



Dutch go from swing production to storage

Demand for gas storage capacity in the Netherlands will increase over the next few years. This is because 60% of the huge Groningen field, which celebrates its 50th anniversary this year, has been depleted. Around the year 2020 Groningen will no longer be able to fulfil its role as a “swing producer”. New gas storage capacity is required to fill this gap.

| by Rik Komduur

Energy group Taqa is not letting the grass grow under its feet. The Abu Dhabi company is about to build new gas storage facilities at Bergermeer (BGS), near the Dutch North Sea coast and close to the spot where the Balgzand-Bacton gas pipeline (BBL) leaves the Netherlands. The facility is expected to be operational by 2012. It will have a planned working volume of over 4.1 billion cubic metres (bcm). This is almost equal to the total current Dutch storage capacity and one of the largest storage reservoirs in Europe.

With the BGS facility, Taqa is aiming to service the Dutch market and to supply the UK, Germany, Belgium and France, as well as the TTF, the Dutch gas trading hub. With its 36% share in the project, Taqa will run the Bergermeer storage facilities. Other shareholders are EBN (a Dutch state-owned company with a 40% share), Petro-Canada Netherlands BV (12%) and Dyas BV (12%). The gas storage facility has attracted plenty of interest from potential users. Gazprom has already signed a Memorandum of Understanding for joint development of BGS.

The large production capacity of the Groningen gas field (see box) has enabled the Netherlands to manage the seasonal fluctuations in consumption with just

three production storage facilities: Norg (with a working volume of 3 bcm), Grijpskerk (1.5 bcm) and the Alkmaar peak gas installation (0.5 bcm). Capacity of Grijpskerk and Norg, close to the Groningen field, is almost fully claimed by gas trader Gasterra, which uses them to balance demand against production from the Groningen field and smaller Dutch fields. The Alkmaar peak gas installation, owned by the same partners that own BGS, is used to adapt to very high gas

for virtually the entire Dutch market. Martinus expects the Groningen gas system (including an expected expansion of the Norg and Grijpskerk storage facilities) will be able to guarantee the flexibility Gasterra needs until approximately 2025. After that, additional storage capacity is needed.

Taqa is not the only company to anticipate this. The Nederlandse Aardolie Maatschappij (NAM), a joint venture

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demand during the coldest winter days in this densely populated part of the Netherlands. The Dutch utility companies Essent and Nuon each have additional gas storage facilities (in salt caverns) just over the German border. This brings the total Dutch storage capacity to just over 5 bcm, approximately 7% to 8% of domestic and foreign supply obligations.

That capacity will not suffice in the future, confirms Gerard Martinus, storage expert at Gasterra, the trading company which currently guarantees flexibility

between Shell and ExxonMobil, which is the operator of the Norg and Grijpskerk storage facilities, intends to increase its storage capacity drastically, sources in the Dutch gas industry confirm – to 10 bcm in Norg and 3 bcm in Grijpskerk. In addition, grid owner Gasunie, a state-owned company, is co-operating with Nuon to build a gas storage facility in a salt cavern in Zuidwending, near the Groningen field, with a capacity of 0.18 bcm, which may be increased at a later date to 0.54 bcm.

The latter project is unique in the Netherlands. Gas storage in depleted

50th anniversary of “Groningen”

50 years ago, in 1959, the NAM company, a joint-venture of Shell and Standard Oil of New Jersey (now ExxonMobil), hit upon a huge gas field near the town of Slochteren, in the province of Groningen, in the northern Netherlands. The Groningen field (or “Slochteren”, as it is also known) turned out to contain 2,800 billion m³ of gas – a huge amount, enough to supply the UK, the largest EU gas market, for 30 years at current consumption levels. Slochteren, which was all the more important because it was located in the heart of western Europe, laid the foundation for the European gas market of today. ‘The discovery of the Slochteren gas field in Groningen formed the basis for the development of the European gas market as we know it today’, Klaus Liesen, former chief executive of Eon Ruhrgas, recently remarked in a conversation with European Energy Review. ‘If Slochteren had not been there, the economic and political risks of importing gas from faraway sources, such as Russia, would have been considerably larger and the technical development of an integrated gas market in Germany and Western Europe much slower.’

For the Netherlands itself, the discovery was even more important. Gas income formed an important basis of the country’s subsequent wealth, netting the Dutch government some €100 billion over the years, some 2 to 4% of GDP. The country’s superb infrastructure owes a lot to the Groningen gas field.

