



Progress Report

DTP Subgroup

Lab Process Internal Combustion Engines

(LabProcICE)

Geneva, 18.1.2012

DTP Subgroup
LabProcICE

WLTP 8th DTP Meeting
Geneva, 18.01.2012



Overview

- 1) State of the working progress**
- 2) Issues on DTP level**
- 3) Input for validation 2**
- 4) Work in progress items / proposals / open issues**
- 5) Next steps**



1.1) Meetings since DTP 7 September 2011

- several dates Draft working team meetings
- 26.10.2011 Telephone Conference
- 22. – 23.11.2011 Brussels workshop



1.2) OIL, gtr draft, definitions

Open issues list

has been updated ([LabProclCE-111](#))

GTR draft

has been updated, incl. Subgroup AP ([LabProclCE-112](#))

Definitions

- overview definition term list ([LabProclCE-049rev1](#))
 - detailed definition list ([LabProclCE-050](#))
- Review postponed, coordination by Draft Coordinator expected



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Test Room and Soak Area Temperature

DTP7 decision for validation phase 2:

soak and test temperature: 25 °C

→ note: final decision still open (EC proposal 22 °C)

→ recommendation: some labs should conduct tests at lower temperatures

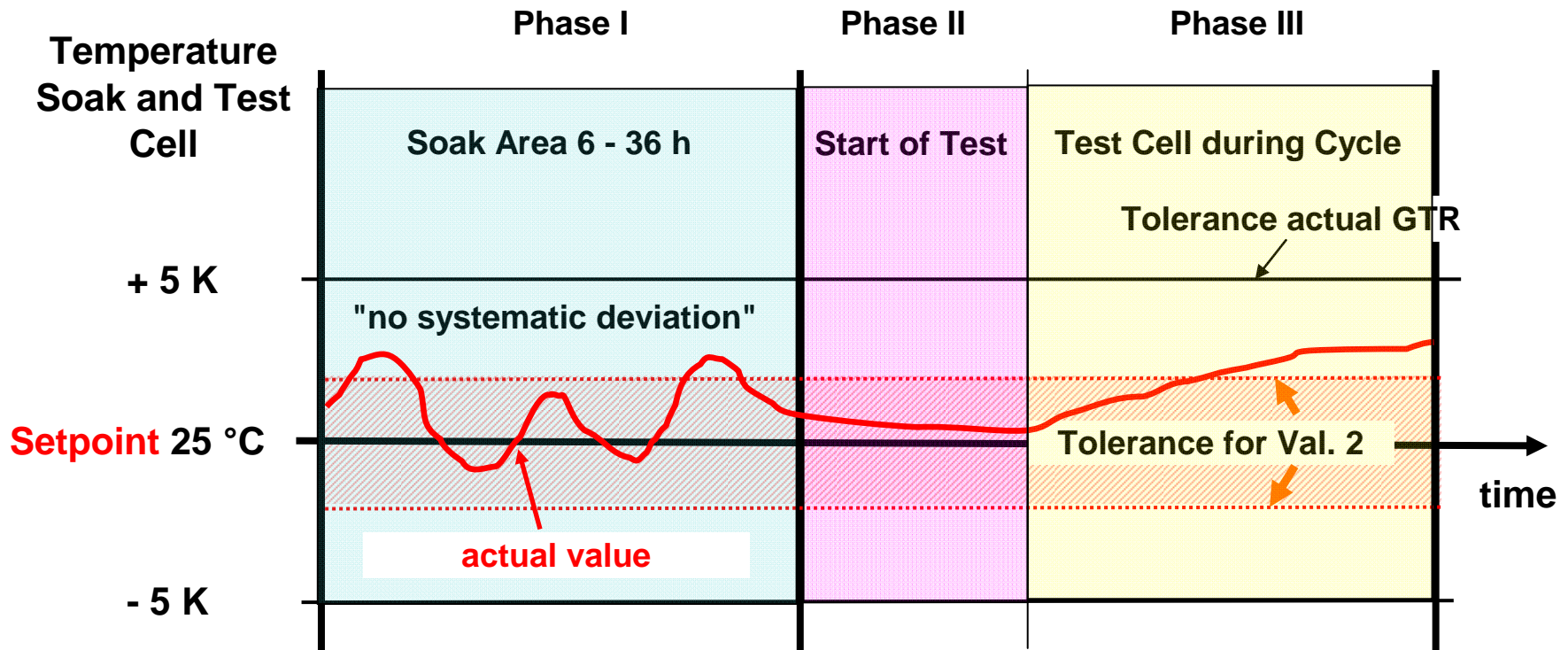
target tolerance of the actual value: +/- 2 °C

