

# ACCESS CODE FOR TRANSMISSION

# **Attachment C.4:**

# **Operating Procedures**

Specific requirements at Interconnection—Connection
Points and Domestic Exit Points

Specific Requirements at all Interconnection Points and Domestic Exit Points are published on the Electronic Data Platform Fluxys Belgium's website and may be amended from time to time. Prior to an amendment of the Specific Requirements, the TSO shall consult the market parties on this amendment and such amendment shall be subject to CREG approval.

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1816. Operating Conditions and quality requirements at Zeebrugge LNG Terminal

# 1 - Operating Conditions and quality requirements at IZT and Zeebrugge

	Unit	Min.	Max.
Gross Calorific Value	kWh/m³ (n) (25°C, 0°C)	10.80	12.38
Wobbe Index	kWh/m3 (n) (25°C, 0°C)	13.82	15.05
Pressure <sup>(1)</sup>	barg	55	80
Temperature	°C	2	38
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint	°C at 69 barg		Minus 8 <sup>(2)</sup>
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3(n) (as S)		6

<sup>(1)</sup> Natural gas shall be made available in the entry direction at any pressure within this range as requested from time to time by Fluxys

(2) As long as the maximum water dewpoint applicable in the IUK system is -10°C at 69 barg, said value shall be applicable.

The Natural Gas delivered may not contain any other elements or impurities (such as, but not limited to methanol, condensates and gas odorants) to the extent that the Natural Gas delivered cannot be transported, stored or marketed in Belgium without incurring additional cost for quality adjustment.

The Natural Gas delivered may not contain any added odorants.

## 2 - Operating Conditions and quality requirements at ZPT

	Unit	Min.	Max.
Gross Calorific Value	kWh/m³ (n) (25°C, 0°C)	11.17	12.77
Wobbe Index	kWh/m3 (n) (25°C, 0°C)	14.17	15.47 <sup>(1)</sup>
Pressure <sup>(2)</sup>	barg	45	80
Temperature	°C	2	30(Oct-May) 32 (June- Sept)
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint	°C at 69 barg		Minus 10
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3(n) (as S)		6

<sup>(1)</sup> For redeliveries of Natural Gas at IZT/Zeebrugge, we refer to ACT - Attachment C1.

The Natural Gas delivered may not contain any other elements or impurities (such as, but not limited to methanol, condensates and gas odorants) to the extent that the Natural Gas delivered cannot be transported, stored or marketed in Belgium without incurring additional cost for quality adjustment.

The Natural Gas delivered may not contain any added odorants.

<sup>(2)</sup> Natural gas shall be made available at any pressure within this range as requested from time to time by Fluxys

#### 3 - Operating Conditions and quality requirements at Eynatten 1 (GasPool)

	Unit	Min.	Max.
Gross Calorific Value	kWh/m³ (n) (25°C, 0°C)	10.80	12.77
Wobbe Index	kWh/m3 (n) (25°C, 0°C)	13.82	15.47 <sup>(1)</sup>
Pressure <sup>(2)</sup>	barg	49 exit 55 entry	80
Temperature	°C	2	38
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint <sup>(3)</sup>	°C at 69 barg		Minus 8
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3(n) (as S)		6

<sup>(1)</sup> For redeliveries of Natural Gas at IZT/Zeebrugge, we refer to ACT – Attachment C1.

The Natural Gas delivered may not contain any other elements or impurities (such as, but not limited to methanol, condensates and gas odorants) to the extent that the Natural Gas delivered cannot be transported, stored or marketed in Belgium without incurring additional cost for quality adjustment.

The Natural Gas delivered may not contain any added odorants.

<sup>(2)</sup> Natural gas shall be made available in the entry direction at any pressure within this range as requested from time to time by Fluxys

<sup>(3)</sup> As long as the maximum water dewpoint applicable in the IUK system is -10°C at 69 barg, said value shall be applicable

## 4 - Operating Conditions and quality requirements at Eynatten 2 (NCG):

	Unit	Min.	Max.
Gross Calorific Value	kWh/m³ (n) (25°C, 0°C)	10.80	12.77
Wobbe Index	kWh/m3 (n) (25°C, 0°C)	13.82	15.47 <sup>(1)</sup>
Pressure <sup>(2)</sup>	barg	49 exit 55 entry	80
Temperature	°C	2	38
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint <sup>(3)</sup>	°C at 69 barg		Minus 8
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3(n) (as S)		6

<sup>(1)</sup> For redeliveries of Natural Gas at IZT/Zeebrugge, we refer to ACT - Attachment C1..

