**Gas Storage Bergermeer – Compressor update** **February 2021**

With transparency at the forefront, TAQA has always informed the market of the causes of significant outages through notes published on its Gas Storage Bergermeer (GSB) website[1]. However, as a result of the recurring technical curtailments that are related to GSB's compressors, TAQA would like to inform the market in more detail in relation to these current challenges and the expected way forward.

This document will cover the following topics:

1. High-level overview of compressor functionality
2. Technical challenges explained
3. Planning
4. Potential impact on customers

## 1. Compressor functionality

GSB has six 12 MW electrically driven, magnetic bearing compressors.

For injection, compression is required at any time to allow gas injection into the reservoir. Depending on reservoir pressure (which can be anywhere between an average of 77-150 bar), national grid pressure (50-65 bar) and total customer nominations, TAQA can determine how many compressors are required to meet contractual commitments.

The GSB facility is designed with redundant compressor capacity such that the highest injection capacity demand into an empty reservoir can be met with three compressors and the highest injection capacity demand into a close to full reservoir can be met with five compressors. This allows the facility to always have flexible maintenance on at least one compressor with the aim to increase long-term availability.

For withdrawal, compression is only required when reservoir pressure is relatively low. The initial part of withdrawal is performed via free flow, here the reservoir pressure is high enough to enter the grid without compression support. Once the reservoir pressure approaches approximately 40% fullness, and depending on customer nominations, compression is required to support withdrawal. On this side of the operation, there is also an implied redundancy in compression capacity; in the case of highest capacity demand, five compressors can meet maximum customer nominations.

For further explanation on the technical process, this Q&A from 2018 may be useful.

## 2. Technical challenges

Since early January 2021, GSB is reporting reduced technical availability on the withdrawal side caused by problems with the compressors.

As described above, of the six compressors, one compressor is as planned in routine maintenance.

In the autumn of 2020, a second compressor required unplanned long-term maintenance, due to failure of the transformer as part of electricity supply. This did not have any impact on the technical withdrawal availability at the time.

[1] www.gasstoragebergermeer.com/news-archive

Early January, while switching from withdrawal in free flow mode to withdrawal including compression, an electrical issue was observed on a motor of one of the running compressors. The stop of this compressor was affecting the technical availability, as four compressors were required for the withdrawal operating mode at that point in time.

End of January, a fourth compressor was taken out of operation, also in relation to an electrical issue on the motor. This issue impacted the withdrawal availability even more, as only two compressors were left in operation.

The causes of the issues described above are being investigated and require a full analysis and diagnose in close cooperation with the manufacturer and suppliers.

Motor issues are possibly linked to the relatively high concentrations of liquids in the gas, impacting the gas-cooled electrical motors of the compressors. We have not seen these issues since winter 17/18 as we did not require to produce with compression capacity as the nominations were lower last two winters. Currently, we do need compression capacity and thus are now facing the wetter gas issues in the gas-cooled electrical motors.

After winter 17/18, various changes were implemented to the compressor motors. As described, this winter is the first opportunity to fully test these changes with the wetter gas. In our current investigation the modifications from three years ago will also be fully evaluated.

## 3. Planning

At the time of publication of this newsletter, two compressors are fully operating.

The high-level planning with regards to the other four compressors is that:

- A third compressor is expected to come online in June.
    - This compressor will be online once a new transformer has been installed.
- The fourth compressor is expected to come online in June as well.
    - This is the compressor that is currently undergoing routine maintenance.
- Return of the two compressors with motor issues is still uncertain and will depend on the outcome of the ongoing investigations.

TAQA is continuously pursuing an acceleration of these timelines with the aim to return to increased capacity soonest.

## 4. Potential impact on customers

GSB continues to publish *technical* unavailability as per REMIT obligations at https://agsi.gie.eu/#/unavailability.

Technical unavailability does not necessarily equate to contractual availability. In other words, during a technical unavailability, as published on the AGSI+ website; GSB can opt to either keep customers whole or (partly) curtail contractually.

Customers should check their *contractual* rights via myGSB