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PROPOSAL

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To:	Ms Thérèse BLANCHET, Secretary-General of the Council of the European Union
No. Cion doc.:	COM(2024) 561 final
Subject:	ANNEXES to the Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive 2014/32/EU as regards electric vehicle supply equipment, compressed gas dispensers, and electricity, gas and thermal energy meters

Delegations will find attached document COM(2024) 561 final.

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COM(2024) 561 final

ANNEXES 1 to 6

ANNEXES

to the

Proposal for a
DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

amending Directive 2014/32/EU as regards electric vehicle supply equipment, compressed gas dispensers, and electricity, gas and thermal energy meters

ANNEX I

Annex I to Directive 2014/32/EU is amended as follows:

(1) in part '**DEFINITIONS**', in the seventh row of the table, the definition of 'Direct sales' is replaced by the following:

'A trading transaction is direct sales if:

— the measurement result serves as the basis for the price to pay; and

— at least one of the parties involved in the transaction related to measurement is a consumer or any other party requiring a similar level of protection; and

— all the parties in the transaction accept the measurement result at the time the measurement is concluded.';

(2) point 10.2. is replaced by the following:

'10.2. The indication of any result shall be clear and unambiguous, protected against accidental deletion, and accompanied by such marks and inscriptions necessary to inform the user of the significance of the result. Easy reading of the presented result shall be permitted under normal conditions of use. Additional indications may be shown provided they cannot be confused with the metrologically controlled indications.';

(3) the following points 10.6., 10.7., and 10.8. are added:

'10.6. By way of derogation from points 10.1. and 10.5., for gas and electricity meters, measuring systems for electric vehicle supply equipment ('EVSE') and measuring systems for compressed gas dispensers the following shall apply:

The measuring instruments shall use one or more of the following technical solutions to indicate the measurement results:

(a) be fitted with a metrologically controlled display, readout and/or printer accessible without tools to present the relevant data;

(b) present the relevant data on a remote display accessible without tools or on a device of the consumer or end-user.

The presented results shall be traceable to the measuring instrument under metrological control. Security measures shall provide evidence of tampering.

The measurement result presented by the respective technical solution shall serve as the basis for the price to pay, when applicable.

The data may be made available, in addition, by means of metrologically controlled remote channel.

10.7. By way of derogation from point 10.4., for measuring systems for EVSE and measuring systems for compressed gas dispensers, the measurement data shall be fully established in a device or a system so that it can be immediately presented to the consumer.

10.8. By way of derogation from point 10.4., measuring systems for EVSE shall be designed to present the measurement result to all parties in the transaction when installed as intended.'.

ANNEX II

Annex IV to Directive 2014/32/EU is amended as follows:

(1) the title is replaced by the following:

'**GAS METERS AND CONVERSION DEVICES (MI-002)**';

(2) the first paragraph is replaced by the following:

'The relevant requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this Annex apply to gas meters and conversion devices defined in this Annex, intended for residential, commercial and light industrial use.';

(3) in part '**DEFINITIONS**', the table is amended as follows:

(a) in the first row, the definition of 'Gas meter' is replaced by the following:

'An instrument designed to measure, memorise and display the quantity of fuel gas (volume or mass) and/or energy of that gas that has passed it.';

(b) in the second row, first column, the term 'Conversion device' is replaced by the following:

'Volume conversion device';

(c) the following rows are added:

'Gas calorific value determining device	An associated measuring instrument for determining the calorific value of gas that has passed it.
Energy conversion device	A device which calculates, integrates and displays energy using the mass or the volume at base conditions, and the superior / gross calorific value.
Superior/gross calorific value	Amount of heat that would be released by the complete combustion with oxygen of a specified quantity of gas, in such a way that the pressure, p_1, at which the reaction takes place remains constant, and all the products of combustion are returned to the same specified temperature, t_1, equal to that of the reactants, all of those products being in the gaseous state except for water, which is condensed to the liquid state at t_1.';

(4) Part I is amended as follows:

(a) point 1.1. is replaced by the following:

'The flowrate range of the gas shall fulfil at least the following conditions:

Class	Q_{max}/Q_{min}	Q_{max}/Q_t	Q_r/Q_{max}
1,5	≥ 150	≥ 10	1,2
1,0	≥ 10	≥ 5	1,2

