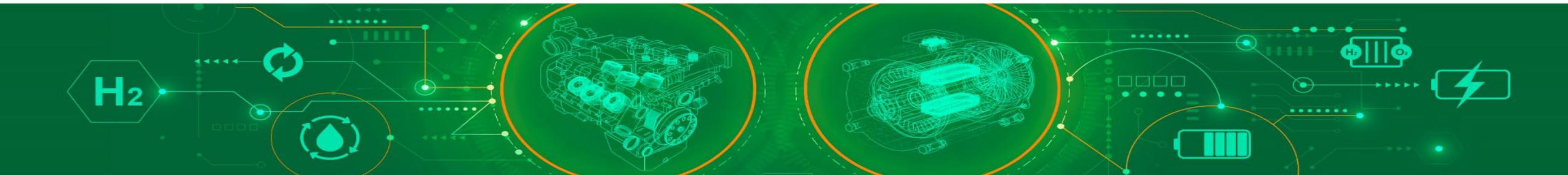


EUROMOT proposal to amend R96: explanatory notes



GRPE status:

At GRPE 92. EU Commission submitted amendments to UNECE R49 to allow the type approval of dual fuel hydrogen engines of type 1A with hydrogen as the main fuel. Amendment also included text to allow the measurement of NO_x, CO and CO₂ with FTIR or QCL-IR analyzers.

R96:

EUROMOT has prepared corresponding text to introduce amendments to R96 05 series, following the same principles that were used to amend R96 to allow the type approval of mono-fuel hydrogen engines:

- Amendment is “lean”
 - Minimum viable changes to the Regulation,
 - Restricted to engines of type 1A with hydrogen as the main fuel.
- Amendments are self contained
 - Impact to existing type-approval procedure is minimized,
 - Technical modifications are contained within a new Annex,
 - Modification of β is avoided.

Documents submitted to GRPE 94:

- [Working Document: ECE/TRANS/WP.29/GPRE/2026/24](#)
 - Uses R96 as modified by [ECE-TRANS-WP29-GRPE-2024-16e](#) and [ECE-TRANS-WP29-GRPE-2024-24e](#) as the basis for amendments
 - Consolidates amendments included in informal documents [GRPE-93-09](#) and [GRPE-93-11](#)
 - Includes:
 - New dual-fuel text,
 - Modifications where required to the mono-fuel text,
 - Options to use FTIR/QLC-IR,
 - General fixes to issues identified in the base text.
- Informal document GRPE-94-62
 - Improves consistency of use of anglicised English in document [ECE/TRANS/WP.29/GPRE/2026/24](#), by replacing all instances of the word “analyzer” with “analyser”

Changes since submission of the informal documents

- Alignment of options for type-examination between FTIR and QCL-IR

Thank you for your attention

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Reminder: Scope of amendments

	Gas Energy Ratio* (GER)	Idle on liquid fuel	Warm-up on liquid fuel	Operation on liquid fuel only	Operation in absence of gaseous fuel
Type 1A	GER≥90%	Not allowed	Allowed only in service mode	Allowed only in service mode	Allowed only in Service mode
Type 1B	GER≥90%	Allowed only in liquid fuel mode	Allowed only in liquid fuel mode	Allowed only in liquid fuel mode and service mode	Allowed only in liquid fuel mode
Type 2A	10%<GER<90 %	Allowed	Allowed only in service mode	Allowed only in service mode	Allowed only in service mode
Type 2B	10%<GER<90 %	Allowed	Allowed only in liquid fuel mode	Allowed only in liquid fuel mode and service mode	Allowed only in liquid fuel mode
Type 3A	Not Defined				
Type 3B	GER≤10%	Allowed	Allowed only in liquid fuel mode	Allowed only in liquid fuel mode and service mode	Allowed only in liquid fuel mode

*Gas Energy Ratio:

$$GER(\%) = \frac{\text{Energy content of gaseous fuel}}{\text{Energy content of both fuels}}$$

NRE 19 ≤ kW ≤ 560: Energy evaluated over hot NRTC

Other categories: Energy evaluated over NRSC