

INFORMAL GROUP ON GASEOUS FUEL VEHICLES
Within the UN GRPE (WP29)

PROPOSED AMENDMENT GFV-02-04

Regulation UN/ECE n. 115

AEGPL Comments

General Comment

- GFV 02-04, and in particular par. 2, aims at bringing the Regulation to its original form, cancelling – directly or indirectly – all the provisions introduced by the Supplement 2 to the Regulation, and some other related Corrigendum.
- Supplement 2 to the original version of the Regulation (Date of entry into force: 18 January 2006) has been approved during the one-hundred-and thirty-sixth of WP29 session as TRANS/WP.29/2005/37 (7 April 2005) after having been extensively discussed for almost two years during formal (GRPE sessions) and informal meetings and contacts between Aegpl (the proponent) and the authorities as well as the other stakeholders.
- Many modifications and integrations have been made to the first proposal of AEGPL (Informal document No. **GRPE-47-6 at the 47th GRPE**, 12-16 January 2004) according to the observations of the national delegates and the other parts in order to get a final, shared by all, document.

1. Clarification of the scope of application

- **Paragraph 1.4, amend to read:**
- „1.4. This Regulation applies to retrofit systems intended to be fitted on vehicles of categories M and N, **type approved pursuant to Regulation 83 or 49, or equivalent UE Directives** with the exception of:
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 - (f) **vehicles type-approved pursuant to Directive 70/220/EEC and Directives amending this Directive, earlier than Directive 98/69/EC,**
 - (g) **vehicles equipped with diesel engines type-approved pursuant to Directive 98/69/EEC and later Directives amending Directive 70/220/EEC,**
 - (h) **vehicles others than M1 and N1 categories type-approved pursuant to Directive 98/69/EEC and later Directives amending Directive 70/220/EEC,**
 - (i) **vehicles type-approved pursuant to EU Directive 88/77/EEC and Directives amending this Directive, earlier than Directive 1999/96/EC.**

1. Clarification of the scope of application

- Comments:
- To avoid the long list of exclusions we could turn them into a positive description of the application field.
- For instance:
- petrol vehicles of categories M1 and N1 type-approved pursuant to Directive 70/220/EEC and Directives amending this Directive, equal to or later than Directive 98/69/EC;
- (petrol and diesel) vehicles of categories M and N type-approved pursuant to EU Directive 88/77/EEC and Directives amending this Directive, equal to later than Directive 1999/96/EC

2. Deletion of the splitting of retrofit systems into “intrusive” and “non-intrusive”

Purpose of the Regulation

- *“A Regulation concerning retrofit gas systems serves a purpose only if it ensures, among other things, that the vehicle after the retrofit is at least as clean as the original vehicle.”* from GFV-02-4 document.
- This approach goes well beyond the scope of this Regulation that – as any other environmental type-approval mandatory scheme – should aim at verifying certain requirements whose compliance finally allow the sales and the use of the addressed products.
- *The type-approval pursuant to R. 115 doesn't grant any economic incentive (nor automatically neither indirectly):* environmental national incentives are usually designed for specific tasks, based on different environmental needs (PM in some areas, benzene or NO_x in others and so on), **even not covered by the Regulation 115.**
- The reasons of the LPG retrofit system purchase can be different from the environmental ones (economic, for instance) and a type-approval Regulation is not permitted to influence it beyond its scope.

2. Deletion of the splitting of retrofit systems into “intrusive” and “non-intrusive”

Purpose of the splitting

- **The purpose of the “non-intrusive” definition was not to reduce the number of tests: this was a consequence.**
- The restriction of the scope to Euro 3 cars and younger could have justified – automatically – the deletion of par. 6.1.2.5.1.2., that was established in 1998 having in mind the gas Venturi retrofit system.
- However, the possible selling of less advanced system even on modern cars obliged to keep that paragraph in place, but the parallel need of technical adaptation of the Regulation to the new retrofit technologies induced to set an alternative procedure for systems that are “not intrusive” by design, i.e. regardless the car type on which they are fitted.