If a gas meter has multiple gas application-dependent flow rate ranges, all of those shall be inscribed on the meter, accompanied by a clear description of the gas application.';

(b) the introductory sentence of point 3.1.1. is replaced by the following:

‘The effect of an electromagnetic disturbance on a gas meter, conversion device or gas calorific value determining device shall be such that:’;

(c) in point 6, the following paragraph is added :

‘Quantity of energy shall be displayed in joules or in watt-hours.’;

(5) Part II is amended as follows:

(a) the title is replaced by the following:

‘SPECIFIC REQUIREMENTS

CONVERSION DEVICES’;

(b) the first paragraph and the introductory sentence of the second paragraph are replaced by the following:

‘A conversion device constitutes a sub-assembly when it is together with a measuring instrument with which it is compatible.

For a conversion device, the essential requirements for the gas meter shall apply, if applicable.’;

(c) point 8 is amended as follows:

(i) the title is replaced by the following:

‘**MPE for volume conversions devices’**;

(ii) the note to point 8 is replaced by the following:

‘Note:

The errors of the gas meter and, if applicable, of the gas calorific value determining device are not taken into account.

The conversion device shall not exploit the MPEs or systematically favour any party.’;

(6) the following Part IIa is inserted:

‘**PART IIa**

SPECIFIC REQUIREMENTS

GAS CALORIFIC VALUE DETERMINING DEVICES

A gas calorific value determining device is either of the following:

(a) it is locally installed and sends signals directly to the energy conversion device;

(b) it is not locally installed and is considered as an external transducer.

For a gas calorific value determining device, the essential requirements for the gas meter shall apply, where applicable. In addition, the following requirements shall apply:

9a. Base conditions for converted quantities

The manufacturer shall specify the following:

– the range for gas chemical composition;

– the base conditions for calorific value and converted quantities.

9b. MPE

Class	0,5	1,0
MPE	0,5 %	1 %

The gas calorific value determining device shall not exploit the MPEs or systematically favour any party.

9c. Permissible effect of disturbances

The critical change value is the greater of the two following values:

– one fifth of the magnitude of the MPE for the calorific value;

– two scale intervals of the gas calorific value determining device.

9d. Durability

After an appropriate test, taking into account the period of time estimated by the manufacturer, has been performed, the following two criteria shall be satisfied:

– the variation of the measurement result after the durability test when compared with the initial measurement result shall not exceed half of the magnitude of the MPE;

– the error of indication after the durability test shall not exceed the MPE.

9e. Suitability

A gas calorific value determining device shall be capable of detecting when it is operating outside the operating ranges stated by the manufacturer for parameters that shall be registered for measurement accuracy. In such a case, the gas calorific value determining device shall register the following:

(a) that the gas calorific value is not relevant;

(b) that the gas calorific value determining device operates outside the operating range.

9f. Units

Calorific value shall be displayed in joules and/or watt-hours per unit of mass or volume at base conditions.’.

ANNEX III

Annex V to Directive 2014/32/EU is amended as follows:

(1) in part '**DEFINITIONS**', the introductory sentence is replaced by the following:

'An active electrical energy meter is an instrument which measures the active electrical energy consumed in a circuit or transferred between circuits.';

(2) in part '**DEFINITIONS**', in the table, the last three rows are replaced by the following:

'f	=	the frequency of the voltage supplied to the meter, for alternating current ('AC') electrical energy meters;
f_n	=	the specified reference frequency, for AC electrical energy meters;
PF	=	power factor = cosφ = the cosine of the phase difference φ between I and U, for AC electrical energy meters.';

(3) in point 2, the last two paragraphs are replaced by the following:

'The operating ranges within which the meter shall satisfy the MPE requirements are specified in Table 2.

For AC electrical energy meters, the voltage, frequency and power factor ranges shall be:

– $0{,}9 \cdot U_n \leq U \leq 1{,}1 \cdot U_n$;

– $0{,}98 \cdot f_n \leq f \leq 1{,}02 \cdot f_n$;

– $0{,}5\ inductive \leq PF \leq 0{,}8\ capacitive$.

