

## **EASEE-gas**

European Association for the Streamlining of Energy Exchange - gas

# Common Business Practice

Number: 2005-001/02

Subject: Harmonisation of Natural Gas Quality

Approved:

EASEE-gas CBP 2005-001/01 has been approved by the EASEE-gas Executive Committee on 3 February 2005 and published on 7 February 2005. EASEE-gas CBP 2005-001/02 has been approved by the EASEE-gas Executive Committee on 6 November 2008.

## About EASEE-gas

---

*Six founding members in Paris created the European Association for the Streamlining of Energy Exchange-gas or EASEE-gas on March 14th, 2002. EASEE-gas's aim is to support the creation of an efficient and effective European gas market through the development and promotion of common business practices (CBP's) that intend to simplify and streamline business processes between the stakeholders. EASEE-gas has set up offices with Association Française du Gaz who provides administrative support.*

*The formation of EASEE-gas was prompted by the success of the Gas Industry Standards Board in the United States and has been modelled on it. The GISB has now evolved into the North American Energy Standards Board. The creation of EASEE-gas is a project that is fully supported by the European Commission and by the European Regulators through the so-called Madrid Forum. It was achieved through the work of a dedicated Task Force supported by EFET, Eurogas, Eurelectric, GEODE, GTE, OGP and the Edigas group.*

*The association is fundamentally based on company membership and voluntary contribution towards the development of common business practices.*

*Full membership in EASEE-gas is open to all companies, European or other, that are involved in the European gas business, from producers to end users, and to companies that are their service providers. Companies can subscribe to full membership in one or more of the eight gas industry segments.*

*Associate membership in EASEE-gas is open to government agencies, e.g., regulators, to organisations such as gas business trade associations and to individuals that may contribute to the benefit of EASEE-gas. Associate members do not pay annual fees, nor do they have voting rights.*

*The development of common business practices within EASEE-gas is organised through working groups under the supervision of an executive committee that is representative of the various gas industry segments. Participation in the working groups is limited to members only.*

## Common Business Practice 2005-001/01 “Harmonisation of Gas Qualities”

### 1. Introduction

This Common Business Practice (CBP) recommends natural gas quality specifications to streamline interoperability at cross border points in Europe and describes the recommended gas quality parameters, parameter ranges and the implementation plan.

The CBP is limited to cross border and EU entry points, including the exit of LNG import terminals, for high calorific gas without added odorants, and excluding areas of production and isolated systems where production, transportation and utilisation are combined.”

Based on standard project lead times, an assessment has been made of the earliest possible implementation date. Therefore, EASEE-gas is of the opinion that the earliest implementation date of any parameter and associated value is 1<sup>st</sup> October 2006. However, implementation directly related to combustion properties (Wobbe index, relative density, oxygen) will not be reasonably feasible before 1<sup>st</sup> October 2010.

Safety and technical implications of the CBP values/ranges and the optimum manner to implement these will have to be assessed for and by each individual country. However, implementation of each parameter and associated range needs to be simultaneous at all cross border points.

Specific legislative issues and implementation times for legal change need to be addressed by the relevant governments. EASEE-gas recommends that the member states legislative bodies consult with the relevant industry representatives to investigate such required legislative changes.

The respective parties on a case-by-case basis should address contractual constraints with respect to the implementation of the various parameters and related values. For the avoidance of doubt, it is the common understanding that this recommendation should not limit the parties’ rights to agree on specifications outside the proposed ranges and continue their agreements on a bilateral basis.

## 2. Gas Parameters

The following parameters have been agreed for harmonisation:

WI	- Gross (Superior) Wobbe Index
d	- relative density
S	- Total Sulphur
H <sub>2</sub> S + COS	- Hydrogen sulphide + Carbonyl sulphide
RSH	- Mercaptans
O <sub>2</sub>	- Oxygen
CO <sub>2</sub>	- Carbon dioxide
H <sub>2</sub> O DP	- Water dew point
HC DP	- Hydrocarbon dew point

For definition of the parameters, reference is made to ISO 14532:2001 Natural gas – Vocabulary.

