

Technical Specifications

Article 1 Scope

- (1.1) The Technical Specifications contain provisions which supplement the GTCSS. Terms written in capital letters shall have the same meaning as defined in § 1 of the GTCSS.
- (1.2) These Technical Specifications reflect the current technical status. Should there be an adjustment to the applicable mining law permit(s) or in case of technical requirements as referred to in § 26 GTCSS, EGD reserves the right to amend these Technical Specifications in accordance with the GTCSS. Such amendments will not automatically result in an increase or a decrease of the Fees.

For the avoidance of doubt, §§ 25, 26 and 27 of the GTCSS remain unaffected.

Article 2 Technical Data

- Storage type: cavern storage
- Storage area: Friedeburg-Etzel, Lower-Saxony, Germany
- Storage Facility location: Bitzenlander Weg 10, 26446 Friedeburg, Germany
- Number of caverns: 2
- Available total working
gas capacity: 2,270 GWh
- Gas type: H-Gas

Article 3 Storage Connection

- (3.1) At the date of these GTCSS, the Storage Facility is connected to the following gas transmission grids:

Take Over Points / Return Points	Network Operator	Market Area
OUDE STATENZIJL (ETZEL-CRYSTAL-H)	Gasunie Transport Services B.V. ("GTS")	TTF (Netherlands)
ETZEL (SPEICHER CRYSTAL), BITZENLANDER WEG 10*	Open Grid Europe GmbH ("OGE")	Net Connect Germany
ETZEL CRYSTAL*	Open Grid Europe GmbH ("OGE")	Gaspool
UGS ETZEL CRYSTAL*	Gasunie Deutschland ("GUD")	Gaspool

* The usage of the Take Over and Return Points *Etzel (Speicher Crystal) Bitzenlander Weg 10, ETZEL CRYSTAL and UGS ETZEL CRYSTAL* can only take place on an interruptible basis.

- (3.2) EGD retains the right to add further Take Over Points and further Return Points to the Storage Facility and to amend this Annex I to the GTCSS accordingly. Such an amendment constitutes an amendment pursuant to § 27 GTCSS so that § 27 GTCSS applies.

Article 4 General Restrictions

- (4.1) The Storage Customer is obliged to use the Storage Capacities only pursuant to the provisions of the GTCSS including the Annexes, in particular only within the limits provided for in Articles 6, 7 and 8 of this Annex I [Operational, Withdrawal and Injection Restrictions]. If used outside these limits, EGD is entitled to
- a. request the Storage Customer to make the required Nominations;
 - b. reject nominations from such Storage Customer.
- (4.2) Nominations at the Take Over and Return Points *Etzel (Speicher Crystal), Bitzenlander Weg 10, ETZEL CRYSTAL* and UGS ETZEL CRYSTAL are always interruptible.

Article 5 Interruptible Storage Capacities

- (5.1) In case of Interruptible Storage Capacities, the interruptible Withdrawal and Injection Rates are calculated for each Storage Customer pro rata the Interruptible Storage Capacity booked by it.
- (5.2) The availability of Interruptible Storage Capacities depends on the particular physical storage use by the EGD Customers of the Storage Facility. Where possible, EGD shall give 12 hours prior notice of the interruption unless this is not possible for operational reasons. EGD will inform the Storage Customer without delay about the interruption as soon as possible after the beginning of the interruption. In the event of an interruption the Storage Customer shall immediately make a respective Re-nomination.
- (5.3) The maximum Injection Rate for Interruptible Storage Capacities on a day D is the positive difference between (i) the maximum Injection Rate for the aggregate of all EGD Customers' firm Storage Capacities (either bundled or unbundled) and (ii) the overall Injection Rate achievable for the day D, if any.
- (5.4) The maximum Withdrawal Rate for Interruptible Storage Capacities on a day D is the positive difference between (i) the maximum Withdrawal Rate for the aggregate of all EGD Customers' firm Storage Capacities (either bundled or unbundled) and (ii) the overall Withdrawal Rate achievable for the day D, if any.

Article 6 Operational Restrictions

- (6.1) Due to mining law requirements, which are set inter alia for purpose of technical safety of the Storage Facility, the storage operation is subject to certain operational constraints and a certain absolute minimum gas pressure must be maintained in each cavern and/or the Natural Gas may only fall below a certain pressure for a limited period

of time. As a result thereof, the Storage Customer shall comply with the following operational restrictions:

The Storage Customer shall throughout each 12 month period starting 1st October of each year maintain a minimum average fill level of 41% of the Storage Customer's Working Gas Capacity.