→ evaluation of technical feasibility



Principle:

Using a **setpoint** and monitoring of **actual value** in 3 phases (see [LabProclCE-107rev1](#))





Method for subtraction of pollutant mass in intake air

([LabProcICE-020](#))

Aim:

measure low pollutant mass with higher accuracy by considering the pollutant level that is contained in the combustion and intake air of the vehicle

Concerns by US EPA / Japan

→ Issue is put on hold until results of validation and correlation show the clear need and effect of the proposed method



Vehicle test mass & Inertia classes

DTP7:

combined solution, see [WLTP-DTP-07-12](#) by NL, T&E and icct

→ improved definition of vehicle test mass

(more representative by taking into account optional equipment, luggage/payload)

→ substitution of current inertia system by step-less inertia approach (more representative CO2 result for individual vehicle)

Approach needs to be discussed in connection with family concepts (gtr and/or regional)



Validation 2:

→ mandatory testing with TMH (mass of the vehicle (with all optional equipment))

→ TMH and TML (without optional equipment) only recommended at some labs

VTF: practicability during Validation 2 questioned

N1 payload discussion [loading factor 35%]

→ see LabProcICE-094 (justification for vehicle test mass)

DTP8:

updated combined proposal for vehicle test mass, inertia classes and vehicle selection

→ DTP-08-02, DTP-08-04 by T&E, NL, icct



Vehicle selection RLD

- optional body parts influencing the aerodynamics
 - design trims, wheel rims
- (a) **Sales volume based approach** (LabProcICE)
- fitting criteria: exceeds 50% of the sales volume
 - improved representativity
- (b) **Worst case criteria** (counterproposal Japan)

Alternative solution:

testing worst case and in addition best case (if requested by manufacturer)

→ in line with test mass approach + covers Japanese proposal



Multimode gear boxes

Emissions testing proposal:

- Test agreed worst case
- Compliance with emissions standards in all modes
- Exemptions for modes used in very limited conditions

CO₂ / FE testing proposal:

(a) Single default mode → test default mode

(b) No default mode or multi default modes

→ test best and worst case, average results of both modes

Note: Japan has withdrawn counterproposal to test & average all modes

Additional provisions:

- Manufacturer shall give evidence to authority about the emission and fuel economy in the different modes
 - validation 2: test all modes in case of no default mode
- Tested options be provided in test report, e.g. for In-Service-testing



Open issues:

- Definitions need to be rediscussed/specified
 - mode, default mode, multi-mode etc
 - ACEA / JAMA will prepare overview of concepts of (default) modes
 - adaptive or „self-learning“ systems
-

GSI

To be tested in validation 2 (if available)
→ LabProICE will provide test procedure

Open issues:

Test GSI and/or fixed gear shift points in gtr? GSI as multimode?
→ certification issue? GSI currently only mandatory in EU.



