

## Technical Capacity of the IUK's Pipeline System

IUK's pipeline runs between Bacton in the UK and Zeebrugge in Belgium. The pipeline is physically bi-directional with compression facilities at the Interconnector Bacton Terminal (IBT) and compression facilities at the Interconnector Zeebrugge Terminal (IZT). IUK's pipeline is connected to the transmission system operated by National Grid Gas at Bacton and to the transmission system operated by Fluxys at Zeebrugge. This paper details the **technical capacity** of the relevant entry and exit points, being the maximum firm capacity that IUK can offer to shippers in accordance with Regulation (EC) No 715/2009<sup>1</sup>.

### 1. Technical Capacity of the Entry Point at Bacton

The technical capacity of the entry point at Bacton into IUK's pipeline from the National Grid Gas system is determined by the capacity of the compression facilities owned and operated by IUK at IBT.

The technical capacity of the compression facilities is a function of the following principal variables:

- Required pressure lift or compression ratio, i.e. the ratio of the inlet pressure to the pipeline pressure on the discharge of the compressors
- Available power from the compressors
- Gas inlet pressure from the National Grid Gas system
- Inlet gas temperature at the National Grid Gas system
- Ambient temperature
- Gas inlet composition

The main constraints to capacity at IBT are the station inlet pressure and gas temperature from National Grid Gas together with the ambient temperature.

The current maximum theoretical technical firm capacity at IBT for entry to IUK's pipeline has been assessed at **27,153,206 kWh/hour** based on the following assumptions:

- Station inlet pressure of 55 barg (Note, the contractual minimum inlet pressure from NG is 45 barg, and there is an agreement in place for the inlet pressure to be increased by National Grid Gas)
- Maximum ambient temperature of 17°C at which the design flow-rate can be achieved at minimum arrival pressure
- Maximum gas inlet temperature of 10°C
- 3 compressors operating in parallel mode
- GCV of 11.5 kWh/Nm<sup>3</sup>

### 2. Technical Capacity of the Exit Point at Zeebrugge

The technical capacity of the exit point at Zeebrugge from IUK's pipeline into the Fluxys system is determined by the following variables:

- Gas pressure in IUK's pipeline for exit into the Fluxys system
- Gas temperature for exit into the Fluxys system

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<sup>1</sup> Defined in Article 2(1)(18), see also requirement in Annex 1 paragraph 3.1.2 (m)

- Minimum entry pressure to the Fluxys system of 80 barg
- Availability of the heater trains

The current maximum theoretical technical firm capacity at IZT for exit from IUK's pipeline has been assessed at **27,153,206 kWh/hour** using an average GCV of 11.5 kWh/Nm<sup>3</sup>.

### 3. Technical Capacity of the Entry Point at Zeebrugge<sup>2</sup>

The technical capacity of the entry point at Zeebrugge into IUK's pipeline from the Fluxys system is determined by the capacity of the compression facilities owned and operated by IUK at IZT.

The technical capacity of the compression facilities is a function of the following principal variables:

- Required pressure lift or compression ratio, i.e. the ratio of the inlet pressure to the pipeline pressure on the discharge of the compressors
- Available power from the compressors
- Gas inlet pressure from the Fluxys system
- Inlet gas temperature at the Fluxys system
- Ambient temperature
- Gas inlet composition

The main constraints of capacity at IZT are the station inlet pressure and gas temperature from the Fluxys system together with the ambient temperature.

The current maximum theoretical technical firm capacity at IZT for entry to IUK's pipeline has been assessed at **33,476,006 kWh/hour** based on the following assumptions:

- Station inlet pressure of 55 barg
- Maximum ambient temperature of 25°C at which the design flow-rate can be achieved at minimum arrival pressure
- 3 compressors operating in parallel mode

GCV of 11.5 kWh/Nm<sup>3</sup>

### 4. Technical Capacity of the Exit Point at Bacton<sup>3</sup>

The technical capacity of exit point at Bacton from IUK's pipeline into the National Grid Gas system is determined by the following variables:

- Gas pressure in IUK's pipeline for exit into the National Grid Gas system
- Gas temperature for exit into National Grid Gas system
- Minimum entry pressure to the National Grid Gas system of 45 barg
- Availability of sufficient heater trains

The current maximum theoretical technical firm capacity at IBT for exit from IUK's pipeline has been assessed at **33,476,006 kWh/hour** using an average GCV of 11.5 kWh/Nm<sup>3</sup>.

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<sup>2,3</sup> In the period October to March IUK's default operating mode in the Belgium to Great Britain direction is improved reserve flow ("IRF") for efficiency purposes. IRF reduces energy consumption and thus commodity charges. However due to a transition time between IRF and non-IRF flow mode, the available technical capacity for within day ("WD") capacity is reduced to 23,433,204 kWh/hour at the Entry point at Zeebrugge and 23,433,204 kWh/hour at the Bacton Exit point. This reduction in technical capacity will not apply in case IUK has realised bookings exceeding 20-30% of its capacity by the day ahead stage (assessed at the closure of the Day Ahead auction).