For direct current ('DC') electrical energy meters, the voltage range shall be between the lowest and the highest output voltage.';

(4) in point 3, the second paragraph is replaced by the following:

'When the meter is operating within rated operating conditions, the percentage errors shall not exceed the limits given in Table 2.';

(5) in Table 2, in the third row, fifth column, the wording '– 40 °C … – 25 °C or + 55 °C … + 70 °C' is replaced by the following:

'below – 25 °C or above + 55 °C';

(6) in point 4.1., the second and third paragraphs are replaced by the following:

'The meter shall comply with the electromagnetic environment E2 for AC electrical energy meters and E1 for DC electrical energy meters, as well as with the additional requirements in points 4.2. and 4.3.

The electromagnetic environment and permissible effects reflect the situation that there are disturbances which shall not affect the accuracy beyond the critical change values and transient disturbances, which may cause a temporary degradation or loss of function or performance but from which the meter shall recover and shall not affect the accuracy beyond the critical change values';

(7) point 4.2. is amended as follows:

(a) in the fifth row, first column, of Table 3, the wording ‘Harmonic contents in the current circuits ([2])’ is replaced by the following:

‘Harmonic contents in the current circuits ([2]), for alternating current (‘AC’) electrical energy meters’;

(b) in the sixth row, first column, of Table 3, the wording ‘DC and harmonics in the current circuit ([2])’ is replaced by the following:

‘DC and harmonics in the current circuit ([2]), for alternating current (‘AC’) electrical energy meters’;

(8) points 5.4. and 5.5. are replaced by the following:

‘**5.4.** ***Running with no load***

When the voltage is applied without any current flowing in the current circuit, the meter shall not register any energy.

5.5. ***Starting***

The meter shall start and continue to register at a rate of change of energy equal to the product of the smallest voltage within the rated operating conditions and I_{st}.’.

ANNEX IV

‘ANNEX Va

MEASURING SYSTEMS FOR ELECTRIC VEHICLE SUPPLY EQUIPMENT (MI-003a)

The relevant requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this Annex apply to measuring systems for EVSE intended for residential, commercial and light industrial use.

DEFINITIONS

A measuring system for EVSE means a system that includes all relevant metrological functions related to the transfer (either way), at a specified transfer point, of electrical energy between EVSE (such as charging stations for electric vehicles) and electric vehicles.

However, by way of derogation from Annex I, such measuring systems shall not be considered as utility measuring instruments.

Measuring systems for EVSE can also have their basic metrology provided by a separately type approved meter which has been tested for compliance with a recognised metering standard with equal or more stringent requirements.

I	=	the electrical current flowing through the measuring system for EVSE at the transfer point;
I_{st}	=	the lowest declared value of I at which the measuring system for EVSE registers electrical energy at unity power factor (polyphase measuring systems with balanced load);
I_{min}	=	the value of I above which the error lies within maximum permissible errors (MPEs) (polyphase meters with balanced load);
I_{tr}	=	the value of I above which the error lies within the smallest MPE corresponding to the class index of the measuring system for EVSE;
I_{max}	=	the maximum value of I for which the error lies within the MPEs;
U	=	for AC, root mean square (RMS) value of the electrical voltage supplied to or from the measuring system for EVSE at the transfer point; for DC, value of the electrical voltage supplied to or from the measuring system for EVSE at the transfer point;
U_n	=	the specified reference voltage(s);
f	=	the frequency of the voltage supplied to or from the measuring system for

		EVSE, for AC measuring systems;
f_n	=	the specified reference frequency, for AC measuring systems;
PF	=	power factor = cosφ = the cosine of the phase difference φ between I and U, for AC measuring systems;
ripple	=	peak-to-peak deviation from the nominal voltage signal expressed as a percentage of the reference value, for DC measuring systems;
harmonic	=	part of a signal that has a frequency that is an integer multiple of the fundamental frequency of the power input to the measuring system for EVSE, the fundamental frequency being, generally, the nominal frequency, f_{nom}, for AC measuring systems;
d	=	distortion factor which is the ratio of the RMS value of the harmonic content (obtained by subtracting the fundamental term from a non-sinusoidal alternating quantity) to the RMS value of the fundamental term, and which is equal to the total harmonic distortion using the fundamental as the reference (denominator);
MMQ	=	minimum measured quantity of energy delivered in a transaction for which the manufacturer specifies that the measuring system for EVSE will meet the MPE of the measuring system for EVSE's accuracy class;
transfer point	=	point at which an electric vehicle is connected to the EVSE (i.e. the charging station for electric vehicle).