2. Deletion of the splitting of retrofit systems into “intrusive” and “non-intrusive”

Interpretation of current R 115 provisions

- **2.1.5. "Non intrusive system" means a retrofit system in which the LPG or CNG fuelling system does not change the original air and petrol feed system to the engine.**
- This include mechanical and electrical/electronic compatibility (electromagnetic compatibility is already ensured in the R67/01 homologation) of retrofit system with petrol carburation.
- Given that, “Relevant modifications” to “piping” remains the first check to avoid unacceptable change of the original carburation on petrol.
- The present definition is not related to definitions of Annex 1 to Regulation 83, and, even taking it as the reference, it could be however interpreted in a wider way - not restricted only to paragraphs 4.2.4.3 and 4.2.7.3 -, referring to the more general par. 4.2. of Annex 1 of R 83 (“Internal Combustion engine), that includes also ignition, exhaust system, valve timing
- **6.1.2.2. In order to prove that the retrofit system is "non intrusive", as defined in paragraph 2.1.5., the system manufacturer shall provide data and/or engineering evaluations which adequately demonstrate that the original air and petrol feed system to the engine is not affected by the installation of the retrofit system.**
- The use of the term “affected”, and not “changed”, confirms the above interpretation: **affecting the “system” means deteriorating its original performance.**

2. Deletion of the splitting of retrofit systems into “intrusive” and “non-intrusive”

Interpretation of current R 115 provisions

- **“1.5 . The requirements for the different categories (M1, N1 or others) are defined in paragraphs 2. to 7. [1]/. Once the retrofit system is installed in the vehicle, the modified vehicle shall fulfil all the provisions of the Regulation for which the type approval has been initially granted.”**
- Although par. 6.1.2.2. doesn't prescribe any specific test, if the authority believes that data and/or engineering evaluations are not sufficient to demonstrate the “compatibility” of retrofit system, **he can ask to carry out tests also by virtue of the general “safeguard” requirement set in par. 1.5.**
- *According to this approach – which is in line with the above combined requirements of R. 115 – **THE APPROVAL OF LPG RETROFIT SYSTEM OF TABLE 1 OF GFV-02-4 DOCUMENT SHOULD HAVE BEEN REFUSED FOR THAT SPECIFIC CAR.***

2. Deletion of the splitting of retrofit systems into “intrusive” and “non-intrusive”

AEGPL proposals

- AEGPL is firmly convinced that the “non-intrusive” concept should be kept;
- However, the related definition and tests can be improved in order to avoid any misinterpretation;

2. Deletion of the splitting of retrofit systems into “intrusive” and “non-intrusive”

AEGPL proposals

- ***“The introduction of the “non-intrusive” concept leads to the situation that the emission limit values for the “intrusive” and “non-intrusive” systems are different which should not be acceptable.”*** from **GFV-02-4** document.
- AEGPL fully supports this statement: with the amend. 2 AEGPL did not propose to delete par. 6.1.2.5.1.3. to stimulate the sector to abandoning the “intrusive” systems.
- Now, in response to the proposals of **GFV-02-4 document**, in order to align the limits for both systems types, AEGPL proposes to delete this par. and not to apply it to all systems.

“It is not justified that Regulation 115 should be more restrictive than Regulation 83”

which is in line with the statement of GVF-02-4 about R.49

“It is not justified that Regulation 115 should be more restrictive than Regulation 49”

2. Deletion of the splitting of retrofit systems into “intrusive” and “non-intrusive”

Switch over time limitation

- AEGPL agrees to limit the switch over time to ensure that the measured emissions relate to the LPG operation.
- The limit set in the draft Commission Regulation for Euro 5/6 (60 sec) should be adapted to the retrofit application in which the exhaust system remains the original one and cannot be redesigned in order to advance its “light on” or to improve its performance for the specific unburned HC coming from LPG combustion.

2. Deletion of the splitting of retrofit systems into “intrusive” and “non-intrusive”

CO2 emission, fuel consumption and max power

- In case of “non-intrusive” systems, par. 6.1.2.5.3.4. and 6.1.3.4. **allow** to use petrol official values for specific calculation of K_{CO2} , K_{cons} and K_{power} ratios.
- If ratios are not realistic because petrol official values are not reproducible on the parent vehicles, the manufacturer can ask and the authority can accept to carry out specific tests on petrol.
- The par 6.1.2.5.1.4. (“the type 1 test shall be carried out only with each LPG reference fuel”) applies to Type 1 emission test by way of derogation of par 6.1.2.5.1.1. to 6.1.2.5.1.3.
- Hence, it doesn't apply for the calculation of above ratios
- In conclusion, AEGPL doesn't see the risk of misinterpretation and, thus, the need of amendments.