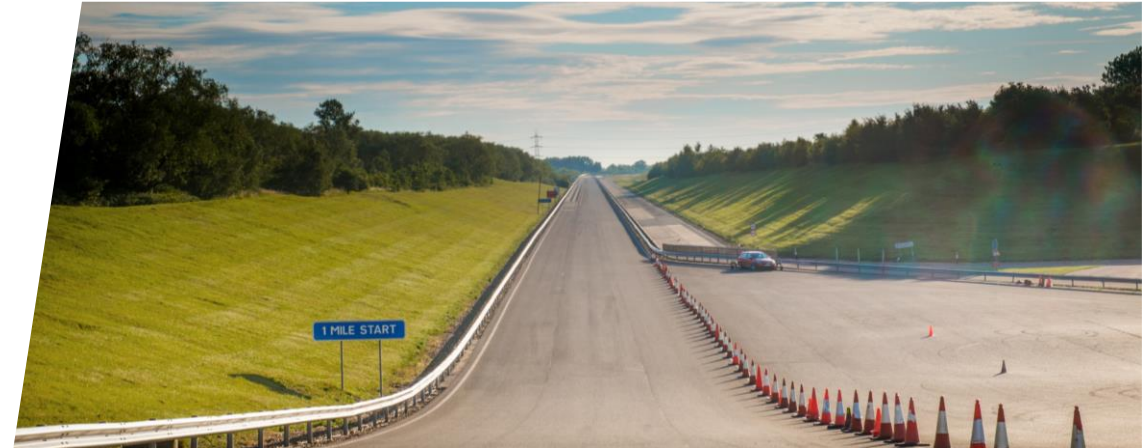




Tyre Abrasion Study for ACEA Maëlle Dodu – Tyre Expert

GRBP TF TA Session 15



CONTENTS

- Tyre Abrasion Study Overview
- WP1 – Literature Review
- WP3 – Real Life Testing
- Next Steps



TYRE ABRASION STUDY OVERVIEW

- Scope:
 - Theoretical and experimental study of influencing factors on tyre wear / abrasion.
- Objectives:
 - Review GRBP TF TA tyre abrasion requirements proposal: test method, interdependency evaluations, etc.
 - Quantify differences in tyre wear / abrasion vs vehicle type (ICE vs BEV).
 - Quantify possible differences between OE and Aftermarket tyres, different label values.
- Work Packages & Timing:

Work Packages		Timing
WP1	Literature Review	Jun-23 (completed)
WP2	EPREL Tyre Database Analysis	Aug-23 (ongoing)
WP3	Real Life Testing	Aug-23 (ongoing)
WP4	Test Results Analysis	Sept-23
WP5	Presentations to GRBP/GRPE: <ul style="list-style-type: none">- Interim report:- Final report:	GRBP 78 th session GRPE 90 th session / GRBP 79 th session

- Scope:
 - Studies published worldwide, in English.
 - Tyre abrasion and mileage for:
 - C1, C2 & C3 tyres,
 - Summer & 3PMSF tyres.
 - Aspects considered:
 - Driving behaviour influence on tyre wear / abrasion,
 - Vehicle design influence on tyre wear / abrasion,
 - Tyre performances interdependency,
 - Tyre wear / abrasion testing,
 - Tyre & Road Wear Particles (TRWP) emissions.
 - Review included, but was not limited to, relevant studies presented in various UNECE Informal Working Groups (IWG) and Task Forces (TF).

- Conclusions:
 - Main influencing parameters with regards to tyre wear /abrasion reviewed in terms of:
 - Vehicle design: increased tyre wear expected with BEV due to increased weight (+20-25%), higher level of instantaneous torque and regenerative braking system,
 - Driving conditions: longitudinal and lateral accelerations more critical than speed,
 - Road surface,
 - Ambient weather conditions.
 - Tyre performances interdependency:
 - Tyre wear / abrasion vs rolling resistance: good level can be achieved for both performances, depending on strategy chosen during tyre development and tyre category considered (ie: eco vs high performance / sport),
 - Tyre wear / abrasion vs rolling noise: good level can be achieved for both performances, depending on strategy chosen during tyre development and tyre category considered (ie: eco vs high performance / sport),
 - Tyre wear / abrasion vs grip / handling: challenging to achieve good level for both performances, investments required in development and implementation of innovative technical solutions.
 - TRWP Emission:
 - Testing methodologies: challenges to generate, collect and quantify TRWP over the relevant particles size range in a representative and accurate way.
 - Particle size distribution: increased driving severity leads to increased share of fine and ultrafine particles.
 - C3 tyres information limited.

- Vehicles & Tyres selection:
 - Vehicles: 1 x BMW iX1 (BEV) vs 5 x BMW X1 (ICE).
 - Tyres:
 - Size: 245/45R19 102 Y,
 - Labels (Rolling Resistance / Wet Grip): AA, AB (OE homologated), BA (OE homologated), CA (Aftermarket, best-selling), DB (Aftermarket, worst label combination available),
 - Tyres tested to check Wet Grip and Rolling Noise label values.
- Test Method:
 - 1 double convoy: 3 + 3 vehicles to limit test time & cost.
 - Total running distance: 15,000km (8 weeks).
 - Circuit around UTAC Mortefontaine site, compatible with BEV charging constraints, with spec as close as possible to TADG-ORV Test Method proposal.
 - Test Procedure as close as possible to TA DG-ORV Test Method proposal.
- Timing:
 - Test start: beginning of July 2023.
 - Test expected end: end of August 2023.

- WP2 – EPREL Tyre Database Analysis:
 - Analysis and report completed mid-August 2023.
 - Conclusions to be included in study presentation to GRBP 78th session.
- WP3 – Real Life Testing:
 - Testing completed end of August 2023.
 - Testing update to be included in study presentation to GRBP 78th session.
- WP4 – Test Results Analysis:
 - Analysis completed mid-September 2023.
 - Conclusions to be included in study final report presentation to GRPE 90th session / GRBP 79th session.



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