

COMMISSION IMPLEMENTING DECISION

of 19 December 2011

establishing harmonised efficiency reference values for separate production of electricity and heat in application of Directive 2004/8/EC of the European Parliament and of the Council and repealing Commission Decision 2007/74/EC*(notified under document C(2011) 9523)**(2011/877/EU)*

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC ⁽¹⁾, and in particular Article 4(2) thereof,

Whereas:

- (1) Pursuant to Directive 2004/8/EC the Commission established in Decision 2007/74/EC ⁽²⁾ harmonised efficiency reference values for separate production of electricity and heat, consisting of a matrix of values differentiated by relevant factors, including year of construction and types of fuel.
- (2) The Commission is to review the harmonised efficiency reference values for separate production of electricity and heat for the first time on 21 February 2011 and every four years thereafter, to take account of technological developments and changes in the distribution of energy sources.
- (3) The Commission has reviewed the harmonised efficiency reference values for separate production of electricity and heat, taking into account data from operational use under realistic conditions, provided by the Member States. Developments in the best available and economically justifiable technology which took place during the period 2006-2011 which was covered by the review, indicate that for the harmonised efficiency reference values for separate production of electricity, the distinction drawn in Decision 2007/74/EC relating to the year of construction of a cogeneration unit should not be maintained for plants that were constructed from 1 January 2006 onwards. However for cogeneration units built in 2005 or before the reference values should continue to be applied reflecting the year of construction, in order to take into account the

observed developments in the best available and economically justifiable technology. Furthermore, on the basis of recent experience and analysis, the review confirmed that correction factors relating to the climatic situation should continue to be applied. In addition, the correction factors for avoided grid losses should also continue to be applied as grid losses have not changed in recent years. Additionally, the correction factors for avoided grid losses should also apply to plants that use wood fuels and biogas.

- (4) The review has not produced evidence to indicate that the energy efficiency of boilers has changed in the period considered, and therefore the harmonised efficiency reference values for the separate production of heat should not relate to the year of construction. No correction factors relating to the climatic situation were required because the thermodynamics of generating heat from fuel do not depend significantly on the ambient temperature. In addition correction factors for heat grid losses are not required as heat is always used near the site of production.
- (5) Stable conditions for investment in cogeneration and continued investor confidence are needed. From this perspective, it is also appropriate to extend the current harmonised reference values for electricity and heat to the period 2012-2015.
- (6) Data from operational use under realistic conditions do not demonstrate a statistically significant improvement of the actual performance of state-of-the-art plants in the period under review. Therefore the reference values established for the period 2006-2011 in Decision 2007/74/EC should be maintained for the period 2012-2015.
- (7) The review confirmed the validity of the existing correction factors relating to the climatic situation and to avoided grid losses.
- (8) The use of a single set of reference values for the entire period and the waiving of correction factors for climatic differences and grid losses were also confirmed for heat generation.
- (9) Taking into consideration that the main aim of Directive 2004/8/EC is to promote cogeneration in order to save

⁽¹⁾ OJ L 52, 21.2.2004, p. 50.

⁽²⁾ OJ L 32, 6.2.2007, p. 183.

energy, an incentive for retrofitting older cogeneration units should be given in order to improve their energy efficiency. For these reasons the efficiency reference values for electricity applicable to a cogeneration unit should become higher from the 11th year after the year of its construction.

- (10) This approach is consistent with the requirement for the harmonised efficiency reference values to be based on the principles mentioned in Annex III, point (f) of Directive 2004/8/EC.
- (11) Revised harmonised efficiency reference values for separate production of electricity and heat should be established. Decision 2007/74/EC should, therefore, be repealed.
- (12) The measures provided for in this Decision are in accordance with the opinion of the Cogeneration Committee,

HAS ADOPTED THIS DECISION:

Article 1

Establishment of the harmonised efficiency reference values

The harmonised efficiency reference values for separate production of electricity and heat shall be as set out in Annex I and Annex II respectively.

