

New!

July 9, 2019

- **Can I use a similar vehicle to the ones listed in https://ec.europa.eu/research/horizonprize/pdf/cleanengine/list_of_cars_future.pdf, for instance a Renault Scenic that shares the same platform and engine with the Megane in the list, or SUV and Crossover models derived from vehicles in the list?**

Unfortunately only the exact nameplates in the list are acceptable, if different body versions exist with the same name that's acceptable, provided they are hatchback and three volumes family car bodies, as indicated in section 3 of the [Rules of Contest](#).

- **Which Model Year is intended in the list of acceptable cars?**

The submission does not have to be based on the latest version of the vehicles included in the list of acceptable cars available [here](#). Please note however that only hatchback and three volumes family car bodies are admitted according to section 3 of the [Rules of Contest](#)).

June 12, 2019

- **Where should we register, the email address in the rules does not work?**

The email address for registration and communication mentioned in the Rules of contest RTD_FUTURE_ENGINE_PRIZE@EC.EUROPA.EU is not active; the address to be used is the one in this web site, i.e. EC-FUTURE-ENGINE-PRIZE@EC.EUROPA.EU. Consequently, the **registration period is extended until June 26.**

- **What does it mean that “large energy storage” is not admitted?**

The purpose of this limitation, (and the exclusion of hybridisation) is to avoid that a separate energy storage is used to allow extremely low or zero-emissions driving, which would not respect the spirit of the prize by reducing or eliminating the functioning of the combustion engine. This could be achieved for instance with a hybrid with a large electric battery or a combustion engine receiving hydrogen from a large tank.

On the other hand, it is recognised that a small storage can be part of an acceptable solution, for instance for a minimal hybrid having a small electric battery which would not allow the vehicle to run exclusively on the battery but can for instance use the energy in the battery to feed an electrically heated catalyst, something which would not be feasible using the normal electric installation and its lead-acid battery. In the same way, it is acceptable to have a small tank of a fuel/chemical compound to be injected in small quantities to improve the combustion, for instance again in cold start conditions.

So the definition is basically to exclude a storage “large enough to drive even a small part of the test cycle”. Anything that does not allow the secondary energy storage to power the car (for an electric hybrid, not being able to move the car by itself, for a secondary fuel hybrid, not being able to make the engine run only on the secondary fuel) is acceptable.

Please note that on-board generated energy or chemicals are acceptable in any quantity, either if stored or on-demand, as already written in the rules.

- **Can the testing measure particles at 23nm, according to the current procedure, since it is difficult to find laboratories, let alone PEMS systems, capable of measuring at 10nm?**

The rules require testing at 10nm since at the time of writing it was expected that the required technology would have become more available. Since this is not yet the case, it is accepted that contestants can measure at 23nm with a threshold of 6E10 particles/km, while JRC will in any case test results both at 10nm and 23nm.

- **What do the references to defeat devices, access to OBD data and to identification of the test bench mean?**

It has been revealed that many vehicles have on-board software that may limit the effectiveness of the pollution-reduction devices depending on several parameters (temperature, pressure, engine rpm etc.) or detects parameters that show that the car is being tested on the bench or on particular cycles and alter engine behaviour consequently. It has also been suspected that accessing the OBD system could trigger such a behaviour.

Defeat devices are defined in the Euro 6 legislation but further clarifications on engine and aftertreatment control strategies, and in particular on Auxiliary Emission Strategies, are provided in recent Commission Guidelines¹. If any of such strategies were implemented, they must be disclosed and justified in the submitted documentation.

Some of the rules of this contest have been already designed to avoid that such systems can affect test results, but given the mounting evidence of a growing number of parameters being used for such purpose, bench testing methodologies such as those used for initial testing cannot completely exclude the possibility that some parameter could still be altering emissions performance in such measurements.

If the innovation is based on a modification of an existing engine, and its original ECU and/or parts of its software are retained or modified, this software can be different depending on the chosen donor vehicle and its influence on emissions performance cannot be easily and reliably foreseen.

As indicated in the rules, for the purpose of this prize, no access to OBD data should be needed or used in testing, nor should any other way of identifying that the vehicle is being tested be installed. This means that specific access to OBD data for testing purposes is not allowed. However, in case the ECU needs to be accessed to control the car continuously, and not only

¹ <https://ec.europa.eu/docsroom/documents/26183/attachments/1/translations/en/renditions/native>

for the testing, this is acceptable. This might be the case, for instance, when using the existing ECU of a modified engine as described above. However in case a change in behaviour is detected this leads to the rejection of the solution.

