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Working Party on Pollution and Energy

Sixty-fourth session

Geneva, 5-8 June 2012

Report of the Working Party on Pollution and Energy on its sixty-fourth session

Addendum 1

Corrigendum

Page 3, paragraph 4.3

For

"4.3. In order to receive a type-approval of a dual-fuel engine or engine family as a separate technical unit, type-approval of a dual-fuel vehicle with an approved dual-fuel engine with regard to emissions, or a type-approval of a dual-fuel vehicle with regard to emissions, the manufacturer shall, in addition to the requirements of paragraph 4.1. demonstrate that the dual-fuel vehicles or engine are subject to the tests and comply with the requirements set out in Annex 15." *Insert a new paragraph 4.5.1., to read:*

read

"4.3. In order to receive a type-approval of a dual-fuel engine or engine family as a separate technical unit, type-approval of a dual-fuel vehicle with an approved dual-fuel engine with regard to emissions, the manufacturer shall, in addition to the requirements of paragraph 4.1. demonstrate that the dual-fuel vehicles or engine are subject to the tests and comply with the requirements set out in Annex 15."

Insert a new paragraph 4.5.1., to read:

Page 24, paragraph 6.1. and the following Table 1

For

6.1. Dual-fuel engines shall be subject to the laboratory tests specified in table 1

Table 1

Laboratory tests to be performed by a HDDF engine

	<i>Type 1A</i>	<i>Type 1B</i>	<i>Type 2A</i>
WHTC	NMHC; CH ₄ ; CO; NO _x ; PM; PN;NH ₃	<u>Dual-fuel mode:</u>	THC; NMHC; CH ₄
		NMHC; CH ₄	CO; NO _x ; PM; PN; NH ₃
		CO; NO _x ;	
		PM; PN; NH ₃	
		<u>Diesel mode:</u>	
		THC	
		CO; NO _x	
		PM; PN; NH ₃	
WHSC	no test	<u>Dual-fuel mode:</u>	NMHC;
		no test	CO; NO _x
			PM; PN; NH ₃
		<u>Diesel mode:</u>	
		THC	
		CO; NO _x	
		PM; PN; NH ₃	
WNTE laboratory test	no test	<u>Dual-fuel mode:</u>	[HC]
		no test	CO; NO _x
			PM
		<u>Diesel mode:</u>	
		THC	
		CO; NO _x	
		PM	

read

6.1. Dual-fuel engines shall be subject to the laboratory tests specified in Table 1.

Table 1
Laboratory tests to be performed by a dual-fuel engine

	<i>Type 1A</i>	<i>Type 1B</i>	<i>Type 2A</i>	<i>Type 2B</i>	<i>Type 3B</i>
WHTC	NMHC; CH ₄ ; CO; NO _x ; PM; PN; NH ₃	<u>Dual-fuel mode:</u> NMHC; CH ₄ ; CO; NO _x ; PM; PN; NH ₃ <u>Diesel mode:</u> THC; CO; NO _x ; PM; PN; NH ₃	THC; NMHC; CH ₄ ; CO; NO _x ; PM; PN; NH ₃	<u>Dual-fuel mode:</u> THC; NMHC; CH ₄ ; CO; NO _x ; PM; PN; NH ₃ <u>Diesel mode:</u> THC; CO; NO _x ; PM; PN; NH ₃	THC; CO; NO _x ; PM; PN; NH ₃
WHSC	no test	<u>Dual-fuel mode:</u> no test <u>Diesel mode:</u> THC; CO; NO _x ; PM; PN; NH ₃	NMHC; CO; NO _x ; PM; PN; NH ₃	<u>Dual-fuel mode:</u> NMHC; CO; NO _x ; PM; PN; NH ₃ <u>Diesel mode:</u> THC; CO; NO _x ; PM; PN; NH ₃	THC; CO; NO _x ; PM; PN; NH ₃
WNTE laboratory test	no test	<u>Dual-fuel mode:</u> no test <u>Diesel mode:</u> THC; CO; NO _x ; PM	[HC]; CO; NO _x ; PM	<u>Dual-fuel mode:</u> [HC]; CO; NO _x ; PM <u>Diesel mode:</u> THC; CO; NO _x ; PM	THC; CO; NO _x ; PM

Page 30, paragraph 12

For

Appendix 2 Activation and deactivation mechanisms of the counter(s), warning system, operability restriction, service mode in case of HDDF engines and vehicles-
Description and illustrations

read

Appendix 2 Activation and deactivation mechanisms of the counter(s), warning system, operability restriction, service mode in case of dual fuel engines and vehicles-
Description and illustrations

Page 32, the title of Annex 15 - Appendix 2

For

Activation and deactivation mechanisms of the counter(s), warning system, operability restriction, service mode in case of HDDF engines and vehicles -

read

Activation and deactivation mechanisms of the counter(s), warning system, operability restriction, service mode in case of dual-fuel engines and vehicles - Description and illustrations

Page 39, paragraph A.3.1.3

For

A.3.1.3. Service mode indicator

In the case where a dual-fuel engine is type approved as a separate technical unit, the ability of the engine system to command the activation of the service mode indicator when operating in service mode shall be demonstrated at type-approval.