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LabProcICE parameter setting for validation 2

Updated parameter list: [LabProcICE-100rev1](#)

→ Major amendments since DTP 7:

- temperature requirements (setpoint, continuously monitoring)
- Tolerance of speed trace (+-2 km/h)
- Test mass and inertia approach
- Multimode and GSI requirements

Road Load Determination

- excluded from validation phase 2
- general need for validation?
 - JAMA yes. Feedback of ACEA RLD experts expected
- gtr changes to ISO are relevant for regional correlation exercises



Further Working Documents for Validation 2:

Excel data sheet for reporting of results (by Heinz Steven)

→ revision: [LabProcICE-101rev1](#)

Assessment Criteria ([LabProcICE-102rev1](#)):

1. Objectives (what do we want)
2. Assessment Parameter (what to look for)
3. Assessment Criteria (how to judge)

Mode Construction

review of DHC proposals by DTP experts (LabProcICE/EV)

→ last [draft proposal](#)



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RLD - Tyre Selection Criteria

- selection based on 6 **rolling resistances classes** according to EU Tyre Labelling Regulation 1222/2009.
- RR measured acc. to ECE-R117.
- Tyres in the worst rolling resistance classes shall be chosen for road load determination. If tyres from more than three rolling resistance classes are specified for the vehicle, tyres from the second worst rolling resistance class shall be chosen.

DTP 7:

→ Re-definition of classes necessary?

LabProcICE proposal:

→ No need for refinement → **Proposal confirmed**



RLD – Coast down mode

Reasoning:

Parasitic drags during vehicle coast down (e.g. regenerative braking) would distort the road load data

→ no realistic/representative evaluation of driving resistance

LabProcICE & EV proposal for definition and application of coast down mode → [LabProcICE-106](#) (*note: details to be reviewed*)

Definition:

"Vehicle coast down mode means a special mode of operation for example where drivetrain components are mechanically decoupled from the wheels and/or electrically controlled which enables an accurate and repeatable road load determination and an accurate dyno setting when using the coastdown method."



- Mode shall only be engaged for coast down (on the road or chassis dynamometer).
- The vehicle coast down mode shall not act as a defeat device.

Application requirements – 3 step-approach:

1. tolerances specified for coasting down of conventional vehicles should apply equally to electrified vehicles
2. equivalence of the coast down determination on the road and on the dyno to be shown
3. mode shall be used if a vehicle can not meet the tolerance range set for dyno load setting or can not show the equivalence



LabProc - Monitoring of Battery SoC

Position of DTP:

The energy content of all batteries has to be considered for determination of CO₂ and energy consumption in the test cycle.

Agreed by DTP6:

- apply conditioning test cycle with fully charged battery
- battery shall not be charged again before the emission testing

Proposal: (based on LabProcICE-056rev2 /-081):

- Monitoring of energy difference during test
- Comparison with energy of consumed fuel during test
- Correction of CO₂ value if energy difference exceeds certain threshold



Validation phase 2

→ check of feasibility

Open questions:

- Closed compartment during cycle causes high temperature load on measurement clamps
- Correction of CO₂ value is unsure due to CO₂ measurement tolerances.



ME – 40 CFR Part 1066

- Succeeding legislation for current US regulation (40 CFR part 86)
- Issues of the HDV legislation (40 CFR part 1065) shall be adopted for LDV legislation
- Final rulemaking planned for late 2012

Main issues – harmonization, time consuming, invest:

- New hardware needed for PM-measurement (filterholder ...)
- New checks required (hardware/software)
 - Several analyser checks have to be done at a concentration „expected at the standard“
 - Additional interference checks for N₂O, CO₂ analysers
 - NO_x quench check
 - Additional leak checks in the CVS system



Further steps:

LabProICE experts will continuously cross-check development of Part 1066 and gtr

Open questions:

- How to deal with major differences in future?
- To what extent is disharmonization with US legislation acceptable?



Other issues

- [DTP-07-13](#) by Poland (comments on the measurement methods of hydrocarbons emissions according to Regulation 83.06)
 - check by LabProcICE ME experts
 - also relevant for GFV Informal Group
- Other open issues see OIL [LabProcICE-111](#)
 - feedback/proposals on any of the listed items or on the gtr draft [LabProcICE-112](#) are welcomed!



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- Small teams (LabProc, ME, RLD) will continue work on draft gtr / OIL / definitions
- Additional Tel/web conferences, e. g. ME experts (check of Part 1066)
- Evaluation of new test procedure during Validation Phase 2
- Next face-to-face workshop:
planned in March 2012, Brussels



Thanks for your attention.

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