

# HATFIELD MOOR GAS STORAGE FACILITY: SITE INFORMATION

## Key facts:

- Commissioned in February 2000
- Located at Hatfield Moor near Doncaster
- Enough capacity to supply 250,000 homes
- Ability to store up to 4.1bn ff<sup>3</sup> of gas in a depleted underground gas reservoir



## An Introduction to Hatfield Moor Gas Storage Facility

Hatfield Moor Gas Storage Facility utilises a depleted gasfield located 1,450 feet below the Yorkshire countryside.

Operations to extract natural gas from the underground reservoir began in 1986 and as the field became depleted, an opportunity was identified to use it for gas storage.

The reservoir is a layer of porous sandstone that works like a solid sponge to 'soak up' the injected gas. That porous layer is sealed by solid rock which prevents the gas from dissipating, making the geology of the field ideally suited for purpose.

The facility consists of four separate areas – the Lindholme Compression Site, the Beltoft Gas Off-take, the Hatfield Moor Gaswell and a purpose-built pipe network – and enables ScottishPower to both manage swings in demand, and buy additional gas to store for peak periods.

This ability to control stocks of gas helps the company meet its obligations under the Network Code, which demands that gas suppliers must balance the amount of gas they put in and take out of the national transmission system on a daily basis.

In addition to supplying customers, some of the stored gas is also used to generate electricity at ScottishPower's gas-fired power stations in England.



*The facility's gas compression site at Lindholme*



*Lindholme is one of four separate areas within Hatfield Moor*

## Reducing our Environmental Impact

Hatfield Moor Gas Storage Facility operates subject to conditions contained in a permit issued and enforced by the Environment Agency (EA), and has operated a Biodiversity Action Plan (BAP) since 2006 to help improve conditions for wildlife.

The facility's key emissions to air are carbon monoxide (CO) and oxides of nitrogen (NO<sub>x</sub>) produced at Lindholme's gas turbine compressor package, both of which staff continually strive to reduce by ensuring optimum combustion performance.

A small quantity of Volatile Organic Compounds is released to air from Lindholme's glycol dehydration unit while natural gas may be vented via a flare at Hatfield Well.

The facility's Environmental Management System (EMS) is certified to the international standard ISO 14001 and drives improvements across areas such as the use of energy, raw materials and resources, and the management of waste. Additionally, staff actively recycle waste materials including wood, scrap metal, paper, electrical equipment, cans and plastics.

In recent years, the site has been working to reduce its resource use, achieving savings in townswater consumption, gas and electricity use and in the amount of diesel used. A water collection system has also been installed to drain rainwater from the roof at Lindholme into a fire pond, reducing the need for townswater. Solar tube lighting and LED street lighting have been installed to reduce electricity consumption.



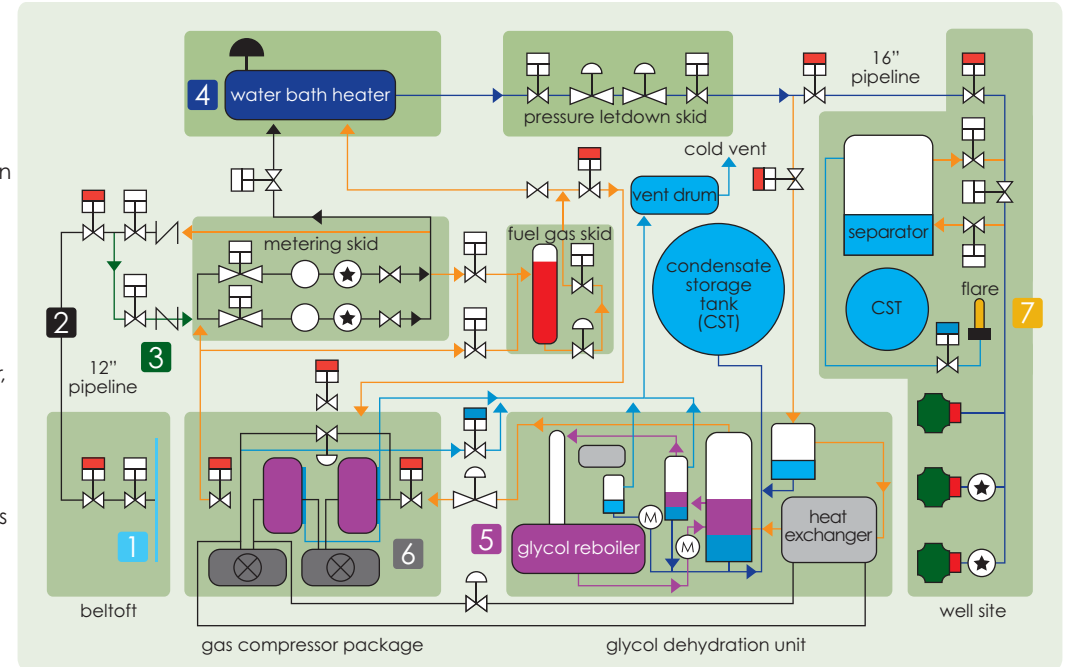
*The well site*

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## How it Works

The technique of using depleted gas fields for storage is widely employed overseas, in countries such as Germany and the USA, but Hatfield Moor was the first onshore UK facility of its kind. Gas storage is one of the most effective ways in which the swings between supply and demand can be matched. Gas goes into storage during low demand periods and out of storage when demand is high.

- 1 Natural gas from the National Transmission System (NTS) is imported at the Beltoft Gas Offtake in North Lincolnshire.
- 2 A purpose-built 15 kilometre pipeline starts at Beltoft and runs through the Lindholme Compression Site to connect with the depleted Hatfield Moors gasfield, which is a further 1.5 kilometres away.
- 3 Gas imported from Beltoft is compressed at Lindholme before being injected into the porous layers of sandstone for storage.
- 4 A gas-filled water bath heater pre-heats the incoming gas prior to its injection into the reservoir, which can store up to 4.1 billion cubic feet of gas at any one time.
- 5 A glycol dehydration plant removes any entrained liquid from the gas imported from the reservoir prior to its return to the NTS. The glycol dehydration plant includes a re-boiler that regenerates the glycol to be used in a continuous cycle.
- 6 Lindholme's gas turbine compressor increases the pressure of the gas to meet NTS requirements before it is exported via the pipeline.
- 7 A natural gas vent at Hatfield Moor Gaswell can safely vent natural gas, if required.



## Environmental Performance Highlights

A new gas turbine was installed and as such the engine provides increased efficiency and reduced emissions. Electrical usage on the dehydration package remains at a low level after improvements in previous years. Electrical load has been further reduced through newly install LED street lights and internal solar tube lighting within the stores area and a new air compressor unit providing better efficiency and reduced electrical load. The site continues to seek ways to reduce energy consumption, water usage, and the amounts of waste generated.

*Lindholme operated for 3,263 hours in 2010*

*An operator checks the well site*