The Natural Gas delivered may not contain any other elements or impurities (such as, but not limited to methanol, condensates and gas odorants) to the extent that the Natural Gas delivered cannot be transported, stored or marketed in Belgium without incurring additional cost for quality adjustment.

The Natural Gas delivered may not contain any added odorants.

<sup>(2)</sup> Natural gas shall be made available in the entry direction at any pressure within this range as requested from time to time by Fluxys

<sup>(3)</sup> As long as the maximum water dewpoint applicable in the IUK system is -10°C at 69 barg, said value shall be applicable

#### **5** - Operating Conditions and quality requirements at Virtualys

	Unit	Min.	Max.
Gross Calorific Value	kWh/m3 (n) (25°C, 0°C)	10.80	12.77
Wobbe Index	kWh/m3 (n) (25°C, 0°C)	13.82	15.47 <sup>(1)</sup>
Temperature	°C	2	38
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint	°C at 69 barg		Minus 8
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3(n) (as S)		6

<sup>(1)</sup> For redeliveries of Natural Gas at IZT/Zeebrugge, we refer to ACT - Attachment C1.

The Natural Gas delivered may not contain any other elements or impurities (such as, but not limited to methanol, condensates and gas odorants) to the extent that the Natural Gas delivered cannot be transported, stored or marketed in Belgium without incurring additional cost for quality adjustment.

The Natural Gas delivered may not contain any added odorants.

#### 6 - Operating Conditions and quality requirements at GDLux

	Unit	Min.	Max.
Gross Calorific Value	kWh/m³ (n) (25°C, 0°C)	10.80	12.77
Wobbe Index	kWh/m3 (n) (25°C, 0°C)	13.82	15.47 <sup>(1)</sup>
Pressure	barg	27	66.2
Temperature	°C	2	38
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint	°C at 69 barg		Minus 10
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3(n) (as S)		6

<sup>(1)</sup> For redeliveries of Natural Gas at IZT/Zeebrugge, we refer to ACT - Attachment C1.

The Natural Gas delivered may not contain any other elements or impurities (such as, but not limited to methanol, condensates and gas odorants) to the extent that the Natural Gas delivered cannot be transported, stored or marketed in Belgium without incurring additional cost for quality adjustment.

The Natural Gas delivered may not contain any added odorants.

# 7 - Operating Conditions and quality requirements at s' Gravenvoeren

	Unit	Min.	Max.
Gross Calorific Value	kWh/m³ (n) (25°C, 0°C)	10.80	12.77
Wobbe Index	kWh/m3 (n) (25°C, 0°C)	13.82	15.47 <sup>(1)</sup>
Pressure	barg	49	66.2
Temperature	°C	2	38
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint	°C at 69 barg		Minus 8
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3(n) (as S)		6

<sup>(1)</sup> For redeliveries of Natural Gas at IZT/Zeebrugge, we refer to ACT - Attachment C1.

The Natural Gas delivered may not contain any other elements or impurities (such as, but not limited to methanol, condensates and gas odorants) to the extent that the Natural Gas delivered cannot be transported, stored or marketed in Belgium without incurring additional cost for quality adjustment.

The Natural Gas delivered may not contain any added odorants.

#### 8 - Operating Conditions and quality requirements at Zelzate 1 (GTS)

	Unit	Min.	Max.
Gross Calorific Value	kWh/m³ (n) (25°C, 0°C)	10.80	12.77
Wobbe Index	kWh/m3 (n) (25°C, 0°C)	13.82	15.47 <sup>(1)</sup>
Pressure	barg	59	80
Temperature	°C	2	38
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint <sup>(2)</sup>	°C at 69 barg		Minus 8
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3 (n)		6

<sup>(1)</sup> For redeliveries of Natural Gas at IZT/Zeebrugge, we refer to ACT - Attachment C1.

