

Vehicle Propulsion System Definitions

**Some options for gaseous fuelled
vehicles**

Informal Group GFV-37

13 January 2015

First proposal for a definition of Bi-fuel and Dual fuel vehicles

- 5.1.1 “Bi-fuel vehicle” means a vehicle with two separate fuel storage systems for different fuels that is designed to run on both fuels and on one fuel at a time and may run part-time on mixtures of the two fuels.
- 5.1.2 “Dual-fuel vehicle” means a vehicle with two separate fuel storage systems for different fuels that is designed to run on different mixtures of the two fuels and may run part-time on one fuel.

A Suggested Alternative (AEGPL)

- 5.1.1 “Bi-fuel vehicle” means a vehicle with two separate fuel storage systems for different fuels that is designed to run ~~on both fuels and~~ on one fuel at a time and may run part-time on mixtures of the two fuels.

"on both fuels" may be considered redundant

5.1.2 “Dual-fuel vehicle” means a vehicle with two separate fuel storage systems for different fuels that is designed to run on different mixtures of the two fuels and may run ~~part-time~~ on one **specific fuel at a time.**

This is to include also dual-fuel type B, where diesel can be used not only part-time.

Comments from NGV Global

5.1.1 “Bi-fuel vehicle” means a vehicle with two separate fuel storage systems for different fuels that is designed to run ~~on both fuels and~~ on one fuel at a time and may run part-time on mixtures of the two fuels.

Dual-fuel vehicles will fall under this category.

5.1.2 “Dual-fuel vehicle” means a vehicle with two separate fuel storage systems for different fuels that is designed to run on different mixtures of the two fuels and may run ~~part-time~~ on one **specific fuel at a time**.

The term mixtures is confusing and can lead to trouble. It is not clear that the so called ‘mixture’ occurs as a result of the operation and it could suggest that it is something done outside of the engine.

This is to include also dual-fuel type B, where diesel can be used not only part-time.

Comments from NGV Global

- Further considerations:

1. “Dual-fuel vehicle” means a vehicle with two separate fuel storage systems for different fuels that is designed to run on different mixtures of the two fuels and may run part-time only on one of the fuels.

2. An alternative approach would be: The dual fuel vehicle has always been considered as a diesel vehicle. The bi-fuel vehicle has always been considered as a gasoline vehicle. Perhaps, therefore, we could add the fuels into the definition again, such as: “Bi-fuel vehicle” means a vehicle with two separate fuel storage systems for different fuels, one of which is gasoline, that is etc etc, and: “Dual-fuel vehicle” means a vehicle with two separate fuel storage systems for different fuels, one of which is diesel, that is etc etc.

Could a bi-fuel vehicle potentially be diesel running on diesel or DME?

Comments from NGV Global

(From a previous discussion on this topic and proposed and approved for inclusion in ISO CNG Standard)

- **3.4**
- **Mono-fuel NGV:** Vehicle which operates on natural gas only .
- *Note 1: Also known as "Dedicated Natural Gas Vehicle"*
- *Note 2: In Europe and in India the term Mono-Fuel also applies to a light duty NGV with max 15 litre gasoline tank.*
- **3.5**
- **Bi-fuel NGV:** Vehicle that has two independent fuel systems (one of them for natural gas) and can run alternatively on either fuel, but only on one at a time.
- **3.6**
- **Dual-fuel NGV:** Vehicle that has two independent fuel systems (one of them for natural gas) and can run on both fuels simultaneously. It also may run on one fuel alone.
- *Note that we talk about NGVs and we can do this because it is a standard for CNG.*

Final proposal from GFV for VPSD

- 5.1.1 “Bi-fuel vehicle” means a vehicle with two separate fuel storage systems for different fuels that is designed to run on one fuel at a time.
- 5.1.2 “Dual-fuel vehicle” means a vehicle with two separate fuel storage systems for different fuels that is designed to run on variable mixtures of the two fuels.

The important difference is:

Bi-fuel is a spark ignited engine which can run on either one of the fuels or on mixtures.

Dual fuel is a compression ignition engine which needs the diesel fuel to ignite the gaseous fuel. Without diesel injection it will not run.

Uit R49:

"Dual-fuel engine" means an engine system that is designed to simultaneously operate with diesel fuel and a gaseous fuel, both fuels being metered separately, where the consumed amount of one of the fuels relative to the other one may vary depending on the operation;