- (6.2) If the mining authorities (e.g. the LBEG) require the storage system operators in Etzel or EGD in particular to take certain measures with respect to the Storage Facility, for example in view of technical safety or in the interest of maintaining the long-term technical performance of the Storage Facility, which measures may cause constraints to the operation of the Storage Facility, EGD shall be entitled to impose a given mode of operation (mandatory mode of operation) on the Storage Customers. Such constraints can, for example, be a certain absolute minimum gas pressure which must be maintained in the cavern and/or the imposition that Gas may only fall below a certain pressure for a limited period of time.

If, against this background, restrictions in the mode of operation of the Storage Facility become necessary and EGD imposes a mandatory mode of operation, EGD will use best efforts to limit this to a minimum and continue to afford the Storage Customer the greatest possible flexibility under the given circumstances.

As soon as the relevant information comes to its knowledge, EGD will inform all Storage Customers about further possible restrictions and request them to make the necessary injections or withdrawals within a certain timeframe *pro rata* their contracted Working Gas Capacities.

- (6.3) If the Storage Customer does not comply with any of these operational restrictions referred to under (6.1) and (6.2), a rapid injection is necessary and/or, as the case may be, withdrawal is not possible. In this case EGD has the rights as provided for in Article 4 of this Annex I.
- (6.4) Further restrictions derive from geological processes leading to a decrease of the maximum available working gas capacity of each cavern and, accordingly, to a decrease of the Storage Customer's Working Gas Capacity Volume as is further specified in Article 7 below.

EGD shall notify the Storage Customer by how much its Working Gas Capacity is reduced pursuant to Article 7 of this Annex I and inform the Storage Customer about the new Working Gas Capacity and the quantity of Working Gas in excess of the new Working Gas Capacity, if any. The Storage Customer shall withdraw the excess quantities at the latest within a period of six weeks following the date it has received this information.

Article 7 Withdrawal Restrictions

For technical reasons, when withdrawing Working Gas, the Storage Customer must comply with the following withdrawal restrictions of the firm Withdrawal Rates, depending on the Working Gas stored by the Storage Customer:

- a) During each Hour in which Working Gas is higher than 98.25% of the firm Working Gas Capacity, the Storage Customer may use 50% of the firm maximum Withdrawal Rate contracted.
- b) During each Hour in which Working Gas is between 95.36% and 98.25% of the firm Working Gas Capacity, the Storage Customer may use 75% of the firm maximum Withdrawal Rate contracted.
- c) During each Hour in which Working Gas is between 50.85% and 95.36% of the firm Working Gas Capacity there are no withdrawal restrictions.
- d) During each Hour in which Working Gas is between 13.12% and 50.85% of the firm Working Gas Capacity, the Storage Customer may use 85.7% of the firm maximum Withdrawal Rate contracted.
- e) During each Hour in which Working Gas is between 7.19% and 13.12% of the firm Working Gas Capacity, the Storage Customer may use 57.1% of the firm maximum Withdrawal Rate contracted.
- f) During each Hour in which Working Gas is between 3.59% and 7.19% of the firm Working Gas Capacity, the Storage Customer may use 28.2% of the firm maximum Withdrawal Rate contracted.
- g) During each Hour in which Working Gas is between 0% and 3.59% of the firm Working Gas Capacity, the Storage Customer may use 9.4% of the firm maximum Withdrawal Rate contracted.

Beyond these restrictions, the Storage Customer may use the Storage Capacities technically made available and communicated by EGD within the Availability Report on an interruptible basis.

For the avoidance of doubt, withdrawal restrictions are not considered as Outages.

Article 8 Injection Restrictions

For technical reasons, when injecting Working Gas, the Storage Customer must comply with the following injection restrictions of the firm Injection Rates depending on the Working Gas stored by the Storage Customer:

- a) During each Hour in which Working Gas is between 0% and 3.59% of the firm Working Gas Capacity, the Storage Customer may use 16.4% of the firm maximum Injection Rate contracted.
- b) During each Hour in which Working Gas is between 3.59% and 7.19% of the firm Working Gas Capacity, the Storage Customer may use 49.3% of the firm maximum Injection Rate contracted.
- c) During each Hour in which Working Gas is between 7.19% and 71.24% of the firm Working Gas Capacity, there are no injection restrictions.

