

## Public Consultation on Gas Quality Harmonization in Europe

- Do you agree with the high-level conclusions of this report?

Speaking in general terms, NGVA Europe is in favour of trying to settle a common Gas Quality specification in Europe but, as the report stresses, this should not be done at any cost due to the high risks that this could represent for many different applications in which the natural gas is used nowadays. It is clear that gas quality harmonization would end with some existing cross-border barriers, but this kind of action should be well based and heavily justified specially from the economic point of view.

- As a manufacturer do you maintain an inventory of installed appliances?

Not applicable for NGVA Europe. We represent the European Natural Gas Vehicle Industry.

- Are there any specific gas quality related issues not recognised within this report?

There are different applications which may require a special treatment within the report, such as the use of Natural Gas/biomethane as a transport fuel. Though Natural Gas Vehicles are not wide spread across the EU nowadays (just in a few EU member states there is a solid market for this technology), this is something that we think should be taken into account, due to the great potential that this technology could represent when trying to decarbonise the transport sector, improve the air quality, and improve the security of energy supply in the EU. The European Committee for Standardization (CEN) has already received a mandate from the European Commission (M/475) to develop the standards allowing biomethane injection into the gas grid, and the necessary specifications for biomethane to be used as a vehicle fuel.

Additionally, we'd like to see a discussion of the development of changes in the future use of NG/biomethane, future demands on emissions (all applications should be covered), and future demands on highly efficient use of all fuels. A present and forecast status of the use of NG/biomethane would also be of high value.

- Do you manufacture appliances that can operate over the full EASEE-gas specification without loss of efficiency or increased of emissions?

This could be somewhat applicable to the existing Natural Gas Vehicle manufacturers, since they optimise their engines according to a reference gas quality specification. While some engine types could only experience a lower efficiency when using a certain NG with less quality (i.e. less methane number – L gases), in some other cases they may experience problems that could harm the engines and reduce their expected life.

- Do you have evidence of damage or failures caused by appliance operating on gas that is not compliant with the local gas quality specification?

There is not yet evidence enough in the case of NGVs.

- Would you support the adoption of the proposed EUROMOT gas quality specification, (Appendix B)?

We would like to support EUROMOT's position regarding the possible increase in gas quality variations that could lead to severe structural problems for internal combustion engines, and of course to less efficient performance regarding emissions and fuel consumption. Having a stable methane number is critical, though we'd like to internally discuss with them some of the specific values and parameters in order to get to a common position.

One possibility could be to use gases with lower energy contents for stationary applications, and use high quality gases for mobile applications.

- Are there any specific circumstances that should be assessed in detail?

As previously commented, the injection of other gases in the existing NG grid should be studied in detail. CEN has already settled a technical committee to deal with this issue, as explained in the third question

- Do you consider that the data used to undertake this analysis is sufficient to support the conclusions presented in this report?

Yes, but please see answer given to the third question.

- Should significant effort be made to improve the data used in the analysis presented in this report?

No comments.

- Do you have access to further data that could (if it were made available) improve the quality of the data used in the analysis presented in this report?

If further consideration of the use of NG as vehicle fuel would be made, NGVA Europe could support with specific details.

- Can you provide typical detailed gas composition at cross border points?

Though it's not exactly the data requested, the table presented at the end of the document gives an overview of the NG quality standards in some European countries.

- If so, can this data be made available (respecting confidentiality, as required)?

See answer to last question.

- How should data be collected for such a study?

Through European Organizations like Eurogas and Marcogaz, since they're representing the interests of the European Gas companies and can get access to that information.