SPECIFIC REQUIREMENTS

1. Accuracy

The manufacturer shall specify the class index of the measuring system for EVSE. The class indices are defined as: Class A, B and C.

Accuracy shall be determined at the transfer point.

If energy exchanged at the transfer point is in the form of DC, then DC energy shall be the measurand; if AC energy is exchanged at the transfer point, then AC energy shall be the measurand.

2. Rated operating conditions

The manufacturer shall specify the rated operating conditions of the measuring system for EVSE, in particular, the values of f_n, U_n, I_{st}, I_{min}, I_{tr} and I_{max} that apply to the measuring system for EVSE.

For the current values specified, the measuring system for EVSE shall fulfil the conditions given in Table 1:

Table 1

	AC	**AC**	**DC**	**DC**
I_{min}	$\leq I_{tr}$	$\leq I_{tr}$	$\leq I_{tr}$	$\leq I_{tr}$
I_{tr}	$\leq 5\ A$	$\leq 0{,}1 \cdot I_{max}$	$\leq 25\ A$	$\leq 0{,}1 \cdot I_{max}$
I_{max}	$\leq 80\ A$	$> 80\ A$	$\leq 500\ A$	$> 500\ A$

The voltage, frequency and power factor ranges within which the measuring system for EVSE shall satisfy the MPE requirements are specified in Table 2.

For AC measuring systems, the following shall apply:

– the voltage range shall be: $0{,}9 \cdot U_n \leq U \leq 1{,}1 \cdot U_n$;

– the frequency range shall be: $0{,}98 \cdot f_n \leq f \leq 1{,}02 \cdot f_n$;

– the power factor range shall be: $PF \geq 0{,}9$;

– the measuring system for EVSE shall operate correctly when the supply voltage distortion is less than 10 % and the load current distortion is less than 3 % at all harmonics indices;

– the MMQ range shall be: $MMQ \leq 0{,}1\ kWh$.

For DC measuring systems, the following shall apply:

– the voltage range shall be between the lowest and the highest output voltage;

– while the measuring system for EVSE shall only measure energy having frequencies up to 2 kHz, the ripple produced on the output of the measuring system for EVSE shall not exceed:

  – 1,5 A below 10 Hz, 6 A below 5 kHz, and 9 A below 150 kHz at maximum rated power and maximum rated current or where the output voltage and current correspond to the maximum current ripple for current; and

  – ±5 V in normal operation for voltage, while the measuring system for EVSE shall only measure energy having frequencies up to 2 kHz;

– the MMQ range shall be: $MMQ \leq 1\ kWh$.

3. Base MPEs (BMPEs)

When the measuring system for EVSE is operating under rated operating conditions, the percentage errors shall not exceed the limits given in Table 2 for the specified class index.

Table 2

	BMPEs in percent at rated operating conditions

		and defined load current levels		
Current	**Power factor**	**A (2 %)**	**B (1 %)**	**C (0,5 %)**
$I_{st} \leq I < I_{min}$	*> 0,9*	*± 25*	*± 15*	*± 10*
$I_{min} \leq I < I_{tr}$	*> 0,9*	*± 2,5*	*± 1,5*	*± 1*
$I_{tr} \leq I < I_{max}$	*> 0,9*	*± 2*	*± 1*	*± 0,5*

The measuring system for EVSE shall not exploit the BMPEs or systematically favour any party.

4. Operating requirements

A measuring system for EVSE that applies corrections to compensate for energy loss introduced by parts comprising a cable and connector mounted between the position at which the energy is measured and the transfer point shall do either of the following:

(a) ensure that those parts are not replaceable and that they are secured by an appropriate hardware seal;

(b) if those parts are intended to be replaceable while the measuring system for EVSE is under seal, ensure, that they are:

- identified in the type approval certificate as replaceable;
- marked with information about the cable characteristics and/or that they bear a unique identification;
- sealed separately with an installer seal.