In the case where a dual-fuel engine is type approved with regard to its emissions, the activation of the service mode indicator when operating in service mode shall be demonstrated at type-approval.

Note: Installation requirements related to the service mode indicator of an approved dual-fuel engine are specified in paragraph 6.2. of this Annex.

read

A.3.1.3. Service mode indicator

In the case where a dual-fuel engine is type approved as a separate technical unit, the ability of the engine system to command the activation of the service mode indicator when operating in service mode shall be demonstrated at type-approval.

In the case where a dual-fuel vehicle is type approved with regard to its emissions, the activation of the service mode indicator when operating in service mode shall be demonstrated at type-approval.

Note: Installation requirements related to the service mode indicator of an approved dual-fuel engine are specified in paragraph 6.2. of this Annex.

Page 40, paragraphs A.3.3 and A.3.3.1 (appearing twice in the text)

For

A.3.3. Operability restriction

In the case where a Type 1A or Type 2A dual-fuel engine is type approved as a separate technical unit, the ability of the engine system to command the activation of the operability restriction upon detection of an empty gaseous fuel tank, of a malfunctioning gas supply system, and of an abnormality of gas consumption in dual-fuel shall be demonstrated at type-approval.

In the case where a Type 1A or Type 2A dual-fuel vehicle is type approved as regards to its emissions, the activation of the operability restriction upon detection of an empty gaseous fuel tank, of a malfunctioning gas supply system, and of an abnormality of gas consumption in dual-fuel mode shall be demonstrated at type-approval.

Note: Installation requirements related to the operability restriction of an approved dual-fuel engine are specified in paragraph 6.2. of this Annex.

A.3.3.1. The malfunctioning of the gas supply and the abnormality of gas consumption may be simulated at the request of the manufacturer and with the approval of the approval authority.

In the case where a Type 1A or Type 2A dual-fuel engine is type approved as a separate technical unit, the ability of the engine system to command the activation of the operability restriction upon detection of an empty gaseous

fuel tank, of a malfunctioning gas supply system, and of an abnormality of gas consumption in dual-fuel shall be demonstrated at type-approval.

In the case where a Type 1A or Type 2A dual-fuel vehicle is type approved as regards to its emissions, the activation of the operability restriction upon detection of an empty gaseous fuel tank, of a malfunctioning gas supply system, and of an abnormality of gas consumption in dual-fuel mode shall be demonstrated at type-approval.

Note: Installation requirements related to the operability restriction of an approved dual-fuel engine are specified in paragraph 6.2. of this Annex.

- A.3.3.1. The malfunctioning of the gas supply and the abnormality of gas consumption may be simulated at the request of the manufacturer and with the approval of the approval authority.

read

- A.3.3. Operability restriction

In the case where a Type 1A or Type 2A dual-fuel engine is type approved as a separate technical unit, the ability of the engine system to command the activation of the operability restriction upon detection of an empty gaseous fuel tank, of a malfunctioning gas supply system, and of an abnormality of gas consumption in dual-fuel mode shall be demonstrated at type-approval.

In the case where a Type 1A or Type 2A dual-fuel vehicle is type approved as regards to its emissions, the activation of the operability restriction upon detection of an empty gaseous fuel tank, of a malfunctioning gas supply system, and of an abnormality of gas consumption in dual-fuel mode shall be demonstrated at type-approval.

Note: Installation requirements related to the operability restriction of an approved dual-fuel engine are specified in paragraph 6.2. of this Annex.

- A.3.3.1. The malfunctioning of the gas supply and the abnormality of gas consumption may be simulated at the request of the manufacturer and with the approval of the approval authority.

Page 48, paragraph A.6.4.3

For

- A.6.4.3. Calculation of the u_{gas} values for a fuel mixture

The raw exhaust gas u_{gas} values for a fuel mixture can be calculated with the exact equations in section 8.4.2.4. of Annex 4 and the molar ratios calculated according to this section.

For systems with constant mass flow, equation 57 in section 8.5.2.3.1. of Annex 4 is needed to calculate the diluted exhaust gas u_{gas} values."

read

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The raw exhaust gas u_{gas} values for a fuel mixture can be calculated with the exact equations in section 8.4.2.4. of Annex 4 and the molar ratios calculated according to this section.

For systems with constant mass flow, equation 57 in section 8.5.2.3.1. of Annex 4 is needed to calculate the diluted exhaust gas u_{gas} values.