On 16 and 17 June, many energy celebrities will converge on Groningen to celebrate the 50th anniversary of the gas discovery, including ExxonMobil’s ceo Rex Tillerson and Shell’s ceo Jeroen van der Veer. The event will include a conference in which the energy future of the world will be discussed. This question is particularly relevant to the Netherlands, as there is only some 1,100 bcm left of the original 2,800. Discoveries similar to Slochteren are not expected anymore. More information on www.groningengas50.nl

gas fields differs greatly from storage in salt caverns. Because of their geological characteristics, depleted gas fields have a long gas injection and withdrawal period, as the gas must migrate through porous rock layers. They do offer the possibility to store large amounts of gas, making them especially suitable for seasonal storage.

important part. ‘The results of a study we carried out several years ago showed that increased gas demand and decreased supply flexibility, would require the building of substantial storage capacity in Europe (approximately 2 to 3 bcm per year). It turns out, however, that the power sector will claim a substantial part of

and British markets. The UK is starting to become a net importer so that, at some point in time, gas must flow from the continent to the UK. Large gas producers already supplying the European continent will want to supply gas to the British market. However, the pipelines to be laid to the UK will not have maximum capacity; suppliers will require buffers in the vicinity of the pipelines to enable them to guarantee supply, especially because their own production centres may be quite far away.’

‘Our aim is to keep the inconvenience down to a minimum’

Salt caverns, on the other hand, can be compared with an empty bottle; gas can be pumped into and out of these caverns relatively quickly. They often have smaller capacity and are more suitable to facilitate peak demand. These storage caverns can be filled and emptied several times per year, which makes them useful in the event of price differences.

According to Martinus, it is difficult to say exactly how much additional storage capacity needs to be built in the Netherlands. Demand for storage will depend on what is built in neighbouring countries. The demand side also plays an

the increased gas demand. As the power sector is far less dependent on seasonal fluctuations than the consumer market, it is likely that less storage is needed than we expected earlier.’

Paul van Gelder, European director of Taqa, confirms that it is difficult to estimate how much more storage capacity will be required in the coming years. He does expect that the BGS will be able to accommodate a significant portion of storage demand in the Netherlands and surrounding countries. ‘We know that there will be a need for storage in the coming years. We primarily studied Dutch

A matter of concern for the Dutch government is that at present there is not sufficient storage capacity accessible to all market parties. Hence, although part of the BGS capacity will be contracted for the long term, a significant portion must remain available for third party access (TPA). Taqa is still negotiating the ratio between long term contracts and TPA with the various parties. It will be important for a party like Gazprom that they are able to get on board for the long term. The EU’s third Energy Liberalisation Package, adopted recently by the European Parliament, does not seem to require 100% TPA, Dutch gas experts say. Thus, there is room for the Dutch government to come up with a compromise solution that will satisfy all stakeholders. ■

Taqa’s “unique” gas storage project

The gas storage being built at Bergermeer near Alkmaar in the Dutch province of Noord-Holland, is not only a very large project but also one of a kind, according to Taqa’s European director Paul van Gelder. ‘Very innovative technology, unique for this kind of project, such as low-noise rigs and special drilling techniques, will be applied in the construction. In addition, we will lay the pipelines in such a way that it will cause as little inconvenience as possible to the population. We will be drilling and performing other activities for approximately two and a half years in a rather densely populated area and our aim is to keep the inconvenience down to a minimum.’ There is resistance to the project among the local population, though. People are especially concerned that the drilling of new wells could lead to earthquakes.

The unique features of the project do carry a price tag. Taqa has budgeted investment costs at €800 million. These costs can be divided into three major items. The first is the adaptation of the existing wells and the drilling of 14 new wells. The second and smallest item consists of laying pipelines between the wells and the gas treatment installation, along a length of 8 kilometres. The last and largest cost item is the gas treatment installation itself, where gas will be pressurised and adapted to grid quality. Not included in the €800 million are the costs of purchasing 4.3 bcm of cushion gas required to get the storage up and running. The BGS is an old, virtually depleted gas field. This means that cushion gas must first be injected to supply basic pressure. As long as the field is used for storage, this gas has no further value. The BGS lifespan is estimated at 30 to 40 years. The cushion gas has therefore no economic value at the time of injection. The required investment, says Taqa, will be around €2 billion. At current gas prices, costs would have considerably lower, but the negotiations were conducted when the price was higher. Van Gelder says that Taqa is trying to get parties to provide some of the cushion gas in exchange for a share in the storage volume (a swap agreement).