5. Permissible effects

5.1. *General*

Measuring system for EVSE shall be designed and manufactured in such a way that when exposed to disturbances critical faults do not occur.

When there is a foreseeable high risk due to lightning or where overhead supply networks are predominant, the metrological characteristics of the measuring system for EVSE shall be protected.

5.2. *Effect of disturbance*

In case of disturbances, the legally relevant data shall be correct or the shift in the accuracy measurements shall not exceed 1,0 BMPE even if the measuring system for EVSE appears to function correctly. Ceasing to function is not a critical fault. If a disturbance interrupts a transaction, either of the following shall apply:

(a) the transaction is cancelled;

(b) the transaction is completed correctly when the disturbance is removed.

5.3. *Effect of influence quantities*

When the load current is held constant at a point within the rated operating range with the measuring system for EVSE otherwise operated at reference conditions, and when any single influence quantity is varied from its value at reference conditions to its extreme values defined in Tables 3 and 4, the variation of error shall be such that the additional percentage error is not outside the values for error shift specified in Table 4. The measuring system for EVSE shall continue to function after the completion of each of those tests.

Table 3

Influence quantity	**Current**	**Limits for temperature coefficient (%/K) for EVSE of class**			**Type of Current**
		A (2 %)	**B (1 %)**	**C (0,5 %)**	
Temperature coefficient, c, over any interval of the temperature range, which is not less than 15 K and not greater than 23 K (i)	$I_{tr} \leq I \leq I_{max}$	±0,1	±0,05	±0,03	AC and DC

Table 4

Influence quantity	**Value**	**Current**	**Maximum permissible error shift (%) for measuring system for EVSE of class**			**Type of Current**
			A (2 %)	**B (1 %)**	**C (0,5 %)**	
Self-heating	Continuous current at I_{max}	I_{max}	±1	±0,5	±0,25	AC and DC
Conducted disturbances, low frequency	2 kHz – 150 kHz	$I_{tr} \leq I \leq I_{max}$	±3	±2	±2	AC and DC
Continuous (DC) magnetic induction of external origin	200 mT at 30 mm from magnetic core surface	$I_{tr} \leq I \leq I_{max}$	±3	±1,5	±0,75	AC and DC
Magnetic field (AC, power frequency) of external origin (ii)	400 A/m	$I_{tr} \leq I \leq I_{max}$	±2,5	±1,3	±0,5	AC and DC
Radiated, RF, electromagn	f = 80 MHz – 6000 MHz	$I_{tr} \leq I \leq I_{max}$	±3	±2	±1	AC and DC

etic fields	, Field strength ≤ 10 V/m					
Conducted disturbances, induced by radio frequency fields (ii)	f = 0,15 MHz – 80 MHz, Amplitude ≤ 10 V	$I_{tr} \leq I \leq I_{max}$	±3	±2	±1	AC and DC
Operation of ancillary devices	Ancillary devices operated with $I = I_{tr}$ and I_{max}	$I_{tr} \leq I \leq I_{max}$	±0,7	±0,3	±0,15	AC and DC
Voltage variation (ii)	$0,9 \times U_n$ to $1,1 \times$ highest U_n	$I_{tr} \leq I \leq I_{max}$	±1	±0,7	±0,2	AC
Frequency variation of mains (ii)	Each f_n ± 2 %	$I_{tr} \leq I \leq I_{max}$	±0,8	±0,5	±0,2	AC
Harmonics in voltage and current circuits (ii)	d < 5 % I d < 10 % U	$I_{tr} \leq I \leq I_{max}$	±1	±0,6	±0,3	AC
Reversed phase sequence (AC 3-phase only) (ii)	Any two phases interchanged	$I_{tr} \leq I \leq I_{max}$	±1,5	±1,5	±0,1	AC

Table notes:

(i) In case of a measuring system for EVSE with a separately type approved meter, the temperature test can be limited to a check of correct functioning at the extreme temperatures foreseen in the measuring system for EVSE enclosure.

(ii) Not required for measuring for EVSE system with a separately type approved meter if the type approval specifications meet or exceed those of the accuracy class specified by the manufacturer.