(2) As long as the maximum water dewpoint applicable in the IUK system is -10°C at 69 barg, said value shall be applicable

The Natural Gas redelivered may not contain other elements and impurities (such as but not limited to methanol, condensates, gas odorants) to the extent that the Natural Gas redelivered cannot be transported, stored and marketed in Belgium without incurring additional cost for quality adjustment

The Natural Gas delivered may not contain any added odorants.

# 9 - Operating Conditions and quality requirements at Zelzate 2 (Zebra)

	Unit	Min.	Max.
Gross Calorific Value	kWh/m3 (n) (25C, 0°0)	10.80	12.77
Wobbe Index	kWh/m3 (n) (25C, 0°C)	13.82(1)	15.47 <sup>(2)</sup>
Pressure	barg	55	80
Temperature	С	2	38
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint	°C at 69 barg		Minus 8
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3 (n)		6

<sup>(1)</sup> As long as the minimum Wobbe Index value applicable in the Zebra system is 13.67 kWh/m³(n), said value shall be applicable

#### (2) For redeliveries of Natural Gas at IZT/Zeebrugge, we refer to ACT - Attachment C1.

The Natural Gas redelivered may not contain other elements and impurities (such as but not limited to methanol, condensates, gas odorants) to the extent that the Natural Gas redelivered cannot be transported, stored and marketed in Belgium without incurring additional cost for quality adjustment

The Natural Gas delivered may not contain any added odorants.

#### 10 - Operating Conditions and quality requirements at Zandvliet H

	Unit	Min.	Max.
Gross Calorific Value	kWh/m³ (n) (25°C, 0°C)	10.80	12.77
Wobbe Index	kWh/m3 (n) (25°C, 0°C)	13.82	15.47 <sup>(1)</sup>
Pressure	barg	55	80
Temperature	°C	2	38
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint	°C at 69 barg		Minus 8
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3 (n)		6

<sup>(1)</sup> For redeliveries of Natural Gas at IZT/Zeebrugge, we refer to ACT - Attachment C1.

The Natural Gas redelivered may not contain other elements and impurities (such as but not limited to methanol, condensates, gas odorants) to the extent that the Natural Gas redelivered cannot be transported, stored and marketed in Belgium without incurring additional cost for quality adjustment

The Natural Gas delivered may not contain any added odorants.

# 11 Operating Conditions and quality requirements at Hilvarenbeek L

	Unit	Min.	Max.
Gross Calorific Value	kWh/m³ (n) (25°C, 0°C)	9.53	10.74
Wobbe Index	kWh/m3 (n) (25°C, 0°C)	12.20(1)	13.02
Pressure	barg	49	66.2
Temperature	°C	2	38
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint	°C at 69 barg		Minus 8
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3 (n)		6

<sup>(1)</sup> This value will be lowered in agreement with the adjacent operator, subject to compliance with the range and values of the Belgian legislation as in effect at that time

The Natural Gas redelivered may not contain other elements and impurities (such as but not limited to methanol, condensates, gas odorants) to the extent that the Natural Gas redelivered cannot be transported, stored and marketed in Belgium without incurring additional cost for quality adjustment

The Natural Gas delivered may not contain any added odorants.

# 12 - Operating Conditions and quality requirements at Blaregnies L

	Unit	Min.	Max.
Gross Calorific Value	kWh/m³ (n) (25°C, 0°C)	9.53	10.74
Wobbe Index	kWh/m3 (n) (25°C, 0°C)	12.20(1)	13.02
Pressure	barg	49	66.2
Temperature	°C	2	38
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint	°C at 69 barg		Minus 8
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3 (n)		6

<sup>(1)</sup> This value will be lowered in agreement with adjacent operator, subject to compliance with the range and values of the Belgian legislation as in effect at that time

The Natural Gas redelivered may not contain other elements and impurities (such as but not limited to methanol, condensates, gas odorants) to the extent that the Natural Gas redelivered cannot be transported, stored and marketed in Belgium without incurring additional cost for quality adjustment

The Natural Gas delivered may not contain any added odorants.

#### 13 - Operating Conditions and quality requirements at Zeebrugge LNG Terminal

	Unit	Min.	Max.
Gross Calorific Value	kWh/m³ (n) (25°C, 010)	10.80	12.77
Wobbe Index	kWh/m3 (n) (25°C, 0°C)	13.67	15.56
Pressure	barg	55	80
Temperature	°C	2	38
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint	°C at 69 barg		Minus 8
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3(n) (as S)		6

The Natural Gas delivered may not contain any other elements or impurities (such as, but not limited to methanol, condensates and gas odorants) to the extent that the Natural Gas delivered cannot be transported, stored or marketed in Belgium without incurring additional cost for quality adjustment.