- d) During each Hour in which Working Gas is between 71.24% and 95.36% of the firm Working Gas Capacity, the Storage Customer may use 80% of the firm maximum Injection Rate contracted.
- e) During each Hour in which Working Gas is between 95.36% and 98.25% of the firm Working Gas Capacity, the Storage Customer may use 53.3% of the firm maximum Injection Rate contracted.
- f) During each Hour in which Working Gas is higher than 98.25% of the firm Working Gas Capacity, the Storage Customer may use 17.8% of the firm maximum Injection Rate contracted.

Beyond these restrictions, the Storage Customer may use the capacities technically made available and communicated by EGD within the Availability Report on an interruptible basis.

For the avoidance of doubt, injection restrictions are not considered as Outages.

Article 9 Revision of the Working Gas Capacity due to salt creep

- (9.1) Geological processes continually reduce the technically maximum available working gas capacity of a cavern by an annual percentage rate (convergence). The actual rate depends essentially on the mode of operation of the Storage Facility and so cannot be accurately predicted.
- (9.2) As a consequence, the loss of working gas capacity will affect the Storage Customer's Working Gas Capacity. This Working Gas Capacity will be revised downwards annually according to the following principles:
 - a. The revision of the Working Gas Capacity and the Storage Fee (i.e. the fixed component of the Fees, cf. Annex III Art. 2.a) is applied annually with effect from 1. April (6.00 hours), but with the first revision not to be made before the end of the first contract year.
 - b. The revision will reflect as accurately as possible the loss of Storage Customer's Working Gas Capacity in the storage year preceding the revision date. In this regard, EGD will determine the loss of the working gas capacity of each cavern each year by using mathematical models consistent with the business standard practices. These mathematical models will also take into account the results of the latest caverns' surveys of the Storage Facility which are conducted at regular intervals.
 - c. The so calculated loss of working gas capacity will be divided up amongst all EGD Customers as follows:
 - i. The total loss of working gas capacity will in the first instance be divided up amongst all those EGD Customers who have contracted interruptible unbundled storage capacities and will be pro rata their respectively

booked interruptible unbundled storage capacities. The respective Storage Fee payable by the respective EGD Customer will be revised downwards accordingly.

- ii. If the interruptible unbundled storage capacities do not cover the total losses of working gas capacity, the residual loss of working gas capacity will be divided up amongst all EGD Customers who have contracted firm unbundled storage capacities, if any, and will be pro rata their respectively booked firm unbundled storage capacities. The respective Storage Fee payable by the respective EGD Customer will be revised downwards accordingly.
- iii. If the interruptible unbundled storage capacities and the firm unbundled storage capacities do not cover the total losses of working gas capacity, the residual loss of working gas capacity will be divided up amongst all EGD Customers who have contracted firm bundled storage capacities, and will be pro rata their respectively booked firm bundled storage capacities. The portion of the respective Storage Fee that represents the Working Gas Capacity (34%) will be reduced commensurate with the reduction in the respective Working Gas Capacity.

Article 10 Conditions related to pool operations

The Storage Facility will be operated in pool with a total of four caverns. This will bring increased storage flexibility for the EGD Customers. However, the following rules shall apply:

- a. In case of temporary unavailability of one or more caverns of the Storage Facility (e.g. due to Outage), EGD shall notify the Storage Customer the temporary reduction of its Storage Capacities and the amount of Working Gas in store that is unavailable.
 - aa. Regarding the Storage Capacities, the Working Gas Capacity is reduced by the volume of working gas of the unavailable cavern(s), however only to the extent the unavailable cavern(s) is/are EGD caverns (and not third party caverns used for the pool operations). In this context “volume of working gas of the unavailable cavern” means the volume of working gas which the unavailable cavern would be capable to comprise/provide, had it not become unavailable. For the avoidance of doubt, there shall be no reduction of the Working Gas Capacity if the unavailable cavern(s) is/are not EGD caverns but third party caverns used for the pool operations.