6. Units

The electrical energy measured shall be displayed in kilowatt-hours or in megawatt-hours.

7. The Member State shall ensure that the intended use determines the foreseen and foreseeable practical working conditions, namely the rated operating conditions, so that the measuring system for EVSE is suitable for its use.

CONFORMITY ASSESSMENT

The conformity assessment procedures referred to in Article 17 that the manufacturer can choose between are:

B + F or B + D or H1.’.

ANNEX V

Annex VI to Directive 2014/32/EU is amended as follows:

(1) the part '**DEFINITIONS**' is amended as follows:

(a) the first paragraph is replaced by the following:

'A thermal energy meter is an instrument designed to measure the energy which in a heat-exchange circuit is absorbed (cooling) and/or given up (heating) by a liquid called the thermal energy-conveying liquid.';

(b) in the table, the fourth row is replaced by the following:

'$\Delta\theta$	=	the temperature difference θ_{in} - θ_{out} with $\Delta\theta > 0$ for heating and $\Delta\theta < 0$ for cooling';

(2) point 1.1. is replaced by the following:

'1.1. For the temperature of the liquid: θ_{max}, θ_{min},

— for the temperature differences: $\Delta\theta_{max}$, $\Delta\theta_{min}$, subject to the following restrictions:

$\Delta\theta_{max} / \Delta\theta_{min} \geq 10$ with the exception of cooling applications;

$\Delta\theta_{min}$ is a whole number in the range of 1 K and 10 K';

(3) point 1.3. is replaced by the following:

'1.3. For the flow rates of the liquid: q_s, q_p, q_i, where the values of q_p and q_i are subject to the following restriction: $q_p / p_i \geq 5$'.

ANNEX VI

‘ANNEX VIIa

MEASURING SYSTEMS FOR COMPRESSED GAS DISPENSERS (MI-005a)

The relevant requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this Annex apply to measuring systems intended for the continuous and dynamic measurement of quantities (mass or energy) of compressed gas.

However, by way of derogation from Annex I, such measuring systems shall not be considered as utility measuring instruments.

DEFINITIONS

Meter	An instrument designed to measure continuously, memorise and display the quantity at metering conditions of gas flowing through the measurement transducer in a closed, fully charged conduit.
Calculator	A part of a meter that receives the output signals from the measurement transducers and possibly, from associated measuring instruments and displays the measurement results.
Associated measuring instrument	An instrument connected to the calculator for measuring certain quantities, which are characteristic of the gas, with a view to make a correction and/or conversion.
Conversion device	A part of the calculator, which by taking into account the characteristics of the gas, automatically converts the mass of the gas into the amount of energy delivered or received.
Measuring system	A system that comprises, in addition to the meter itself, a transfer point, gas piping and all devices required to ensure correct measurement or intended to facilitate the measuring operations.
Compressed gas (‘CG’) dispenser	A measuring system intended for the fuelling of road vehicles, rail engines, boats, vessels and aircraft with compressed gaseous fuel.
Transfer point	Physical location at which the gas is defined as being delivered or received.
Self-service arrangement	An arrangement that allows customers to use a measuring system for the purpose of obtaining gas for their own use.
Self-service device	A specific device that is part of a self-service arrangement and which allows one or more measuring systems to perform in that self-service arrangement.
Minimum measured quantity (‘MMQ’)	The smallest quantity of gas for which the measurement is metrologically acceptable for the measuring system.
Direct indication	The indication of mass or energy, corresponding to the measure and that the meter is physically capable of measuring.

	Note: The direct indication may be converted into another quantity using a conversion device.
Interruptible	A measuring system is considered as interruptible when the gas flow can be stopped easily and rapidly.
Non-interruptible	A measuring system is considered as non-interruptible when the gas flow cannot be stopped easily and rapidly.
Flowrate range	The range between the minimum flowrate (Q_{min}) and maximum flowrate (Q_{max}).

SPECIFIC REQUIREMENTS

1. Rated operating conditions

The manufacturer shall specify the rated operating conditions for the instrument, in particular:

1.1. The flowrate range

The flowrate range is subject to the following conditions:

(a) the flowrate range of a measuring system shall be within the flowrate range of each of its elements, in particular the meter**;**

(b) for CG dispensers, the ratio between the minimum and maximum flow rate shall be no less than 10.