The Natural Gas delivered may not contain any added odorants.

## 14 Operating Conditions and quality requirements at Dunkirk LNG Terminal

	Unit	Min.	Max.
Gross Calorific Value	kWh/m³ (n) (25°C, 0°C)	11.17	12.77
Wobbe Index	kWh/m3 (n) (25°C, 0°C)	14.17	15.47 <sup>(1)</sup>
Pressure	barg	55	84.5
Temperature	°C	2	38
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint	°C at 69 barg		Minus 10
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3(n) (as S)		6

<sup>(1)</sup> For redeliveries of Natural Gas at IZT/Zeebrugge, we refer to ACT - Attachment C1.

The Natural Gas delivered may not contain any other elements or impurities (such as, but not limited to methanol, condensates and gas odorants) to the extent that the Natural Gas delivered cannot be transported, stored or marketed in Belgium without incurring additional cost for quality adjustment.

The Natural Gas delivered may not contain any added odorants.

#### 15 - Operating Conditions and quality requirements at Loenhout

	Unit	Min.	Max.
Gross Calorific Value	kWh/m³ (n) (25°C, 0°C)	10.80	12.77
Wobbe Index	kWh/m3 (n) (25°C, 0°C)	13.82	15.56 <sup>(1)</sup>
Pressure (2)	barg	60	80
Temperature	С	2	38
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint	°C at 69 barg		Minus 8
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.0(3)
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		5
Total sulphur at any time (as S)	mg/m3(n) (as S)		30
Mercaptans (as S)	mg/m3 (n)		6

<sup>(1)</sup> For redeliveries of Natural Gas at IZT/Zeebrugge, we refer to ACT - Attachment C1.

The Natural Gas redelivered may not contain other elements and impurities (such as but not limited to methanol, condensates, gas odorants) to the extent that the Natural Gas redelivered cannot be transported, stored and marketed in Belgium without incurring additional cost for quality adjustment

The Natural Gas delivered may not contain any added odorants.

<sup>(2)</sup> A lower minimum pressure can be agreed upon by Fluxys and the Storage Operator in line with the provisions of attachment D.2 of the Access Code for Storage.

<sup>(3)</sup> CO2 content of the Natural Gas injected must on average be lower than 1 Mole % over the Storage Season, as defined in the Access Code for Storage

#### 16 - Operating Conditions and quality requirements at Domestic Points for Injection

	<u>Unit</u>	Min.	Max.
Gross Calorific Value	<u>kWh/m³ (n) (25°C, 0°C)</u>	10.80(1)	12.77
Wobbe Index	<u>kWh/m3 (n) (25°C, 0°C)</u>	13.82	<u>15.47<sup>(2)</sup></u>
Hydrocarbon dewpoint	°C from 0 to 69 barg		Minus 2
Water dewpoint	°C at 69 barg		<u>Minus 8<sup>(3)</sup></u>
Oxygen content (O2)	ppm by vol		1000
Carbon dioxide content (CO2)	Mole %		2.5
Hydrogen sulphide content (H2S) (inclusive of COS) (as S)	mg/m3(n) (as S)		<u>5</u>
Total sulphur at any time (as S)	mg/m3(n) (as S)		<u>20</u>
Mercaptans (as S)	<u>mg/m3 (n)</u>		<u>6</u>

<sup>(1) 10.7</sup> kWh/m3(n) as long as the minimum Gross Calorific Value of 10.8 kWh/m3(n) can be respected on Interconnection Points

The Natural Gas redelivered may not contain other elements and impurities (such as but not limited to methanol, condensates, gas odorants) to the extent that the Natural Gas redelivered cannot be transported, stored and marketed in Belgium without incurring additional cost for quality adjustment

The Natural Gas delivered may not contain any added odorants.

<sup>(2) 15.05</sup> kWh/m3(n) if injected gas can be redelivered at IZT/Zeebrugge

<sup>(3)</sup> Minus 10 °C if injected gas can be redelivered at IZT/Zeebrugge