

Technical Capacity of the INT's Pipeline System

INT'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). INT's pipeline is connected to the transmission system operated by National Grid Gas (NGG) at Bacton and to the transmission system operated by Fluxys Belgium at Zeebrugge. This paper details the **technical capacity** of the relevant entry and exit points, being the maximum firm capacity that INT can offer to shippers in accordance with Regulation (EC) No 715/2009¹.

1. Technical Capacity of the Entry Point at Bacton

The technical capacity of the entry point at Bacton into INT's pipeline from the NGG system is determined by the capacity of the compression facilities owned and operated by INT 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 NGG system
- Inlet gas temperature at the NGG system
- Ambient temperature
- Gas inlet composition

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

The current maximum theoretical technical firm capacity at IBT for entry to INT'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 NGG)
- 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/Nm³

2. Technical Capacity of the Exit Point at Zeebrugge

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

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

¹ 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 INT's pipeline has been assessed at **27,153,206 kWh/hour** using an average GCV of 11.5 kWh/Nm³.

3. Technical Capacity of the Entry Point at Zeebrugge²

The technical capacity of the entry point at Zeebrugge into INT's pipeline from the Fluxys system is determined by the capacity of the compression facilities owned and operated by INT 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 INT'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/Nm³

4. Technical Capacity of the Exit Point at Bacton³

The technical capacity of exit point at Bacton from INT's pipeline into the NGG system is determined by the following variables:

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

The current maximum theoretical technical firm capacity at IBT for exit from INT's pipeline has been assessed at **33,476,006 kWh/hour** using an average GCV of 11.5 kWh/Nm³.

^{2,3} In the period October to March INT'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 INT has realised bookings exceeding 20-30% of its capacity by the day ahead stage (assessed at the closure of the Day Ahead auction).