Article 2

Application of the harmonised efficiency reference values

1. Member States shall apply the harmonised efficiency reference values set out in Annex I relating to the year of construction of a cogeneration unit. These harmonised efficiency reference values shall apply for 10 years from the year of construction of a cogeneration unit.
2. From the 11th year following the year of construction of a cogeneration unit, Member States shall apply the harmonised efficiency reference values which by virtue of paragraph 1 apply to a cogeneration unit of 10 years of age. These harmonised efficiency reference values shall apply for one year.
3. For the purpose of this Article the year of construction of a cogeneration unit shall mean the calendar year of the first electricity production.

Article 3

Correction factors for the harmonised efficiency reference values for separate production of electricity

1. Member States shall apply the correction factors set out in Annex III, point (a) in order to adapt the harmonised efficiency

reference values set out in Annex I to the average climatic situation in each Member State.

If on the territory of a Member State official meteorological data show differences in the annual ambient temperature of 5 °C or more, that Member State may, subject to notification to the Commission, use several climate zones for the purpose of the first subparagraph using the method set out in Annex III, point (b).

2. Member States shall apply the correction factors set out in Annex IV in order to adapt the harmonised efficiency reference values set out in Annex I to avoided grid losses.

3. Where Member States apply both the correction factors set out in Annex III, point (a) and those set out in Annex IV, they shall apply Annex III, point (a) before applying Annex IV.

Article 4

Retrofitting of a cogeneration unit

If an existing cogeneration unit is retrofitted and the investment cost for the retrofitting exceeds 50 % of the investment cost for a new comparable cogeneration unit, the calendar year of first electricity production of the retrofitted cogeneration unit shall be considered as its year of construction for the purpose of Article 2.

Article 5

Fuel mix

If the cogeneration unit is operated with more than one fuel the harmonised efficiency reference values for separate production shall be applied proportionally to the weighted mean of the energy input of the various fuels.

Article 6

Repeal

Decision 2007/74/EC shall be repealed.

Article 7

This Decision is addressed to the Member States.

Done at Brussels, 19 December 2011.

For the Commission

Günther OETTINGER

Member of the Commission

ANNEX I

Harmonised efficiency reference values for separate production of electricity (referred to in Article 1)

In the table below the harmonised efficiency reference values for separate production of electricity are based on net calorific value and standard ISO conditions (15 °C ambient temperature, 1,013 bar, 60 % relative humidity).

	Year of construction: Type of fuel	2001 and before	2002	2003	2004	2005	2006- 2011	2012- 2015
Solids	Hard coal/coke	42,7	43,1	43,5	43,8	44,0	44,2	44,2
	Lignite/lignite briquettes	40,3	40,7	41,1	41,4	41,6	41,8	41,8
	Peat/peat briquettes	38,1	38,4	38,6	38,8	38,9	39,0	39,0
	Wood fuels	30,4	31,1	31,7	32,2	32,6	33,0	33,0
	Agricultural biomass	23,1	23,5	24,0	24,4	24,7	25,0	25,0
	Biodegradable (municipal) waste	23,1	23,5	24,0	24,4	24,7	25,0	25,0
	Non-renewable (municipal and industrial) waste	23,1	23,5	24,0	24,4	24,7	25,0	25,0
	Oil shale	38,9	38,9	38,9	38,9	38,9	39,0	39,0
Liquids	Oil (gas oil + residual fuel oil), LPG	42,7	43,1	43,5	43,8	44,0	44,2	44,2
	Biofuels	42,7	43,1	43,5	43,8	44,0	44,2	44,2
	Biodegradable waste	23,1	23,5	24,0	24,4	24,7	25,0	25,0
	Non-renewable waste	23,1	23,5	24,0	24,4	24,7	25,0	25,0
Gaseous	Natural gas	51,7	51,9	52,1	52,3	52,4	52,5	52,5
	Refinery gas/hydrogen	42,7	43,1	43,5	43,8	44,0	44,2	44,2
	Biogas	40,1	40,6	41,0	41,4	41,7	42,0	42,0
	Coke oven gas, blast furnace gas, other waste gases, recovered waste heat	35	35	35	35	35	35	35

ANNEX II

Harmonised efficiency reference values for separate production of heat (referred to in Article 1)

In the table below the harmonised efficiency reference values for separate production of heat are based on net calorific value and standard ISO conditions (15 °C ambient temperature, 1,013 bar, 60 % relative humidity).