If at the time an EGD cavern becomes temporarily unavailable there are two or more EGD-Customers, the Storage Customer’s Working Gas Capacity is reduced by the volume of working gas of the unavailable cavern(s) pro rata the working gas capacity booked by the EGD-Customers.
 - bb. Regarding the Storage Customer’s Working Gas in store, the temporary unavailability of caverns of the Storage Facility leads to an unavailability of parts of

the Storage Customer's Working Gas in store. The quantity of such unavailable Working Gas of the Storage Customer ("**WGu**") is to be determined according to the following formula:

$$WGu = WGta - WGsa$$

WGta means the Storage Customer's total Working Gas in store prior to the unavailability event

WGsa means the Storage Customer's Working Gas in store which is still available after the unavailability event

The **WGsa** is calculated as follows:

$$WGsa = (CWGsa * WGta) / CWGta$$

CWGsa means the sum of all Customers' working gas in store which is still available after the unavailability event

CWGta means the sum of all Customers' working gas in store prior to the unavailability event.

For the avoidance of doubt, the term "all Customers" herein-above also includes the Storage Customer.

- b. In case of temporary (full or partial) loss of Natural Gas, for instance due to the leakage of one or more of the four caverns used for the storage operations, the total loss of Natural Gas will be divided up amongst all Customers pro-rata their respective Working Gas in store at the time of the leakage.
- c. In case of long term (partially or fully) unavailability of one or more of EGD's caverns, for instance due to the leakage of one or more of the EGD caverns used for the storage operations, EGD shall notify the Storage Customer the reduction of its Storage Capacities and the amount of Working Gas in store which is then in excess, to be determined pro rata of its Working Gas in store. The Storage Customer shall withdraw such amount of gas at the latest within a period of six weeks after the restriction occurred.

Article 11 Start-up times and switching mode lead times

(11.1) When nominating gas quantities, allowance must be made for lead times for switching the operating mode of the Storage Facility (starting up the Storage Facility and changing from injection to withdrawal and vice versa); EGD will notify the Storage Customer these lead times as part of the nomination procedure (cf. Annex II).

(11.2) If EGD is able to change the operating mode quicker than the maximum times set out under (11.3) below, then EGD will not insist on the compliance with the lead times for start-up times and switching the operating mode.

(11.3) The lead times given in this paragraph are presently applicable, but will be updated in accordance with the results of the gas plant acceptance tests.

- a. Start-up time from 0 to injection: 30 minutes
- b. Start-up time from 0 to withdrawal: 30 minutes
- c. Change from injection to withdrawal: 120 minutes
- d. Change from withdrawal to injection: 120 minutes

Article 12 Minimum injection and withdrawal rate

For technical reasons, the minimum injection and withdrawal rates which are permitted are:

- a. Minimum injection rate:
 - 675 MWh/h during each Hour in which Working Gas is between 0% and 26,6% of the firm Working Gas Capacity;
 - 562,5 MWh/h during each Hour in which Working Gas is between 26,6% and 100% of the firm Working Gas Capacity.
- b. Minimum withdrawal rate:
 - 675 MWh/h during each Hour in which Working Gas is between 0% and 26,6% of the firm Working Gas Capacity;
 - 367 MWh/h during each Hour in which Working Gas is between 26,6% and 100% of the firm Working Gas Capacity.

Article 13 Gas used for operational purposes

With respect to the Withdrawn Quantities, a control tolerance of 0.05% applies. This is because due to operational reasons minor quantities of Natural Gas are consumed when Natural Gas is withdrawn from the Storage Facility, and physical or technical constraints may also lead to a consumption/loss of minor quantities of Natural Gas in the Storage Facility. Those quantities are measured and/or calculated and a status thereof is prepared on a monthly basis with an aggregate status as at the end of the Contract Term (*operational consumption*).

The Storage Customer is not entitled to request any compensation (neither in cash nor in kind) from EGD, where the operational consumption measured during a Storage Year does not exceed 0.05% of the Withdrawn Quantities during the respective Storage Year. In case the operational consumption measured during the Storage Year does exceed 0.05% of the Withdrawn Quantities during the respective Storage Year, EGD shall reimburse the Storage Customer the excess quantities on the basis of the Reference Price observed over the respective Storage Year:

The corresponding invoice shall be issued at the end of each Storage Year in the time period as provided in § 16 of the GTCSS.