In such case it is the responsibility of the participants to ensure there is no such software affecting emissions measurements, since the presence of such software, even though not the responsibility of the applicant, will not allow to assess the real performance of the submission.

In such cases participants are therefore invited to verify their submission in real driving conditions at least for NO_x emissions (for instance with some available low cost analysers) and compare bench results and RDE ones for plausibility. Such tests are not compulsory but if performed, their results can be added to the submission. Verification testing at JRC will in any case attempt to exclude such situations to the best possible extent, and the jury might decide to use RDE data to assess the submissions.

- **How will the results of the different cycles be assessed?**

In order to promote low real driving fuel consumption and emissions and avoid optimisation for a specific cycle or combination thereof, the way testing results will be used in verification testing is not disclosed, but it will give a significant weight to cold start and urban emissions. The same will be done in RDE testing, which will be performed in winter and will be based on raw data, with no data evaluation. Test bench or real driving results might be used for the final assessment and marking by the jury.

Emissions limits must be met in all cycles individually, and in case of averages, all averaged values must above thresholds, i.e. if one value is 0 (meaning below threshold) and another is 3, the score will be 0 and not 1.5, and the application will be considered below the threshold.

For preliminary testing, however, the arithmetic average of these results (i.e. adding the results on the three cycles and dividing by three) as allowed.

- **The fuel consumption thresholds in the Rules are different between Table 1 and Table 8, which one should be used?**

The lower value of 5l/100km is to be used in both cases. Unfortunately, Table 6 contained errors and in view of the threshold established in the Rules of Contest should read as follows:

FUEL EFFICIENCY	SCORE
> 5 l/100km	0
> 4.5 ≤ 5 l/100km	1
> 4.0 ≤ 4.5 l/100km	2
> 3.5 ≤ 4.0 l/100km	3
> 3 ≤ 3.5 l/100km	4
≤ 3 l/100km	5

- **The rules specify a standard lubrication oil, can another, innovative one be used?**

If the lubricant itself is part of the innovation, yes. In this case, a complete description of all characteristics needed to assess it must be provided in the documentation.

- **Our organisation usually installs aged catalysts before testing, how should catalyst aging be considered in the contest?**

The effect of catalyst or component aging on their pollution reduction performance should be described, and correction factors provided, or proof that catalysts aged according to current standards are used in the prototype should be provided.

- **The rules of the contest don't include the testing details other than the 3 cycles (NEDC, WLTC, CADC), how should the test bench be set up?**

These data are in the submission Template Part B, where a fixed weight of 1500kg is mentioned and other chassis dyno parameters must be selected based on UNECE Regulation 83 coefficients.

- **Template B requires that the WLTC to begin with an engine cold start, but at the same time it specifies that between NEDC and WLTC the engine should be switched off and the vehicle may be parked on the chassis dyno for up to 2 hours. This is not a cold start as defined for the NEDC.**

To avoid any confusion with the NEDC requirements, which are not intended to be applied, WLTC must be run with any temperature the engine will have after the prescribed maximum interval of two hours, as cold start performance will be assessed by the NEDC test. A certain time between the tests will in any case be needed to analyse the bags, with a maximum limit of two hours.

- **Template B requires CADC to be conducted with "engine hot start" but at the same time it is required that between WLTC and ARTEMIS cycles the temperature shall be kept at 25°C for at least 2h. Does that mean that the engine need to keep running between the WLTC and the CADC?**

No, the engine shall be switched off, ARTEMIS shall be run with any temperature the engine will have after the prescribed interval which is required to increase the chamber temperature from 10 to 25°C.

- **Are the NO₂ targets based on the NO₂/NO_x ratio or for the NO_x/NO₂ ratio, as mention in the introduction sentence?**

NO₂ to NO_x is correct as it is the one used for the limit. We apologize for inconsistency in the presentation of the ratio.

- **In section 7 – Procedure of the “Rules of the contest” it is stated that the testing has to be done “at an external independent laboratory”, and in Section 10 –Initial testing definition it says “certified laboratory”. What kind of certification is required?**

A laboratory with an accreditation like ISO 9001 or 17025, or equivalent from other organizations is considered to be “certified”.