OICA for PMP Meeting
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Content OICA for PMP Meeting

- Equivalency of Method B and Method D (CAN)
- Statement to Brake Particle filters
- Vehicle selection / Family building
- Fuel Cell vehicles

Equivalency
Alternative Method / Pressure method

Criterion GTR-24 Working Document

5.3. Equivalency Criterion

The alternative method shall be deemed to be equivalent to the reference method if any of the following conditions is fulfilled:

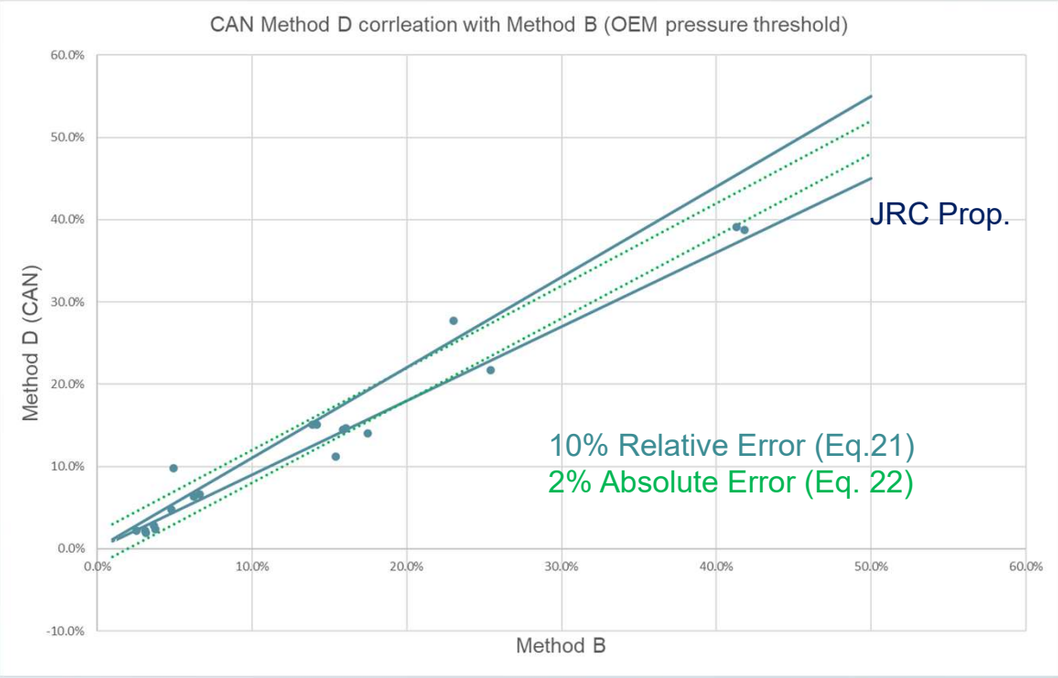
$$\left|\frac{c_{alt} - c}{c}\right| \leq 10 \text{ per cent} \qquad \text{(Eq. CI5)}$$

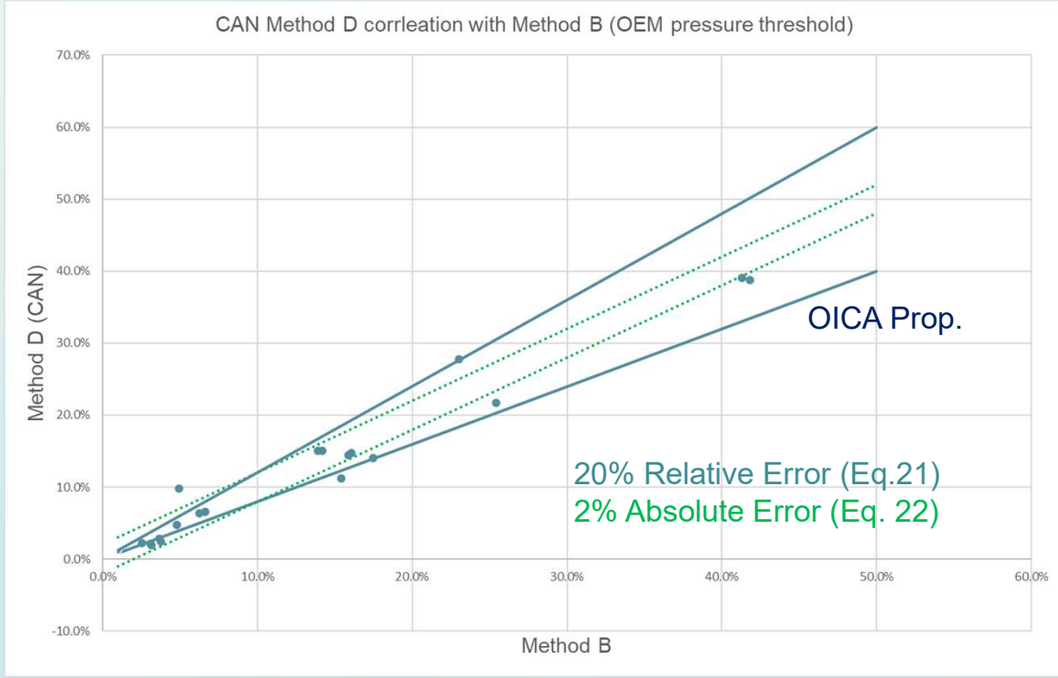
$$|c_{alt} - c| \leq 0.02 \qquad \text{(Eq. CI6)}$$

Where:

c_{alt} is the vehicle-specific friction braking share coefficient measured through the alternative method.

incl. Veh.12-16, OICA 20.12.2023





- JRC proposal: 10% relative error, or 2% absolute error.
- According to updated data the CAN method may fulfill the relative equivalency criterium (+-10%). The relative deviation criterion should be revisted in the second amendment when more data is available.