	FRANCIA	OLANDA	SPAGNA	SVEZIA	GERMANIA	SVIZZERA	AUSTRIA	ITALIA
<b>PCS</b>	Gas tipo H: 10.7 a 12.8 kWh/m <sup>3</sup> (38.52-46.8 MJ/m <sup>3</sup> ) Gas tipo B: 9.5 a 10.5 kWh/m <sup>3</sup> (34.2 - 37.8 MJ/m <sup>3</sup> )	31.6 - 38.7 MJ/m <sup>3</sup> ± 0.4% rel	36.83 - 44.03 MJ/m <sup>3</sup>			10.7 - 13.1 kWh/m <sup>3</sup> (38.52-47.16 MJ/m <sup>3</sup> )	10.7 - 12.8 kWh/m <sup>3</sup> (38.52- 46.08 MJ/m <sup>3</sup> )	34.95 - 45.28 MJ/m <sup>3</sup>
<b>Indice di Wobbe</b>	Gas tipo H: 13.64 a 15.70 kWh/m <sup>3</sup> (49.10 - 56.52 MJ/m <sup>3</sup> ) Gas tipo B: 12.01 a 13.06 kWh/m <sup>3</sup> (43.24 - 47.02 MJ/m <sup>3</sup> )	43.46 - 44.41 MJ/m <sup>3</sup> ± 0.5% rel	48.13 - 57.60 MJ/m <sup>3</sup>	45.5 - 48.5 MJ/m <sup>3</sup>	10.5 - 15.7 kWh/m <sup>3</sup> (36.18-56.52 MJ/m <sup>3</sup> )	13.3 - 15.7 kWh/m <sup>3</sup> (47.88-56.52 MJ/m <sup>3</sup> )	13.3 - 15.7 kWh/m <sup>3</sup> (47.88- 56.52 MJ/m <sup>3</sup> )	47.31 - 52.33 MJ/m <sup>3</sup>
<b>Densità relativa</b>	0.555 a 0.70	0.555 a 0.70	0.555 a 0.70			0.55 - 0.70	0.55 - 0.65	0.5548 - 0.8
<b>Punto di rugiada acqua</b>	< -5 °C alla massima pressione di esercizio		< 2 °C (70 bar)				- 8 °C a 40 bar	< -5 °C A 7000 kPa
<b>Acqua</b>				< 32 mg/m <sup>3</sup>	< 50 mg/m <sup>3</sup>	< 60 %		
<b>Punto di rugiada idrocarburi</b>	< -2 °C tra 1 e 70 bar		< 5 °C (da 1 a 70 bar)				0°C a tutte le pressioni	< 0 °C tra 100-7000 k
<b>Zolfo totale</b>	< 30 mgS/m <sup>3</sup>	< 45 mg/m <sup>3</sup>	< 50 mgS/m <sup>3</sup>	< 23 mgS/m <sup>3</sup>	< 30 mgS/m <sup>3</sup>	< 30 mgS/m <sup>3</sup>	< 10 mgS/m <sup>3</sup>	< 150 mg/m <sup>3</sup>
<b>Zolfo mercaptanico</b>	< 6 mgS/m <sup>3</sup>	< 10 mg/m <sup>3</sup>	< 17 mgS/m <sup>3</sup>					< 15.5 mg/m <sup>3</sup>
<b>Mercaptani</b>					< 15 mg/m <sup>3</sup>		< 6 mg/m <sup>3</sup>	
<b>Zolfo da H<sub>2</sub>S + COS</b>	< 5 mgS/m <sup>3</sup>		< 15 mgS/m <sup>3</sup>					
<b>H<sub>2</sub>S</b>		< 5 mg/m <sup>3</sup>		< 10 ppm	< 5 mgS/m <sup>3</sup>	< 5 mgS/m <sup>3</sup>	< 5 mgS/m <sup>3</sup>	< 6.6 mg/m <sup>3</sup>
<b>CO<sub>2</sub></b>	< 2.5 % mol	< 6 % mol	< 2.5 % mol	< 3 % mol	< 6 % mol	< 4 % mol	< 3 % mol	< 3 %
<b>Contenuto di THT</b>	Compreso tra 15 e 40 mg/m <sup>3</sup>	Compreso tra 10 e 40 mg/m <sup>3</sup>	22 mg/m <sup>3</sup>			15-25 mg THT/m <sup>3</sup>		
<b>O<sub>2</sub></b>	< 100 ppmv	0.50%	0.01%	< 1%	< 3% vol (per gas secco); < 0.5% (per gas umido)	< 0.5 %	< 0.5 %	< 0.6 %
<b>Hg</b>	< 1 µg/m <sup>3</sup>	< 1 µg/m <sup>3</sup>						
<b>Cl</b>	< 1 mg/m <sup>3</sup>	< 50 mg/m <sup>3</sup>						
<b>F</b>	< 10 mg/m <sup>3</sup>	< 25 mg/m <sup>3</sup>						
<b>Composti alogenati</b>							0 mg/m <sup>3</sup>	
<b>H<sub>2</sub></b>	< 6%	< 12 %		< 0.5 % Vol	< 5 % Vol	< 5 % Vol	< 4 % Vol	
<b>NH<sub>3</sub></b>	< 3 mg/m <sup>3</sup>	< 3 mg/m <sup>3</sup>		< 20 mg/m <sup>3</sup>				
<b>CO</b>	< 2 %	< 1 %					Tecnicamente puro	
<b>Cianuri (HCN)</b>		< 10 ppm						
<b>BTX (benzene, toluene, xileni)</b>		500 ppm						
<b>Silossani</b>		5 ppm					< 10 mg/m <sup>3</sup>	
<b>Impurezze</b>			solidi o liquidi assenti			Tecnicamente puro	Tecnicamente puro	
<b>Polvere, fluidi</b>					Tecnicamente libero			Tecnicamente libero
<b>Condizioni misura m3</b>	0°C, 103.25 kPa							15°C, 103.25 kPa