Dual-fuel engines and vehicles
Rules for retrofitting Diesel engines

UNECE GRPE/GFV workshop

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Manufacturing dual-fuel engines

state of the art

- Currently most dual-fuel engines are a result of modifying already type-approved Diesel engines.
- The same modification may be:
  - Part of the manufacturing process.
  - A ‘second manufacturing’ stage.
  - Performed after the entry into service of the vehicle.
- In the second case, the modification may be performed before of after the vehicle registration.

Retrofit
ACEA/OICA definition proposal

- Proposal:
  Retrofitting means (in the context of engines emissions and engine installation) after registration of the vehicle, changing features that are, in the case of a new vehicle, subject to type-approval.

- Note:
  - Installing kits would be retrofitting (including downgrading kits).
  - Tuning the engine would be retrofitting.

Certifying retrofitted dual-fuel (diesel-methane) engines

ACEA/OICA basic positions

- Set clear definitions and retrofit principles:
  - Consistent with the REC principles.
  - Applicable to any type of retrofit (including tuning).
- Split the engine retrofit from the vehicle retrofit with an approved engine.
- Ensure a fair competition among the 3 possible manufacturing routes:
  - Through a basic harmonisation of Retrofit rules in the EU.
  - In having the same level of requirements regarding emission related requirements (no legal pollution niche).
- No ambiguity regarding liability, responsibilities, brand image, etc:
  - The engine retrofitter becomes the new engine manufacturer.
  - The engine becomes a new engine-type with a new approval number.

Development of the dual-fuel legislation
The ACEA / OICA understanding

- First elaborate the requirements for certifying new dual-fuel engines types:
  - EURO VI requirements:
    - So as to permit the certification of EURO VI dual-fuel engines.
    - Aiming at pseudo World-wide harmonisation.
  - EURO V requirements:
    - So as to permit the certification of EURO V dual-fuel engines in some countries.
    - So as to permit the elaboration of harmonised rules for retrofitting EURO V engines.

- Then elaborate the requirements for retrofitting Diesel type approved engines to dual-fuel engines in a manner that is consistent with:
  - the requirements for certifying new dual-fuel engine types.
  - the requirements for certifying retrofitted emission control devices (REC).

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Possible procedures

	PROs	CONs
REC	• Very solid retrofit principles. • Applicable to HDVs	• Dedicated solely to Emission Control Devices
R115	• Existing regulation. • Dedicated to gas retrofit	• No possibility to set general (not gas-specific) retrofit principles. • Not applicable to HDVs without substantial modifications (e.g. to address solely vehicle retrofit). • Risks of generating several inconsistencies with the todays LDV requirements
New reg	• full freedom on the content and structure. • May not be limited to gas retrofit. • Introduce consistency (R83+R115 vs R49+REC+Rxx)	• Administrative constraints (new Regulation)

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summary of the ACEA/OICA position

- Specify first clear general definitions and retrofit principles and
  - then apply them to dual-fuel retrofit.
- Split engine retrofit from vehicle retrofit with an approved engine.
- Ensure a fair competition among the possible manufacturing processes and do not generate loop holes (no relaxed route).
- Prefer the development of a new Regulation for specifying Dual-Fuel retrofit (more environmentally friendly, likely less time demanding, more consistent regarding the split HDV-LDV).