## 3. Parameter units

For this CBP, the parameter units and reference conditions used are according to the EASEE-gas Common Business Practice 2003-001/01. This implies that the energy unit is kWh with a combustion reference temperature of 25 °C, and the volume unit is m<sup>3</sup> at a reference condition of 0°C and 1.01325 bar(a). For conversion to other reference conditions, reference is made to ISO 13443:1996 Natural Gas – Standard reference conditions.

## 4. Parameter ranges and values

The following ranges and values shall apply:

Parameter	Unit	Min	Max	Recommended implementation date
WI	kWh/m <sup>3</sup>	[13.60]	15.81	1/10/2010
d	m <sup>3</sup> /m <sup>3</sup>	0.555	0.700	1/10/2010
Total S	mg/m <sup>3</sup>	-	30	1/10/2006
H <sub>2</sub> S + COS (as S)	mg/m <sup>3</sup>	-	5	1/10/2006
RSH (as S)	mg/m <sup>3</sup>	-	6	1/10/2006
O <sub>2</sub>	mol %	-	0.001*	1/10/2010
CO <sub>2</sub>	mol %	-	2.5	1/10/2006
H <sub>2</sub> O DP	°C at 70 bar (a)	-	- 8	See note **
HC DP	°C at 1- 70 bar (a)	-	- 2	1/10/2006

\* Limit is <0.001 mol%, daily average. However, cross border point daily average levels up to 0.01 mol% will be accepted if these are the result of the prudent operation of UGS's, existing in 2006, which use oxygen for desulphurisation purposes. (Based on the full CBP Wobbe range).

\*\*At certain cross border points, less stringent values are used than defined in this CBP. For these cross border points, these values can be maintained and the relevant producers, shippers and transporters should examine together how the CBP value can be met in the long run. At all other cross border points, this value can be adopted by 1<sup>st</sup> October 2006.

As Wobbe Index, relative density, and Gross Calorific Value (GCV) are directly related to each other, only the Wobbe Index and relative density are retained as parameters. GCV remains as a parameter for billing purposes.

#### **Wobbe Index and Relative Density**

The CBP recommends a Wobbe Index value range of 13.60 to 15.81 kWh/m<sup>3</sup>. However, due to lack of sufficient data on values lower than 13.76 kWh/m<sup>3</sup>, the starting point for implementation will be 13.76 kWh/m<sup>3</sup> for the lower limit. EASEE-gas recommends that work on safety consequences be initiated to investigate the possibility of changing the lower limit towards 13.60 kWh/m<sup>3</sup>.

The values for Wobbe Index and relative density have been based on safety considerations applicable only to appliances complying with the Gas Appliance Directive (Directive 90/396/CEE) and assuming low hydrogen content. These ranges may present safety hazards for appliances that do not comply with the Directive. The implementation may also raise a safety issue regarding appliances manufactured to comply with the Gas Appliance Directive, but where burner settings have been adjusted during or after installation.

The widening of the Wobbe Index range that this CBP introduces in some countries, may have an effect on efficiency, emissions level of appliances and capacities of the transmission and distribution networks.

The implementation would pose widely varying impacts for different countries and might require one or more of the following:

- Changes in national legislation
- Domestic and industrial appliances population management (e.g. conversion, adjustment, replacement)
- Changes to maintenance practices and frequency
- Ballasting and/or blending of gas

Furthermore, GCV specifications/legislation in force in some countries with respect to appliances may require modification to accommodate the full ranges of both Wobbe index and relative density.

An implementation date of 1<sup>st</sup> October 2010 is recommended.

Wobbe Index and relative density are consistently interlinked and the recommended ranges are intended to describe the requirement for safe burner operations. EASEE-gas recommends that all specifications on other combustion parameters at cross border points should be removed by the 1<sup>st</sup> October 2010 (e.g. Incomplete Combustion Factor, Soot Index, Yellow Tip Index, and Combustion Potential).