	Type of fuel	Steam/hot water	Direct use of exhaust gases (*)
Solids	Hard coal/coke	88	80
	Lignite/lignite briquettes	86	78
	Peat/peat briquettes	86	78
	Wood fuels	86	78
	Agricultural biomass	80	72
	Biodegradable (municipal) waste	80	72
	Non-renewable (municipal and industrial) waste	80	72
	Oil shale	86	78
Liquids	Oil (gas oil + residual fuel oil), LPG	89	81
	Bio-fuels	89	81
	Biodegradable waste	80	72
	Non-renewable waste	80	72
Gaseous	Natural gas	90	82
	Refinery gas/hydrogen	89	81
	Biogas	70	62
	Coke oven gas, blast furnace gas, other waste gases, recovered waste heat	80	72

(*) Values for direct heat should be used if the temperature is 250 °C or higher.

ANNEX III

Correction factors relating to the average climatic situation and method for establishing climate zones for the application of the harmonised efficiency reference values for separate production of electricity (referred to in Article 3(1))

(a) Correction factors relating to the average climatic situation

Ambient temperature correction is based on the difference between the annual average temperature in a Member State and standard ISO conditions (15 °C).

The correction will be as follows:

- (i) 0,1 %-point efficiency loss for every degree above 15 °C
- (ii) 0,1 %-point efficiency gain for every degree under 15 °C

Example:

When the average annual temperature in a Member State is 10 °C, the reference value of a cogeneration unit in that Member State has to be increased with 0,5 %-points.

(b) Method for establishing climate zones

The borders of each climate zone will be constituted by isotherms (in full degrees Celsius) of the annual average ambient temperature which differ at least 4 °C. The temperature difference between the average annual ambient temperatures applied in adjacent climate zones will be at least 4 °C.

Example:

In a Member State the average annual ambient temperature in place A is 12 °C and in place B it is 6 °C. The difference is more than 5 °C. The Member State has now the option to introduce two climate zones separated by the isotherm of 9 °C, thus constituting one climate zone between the isotherms of 9 °C and 13 °C with an average annual ambient temperature of 11 °C and another climate zone between the isotherms of 5 °C and 9 °C with an average annual ambient temperature of 7 °C.

ANNEX IV

Correction factors for avoided grid losses for the application of the harmonised efficiency reference values for separate production of electricity (referred to in Article 3(2))

Voltage	For electricity exported to the grid	For electricity consumed on-site
> 200 kV	1	0,985
100-200 kV	0,985	0,965
50-100 kV	0,965	0,945
0,4-50 kV	0,945	0,925
< 0,4 kV	0,925	0,860

Example:

A 100 kW_{el} cogeneration unit with a reciprocating engine driven with natural gas generates electricity of 380 V. Of this electricity 85 % is used for own consumption and 15 % is fed into the grid. The plant was constructed in 1999. The annual ambient temperature is 15 °C (so no climatic correction is necessary).

In accordance with Article 2 of this Decision for cogeneration units older than 10 years of age the reference values of units of 10 years of age should be applied. According to Annex I to this Decision for a natural gas cogeneration unit built in 1999, which has not been retrofitted, the harmonised efficiency reference value applicable in 2011 is the reference value for 2001, 51,7 %. After the grid loss correction the resulting efficiency reference value for the separate production of electricity in this cogeneration unit would be (based on the weighted mean of the factors in this Annex):

$$\text{Ref } E_{\eta} = 51,7 \% * (0,860 * 85 \% + 0,925 * 15 \%) = 45,0 \%$$