1.2. The properties of the gas to be measured by the instrument by specifying the name, the type or the following relevant characteristics of that gas such as:

(a) temperature range;

(b) pressure range;

(c) heating value of the gas;

(d) the nature and characteristics of the gas to be measured.

1.3. The nominal value of the AC voltage supply and/or limits of the DC voltage supply.

2. Accuracy classification and MPEs

2.1. The MPE on the indication of measured or converted amounts transferred at the transfer point is set out in Table 1.

Table 1

Type of compressed gas measuring systems	Accuracy Class (MPE [% of measured value])
Compressed hydrogen measuring systems	2
Other compressed gas measuring systems	1,5

The MPE on the MMQ equals twice the value stated in Table 1.

2.2. The MMQ of a measuring system shall have the form 1 × 10n, 2 × 10n, or 5 × 10n authorised units of mass or energy, where n is a positive or negative whole number, or zero.

The MMQ shall satisfy the conditions of use of the measuring system; except in exceptional cases, the measuring system shall not be used for measuring quantities less than that MMQ.

2.3. The measuring system shall not exploit the MPEs or systematically favour any party.

3. Maximum permissible effect of disturbances

3.1. The effect of an electromagnetic disturbance on a measuring system shall be one of the following:

(a) the change in the measurement result is not greater than the critical change value pursuant to point 3.2;

(b) the indication of the measurement result shows a momentary variation that cannot be interpreted, memorised or transmitted as a measurement result; furthermore, in the case of an interruptible system, that can also mean the impossibility to perform any measurement;

(c) the change in the measurement result is greater than the critical change value pursuant to point 3.2, in which case the measuring system shall permit the retrieval of the measurement result just before the critical change value occurred and cut off the flow.

3.2. The critical change value is the greater of the following values:

— one tenth of the MPE;

— three times the MMQ divided by 100; in the case of a failure of the main power source, the critical change value shall be increased by 5 % of the MMQ.

4. Durability

For systems fitted with meters with moving parts, after an appropriate test, taking into account the period of time estimated by the manufacturer, has been performed, the following criterion shall be satisfied:

The variation of the measurement result after the durability test, when compared with the initial measurement result, shall not exceed two fifths of the MPE.

5. Suitability

5.1. For any measured quantity relating to the same measurement, the indications and, if applicable, printouts provided by various devices shall have the same scale interval and the results shall not deviate one from another.

The scale interval of a CG measuring system shall not exceed one and a half times the MMQ divided by 100.

5.2. It shall not be possible to divert the measured quantity in normal conditions of use unless it is readily apparent.

5.3. During the warm-up time of the CG measuring system, no measurements shall take place.

5.4. ***Instruments for direct sales***

5.4.1. A measuring system for direct sales shall be provided with means for resetting the display to zero.

It shall not be possible to divert measured gas downstream of the meter during a filling operation.

5.4.2. The display of the quantity on which the transaction is based shall be permanent until all parties in the transaction have accepted the measurement result.

5.4.3. Measuring systems for direct sales shall be interruptible.

5.4.4. Measuring systems for direct sales shall display either in units of mass or energy.

5.5. ***CG Dispensers***

5.5.1. It shall not be possible to reset displays on CG dispensers to zero during a measurement.

5.5.2. The start of a new measurement shall be inhibited until the display has been reset to zero.

5.5.3. Where a measuring system is fitted with a price display, the difference between the indicated price and the price calculated from the unit price and the indicated quantity shall not exceed the smallest currency unit. However, that difference need not be less than the smallest monetary value.

6. Power supply failure

A measuring system shall either be provided with an emergency power supply device that will safeguard all measuring functions during the failure of the main power supply device or be equipped with means to save and display the data present in order to permit the conclusion of the transaction in progress and with means to stop the flow of gas at the moment of failure of the main power supply device.

7. Units of measurement

The metered quantity shall be displayed in grams, kilograms, kilojoules, megajoules or kilowatt-hours.

CONFORMITY ASSESSMENT

The conformity assessment procedures referred to in Article 17 that the manufacturer can choose between are: B + F or B + D or H1 or G.’.