#### **Total sulphur, Hydrogen sulphide, carbonyl sulphide and mercaptans**

EASEE-gas has not observed any technical constraints in conflict with the proposed harmonised values, and such values can therefore be adopted by 1<sup>st</sup> October 2006.

#### **Oxygen**

Based on the oxygen measurement survey it is the observation of EASEE-gas that a limit of 0,001 mol% is acceptable. However EASEE-gas acknowledges that as a result of the proper operation of existing desulphurisation processes values up to 0,01 mol% may occur.

#### **Carbon dioxide**

EASEE-gas has not observed any technical constraints in conflict with the proposed harmonised values, and such values can therefore be adopted by 1st October 2006.

#### **Water dew point**

At certain cross border points, less stringent values are used than defined in this CBP. For these cross border points, these values can be maintained and the relevant producers, shippers and transporters

should examine together how the CBP value can be met in the long run. At all other cross border points, this value can be adopted by 1<sup>st</sup> October 2006.

#### **Hydrocarbon dew point**

EASEE-gas has not observed any technical constraints in conflict with the proposed harmonised values, and such values can therefore be adopted by 1<sup>st</sup> October 2006.

The need for introducing a harmonized measuring method has been identified.

#### **Hydrogen**

Future gas operations may lead to use of gases containing significant levels of hydrogen or other synthetic/manufactured gases. Appliance malfunction can occur with the presence of hydrogen or other high flame speed gases. As natural gas does not contain any hydrogen, the recommendations in this CBP are valid only for insignificant levels of hydrogen in order to control risk of flashback. If synthetic/manufactured gases are anticipated to become a cross border issue, the proposed set of parameters needs to be re-evaluated.

#### **Impurities**

The natural gas delivered shall not contain other constituents and/or impurities to the extent that it cannot be transported, stored and/or marketed without quality adjustment or treatment.

#### **Odourisation**

The CBP applies only to high-calorific gas without added odorants and does not address possible future interoperability issues arising from differences in odourisation practices.

Odourisation practices are different in different countries for reasons of gas supply business structure (central versus local) and cost of operation. Current main gas trade flows are compatible with existing odourisation practices, and any problems in this respect have been solved so far in co-operation between gas companies concerned.

With changing flow conditions, there will be a case for reconsidering odourisation operations by involved parties when required and economically justified.

EASEE-gas recommends that qualification work is initiated on the impact of commingling odorized and non-odorized gas flows.

#### **Nitrogen**

EASEE-gas recommends that no gas should be refused as from 1<sup>st</sup> October 2006 on Nitrogen content provided all other requirements of the CBP are met.

## 5. Quality variations

It is recognised that variations in gas quality may cause inefficiencies for industrial end users. EASEE-gas recommends that size and frequency of major variations within the ranges as above should be restricted in a reasonable way (e.g. limited to unavoidable technical problems) and in any case be notified to the relevant end users reasonably in advance. It is the common understanding that stability of the natural gas quality remains to be of outstanding importance.

Size and frequency of major variations of methane content should wherever practicable be notified to the relevant end-users reasonably in advance.

Historical Information regarding variation in gas quality may be given by the TSO on demand subject to confidentiality provisions and instrumentation. Quality sensitive Industrial End-users should in the first instance contact the local TSO who shall share its knowledge in good faith.

## 6. Billing arrangements

Billing arrangements on national levels in EU have been investigated. No restriction on free trade of natural gas at the cross border points has been identified as result of legal billing requirements. Therefore there is no need for harmonised billing arrangements. However, it has been observed that some contractual arrangements on GCV between certain parties at a particular cross border point interfere with the free trade of natural gas. EASEE gas encourages the relevant parties to remove such arrangements as soon as possible but no later than 1<sup>st</sup> October 2006.