Statement on Brake Particle filters (Chap. 9.2.3.)

(g) In case of active brake filtering devices, the testing facility shall use the "Brake Pressure" and "Linear Speed" signals to activate the filtering function at the brake event start time as defined in paragraph 13.1. In such a case, the active filtering function may be deactivated up to maximum 5 seconds after the brake event end time as defined in paragraph 13.1.

OICA DRAFT proposal:

Requirements in addition to the JRC proposal

1. Differentiation between active and passive brake filtering devices based on:
   a. Change of the operating state (passive = fixed state; active = two or more states)
   b. Use of (external) energy for operation
2. The use of active and passive filtering devices is permitted if the GTR-24 specifications are met (e.g. brake temperature and installation specifications of the brake assembly (caliper: 12 o'clock requirement)
3. Active filtering devices can be operated with individual control strategies / functions (goal: to replicate strategies applied to the vehicle as well as possible)
   a. Activation during braking events (vehicle deceleration) and between braking events (vehicle acceleration / cruising)
   b. Proof of the control strategy + applied runtime in the vehicle is required
4. The filter's "particle-intake-device" is installed in the same position as in the vehicle relative to parts of the brake assembly (ensuring a caliper position of 12 o'clock in the brake emissions test stand)
5. The filtering device must be operated during the entire brake emission test (cooling air adjustment, bedding, ..)

- Further proposals need to be defined for integration into the 2nd Amendment in the coming months (e.g. handling of the extracted volume, predictive functional strategies, documentation of power consumption, …)

Vehicle Selection

OICA request for clarification:

- Clarification is needed which vehicle shall be selected from the interpolation family
- „at the request of the testing facility“ is very uncommon. Needs clarification if this is at the request of the authority, or the manufacturer?
- Clarification is needed on the selection of „worst case“. Highest friction share could also be the highest traction REESS.
- Clarification is needed on the selection criterium „highest test mass“

4.1. Vehicle Selection

Each vehicle shall be attributed a vehicle-specific friction braking share coefficient. For the purposes of this UN GTR, only one vehicle of each interpolation family as defined in UNR 154 shall be tested to determine the vehicle-specific friction braking share coefficient of the entire interpolation family. All vehicles within the same interpolation family shall be attributed the

same vehicle-specific friction braking share coefficient regardless of the variant, version, and option configuration.

At the request of the testing facility, when a specific vehicle model comes in different configurations that belong in more than one interpolation families, the worst case vehicle in terms of the specific friction braking share coefficient in each electrification concept according to Table 5.3. of this UN GTR may be tested. In such a case, the measured vehicle-specific friction braking share coefficient shall be attributed to all vehicles in each electrification concept according to Table 5.3. of this UN GTR. In this case, the tested vehicle shall be selected based on the following criteria:

(a) The selected vehicle shall be the one featuring the [lowest] traction REESS capacity among all vehicles in the interpolation families;

(b) In case that all vehicles have the same traction REESS capacity, the selected vehicle shall be the one featuring the highest test mass among all vehicles in the interpolation families.

Handling of fuel cell vehicles in GTR-24

Background

- Fuel cell vehicles are not explicitly mentioned nor defined in GTR-24.
- Instead, definitions *3.7.6. "Hybrid electric vehicle" (HEV), 3.7.7. "Hybrid vehicle"* and *3.7.8. "Not off-vehicle charging hybrid electric vehicle" (NOVC-HEV)* can be utilized for fuel cell vehicles:
  - *"Hybrid electric vehicle" (HEV) means a hybrid vehicle where one of the propulsion energy converters is an electric machine.*
  - *"Hybrid vehicle" means a vehicle equipped with a powertrain containing at least two different categories of propulsion energy converters and at least two different categories of propulsion energy storage systems.*
  - *"Not off-vehicle charging hybrid electric vehicle" (NOVC-HEV) means a hybrid electric vehicle that cannot be charged from an external source. In this UN GTR, NOVC-HEV are categorised to "NOVC-HEV Category 0", "NOVC-HEV Category 1", and "NOVC-HEV Category 2" based on their traction REESS nominal voltage.*
  - *"Not off-vehicle charging hybrid electric vehicle – Category [xxx]" (NOVC-HEV Cat. [xxx]) means a hybrid electric vehicle that features a traction REESS with a nominal voltage [higher than yyy V and lower than or equal to yyy V] that cannot be charged from an external source.*
- The recuperation capability of a fuel cell vehicle might be similar to a hybrid vehicle

Possible solutions

1. Keep GTR-24 as it is since fuel cell vehicles are indirectly covered by definitions 3.7.6, 3.7.7. and 3.7.8.
2. Amend GTR-24 appropriately to include provisions for fuel cell vehicles (Definitions, Abbreviations and Symbols, Table 5.3: Friction braking share coefficients for all vehicle types, Annex C – Scope and Application …, possibility for individual c-factors for FCEVs)