



**UFEOGI**

Ukrainian Industry  
Association Federation  
of Employers of the  
Oil and Gas Industry

Kyiv City  
Organization of  
Employers of the  
Oil and Gas  
industry

# 60 YEARS OF GAS STORAGE IN UKRAINE



**NAFTOGAZ**  
GROUP

**UKRTRANGAZ**

## FOREWORD



**Roman Maliutin**  
Acting Director  
General of Ukrtransgaz

### Dear friends!

Ukrtransgaz as part of the Naftogaz Group remains a reliable partner and a source of strategic prospects for both Europe and the world. It is strengthening its cooperation with Ukrainian and international energy market participants for the sake of common security and new opportunities.

While the issues of energy security and independence are particularly acute for continents and countries, Ukrainian underground gas storages (UGS), uniting representatives of gas production, transportation and distribution, are a guarantor of uninterrupted gas supply regardless of circumstances and geopolitical conditions.

Ukrtransgaz has been already cooperating with more than 1250 (1100 res.+ 150 non-res.) companies. And we invite other gas market participants to get engaged in the dialogue and collaboration. We are open to new partnerships and offer up to 10 bcm or 106 TWh of gas storage capacities. We also have a developed infrastructure close to the EU borders and some of the most favorable tariffs on the continent. All of these, combined with the professional team and decades of successful experience, modern technological equipment and a portfolio of services, meeting all custom-

ers' needs, make Ukrainian UGS an attractive business solution for gas market participants.

Despite the hostilities, Ukrtransgaz maintains the sustainability of its production processes and fulfills all obligations to its customers and business partners. Under any circumstances, our priority is the security of gas storage and supply. Therefore, we are working hard to protect our facilities and are ready to respond to any challenges that may arise. We are grateful to our customers for their trust and support they show us every day, first and foremost, by injecting their gas into Ukrainian UGS.

Ukrtransgaz will continue to meet the highest standards of performance that our partners have been already accustomed to. We are the 2nd storage system operator in Europe to successfully pass the certification and prove its right to carry out gas storage activities in accordance with the updated regulations in the European Union. We are open to new projects and invite all market participants to cooperate - Ukrainian UGS have a lot to offer.



## UKRTRANSGAZ TODAY

Ukrtransgaz operates the domestic UGS system. Working gas volume of all Ukrainian mainland UGS is 30.95 bcm and is the largest in Europe.

On January 1, 2020, the company started operating as an independent storage system operator after completion of one of the largest reforms in gas industry of Ukraine – separation of gas transmission activities.

Today, Ukrtransgaz is a fully legitimate member of the world gas market and an essential component of energy systems of both Ukraine and Europe. Customers from Europe, Asia and North America store their gas in Ukraine, and a list of companies and countries that use gas storage services in Ukraine is constantly growing.

Ukrtransgaz has a developed and reliable gas storage infrastructure, which we constantly improve. The Development Plan of Ukrainian Gas Storages for 2022-2031 envisages UAH 14.4 billion of investments in the modernization and improvement of functioning of the Ukrainian UGS. In addition, the company implements modern solutions, such as UGS geological and gas hydrodynamic 3D-models – all for the sake

of stability, continuity and maximum scientific validity of production processes at our facilities.

Much attention is also paid to improving the customer service system. Ukrtransgaz regularly expands a list of services and products aimed at creating more flexible and attractive conditions for our customers to generate an additional income. And this approach gives the result: despite full-scale hostilities on the territory of Ukraine, non-resident customers continue to store gas in Ukrainian UGS.

The Western Ukrainian cluster, which accounts for more than 80% of Ukraine's UGS working gas volume, is located near the borders with Poland, Hungary, Slovakia and Moldova. Lviv and Ivano-Frankivsk regions, where storages are located, are the most remote from hostilities and neighbor EU countries. This year, Ukraine is offering its European partners capacities of more than 10 bcm for storing gas in a customs warehouse regime with a subsequent possibility of re-export or customs clearance in Ukraine.

Ukrainian storages: 1<sup>st</sup> place in Europe and 3<sup>rd</sup> in the world in terms of working gas volume.



## CERTIFICATION

Ukrtransgaz is the 2nd storage system operator in Europe to successfully pass the certification and prove its right to carry out gas storage activities in accordance with the updated regulations in the European Union and the Energy Community.

Certification is another step towards strengthening the energy security of both Ukraine and the EU.

The mandatory certification procedure for storage system operators was introduced in the EU on July 1, 2022, to counteract Russia's use of UGS in Europe under its control to blackmail other countries, and to prevent a recurrence of cases when the volume of gas in storages was insufficient to properly cover an autumn and winter period.

Ukrtransgaz certification gives a right to engage Ukrainian UGS in implementation of energy security measures in Europe, as provided for by the EU Gas Supply Security Regulation, including storage of non-resident customers' reserves, as well as reserves for the countries that do not have their own gas storages or gas volumes jointly purchased by countries for crisis situations.

## OUR FIGURES

30.95  
bcm

working volume\*

29  
%

volume of Ukraine's UGS in total volume of Europe's UGS

1<sup>st</sup>  
place

by the UGS working gas volume in Europe

28.3  
bcm

a level of UGS filling at the end of the 2020 injection season was the highest in 10 years

10  
bcm

is the historical maximum of gas reserves created by non-resident companies in 2020



## TODAY THE SERVICES OF UKRTRANSGAZ ARE BEING USED BY\*

more than  
1 269  
customers

163  
non-residents

from  
32  
countries

on  
3  
continents

\*as of January, 2024

## PERFORMANCE

Ukrainian gas storages are the largest in Europe in terms of gas storage capacities. Accordingly, they are also the leaders in terms of gas injection and withdrawal rates per day. UGS performance directly depends on a GTS operation mode (pressures) and the UGS actual filling.<sup>62</sup>

### Performance

Filling	Withdrawal mcm/day	Injection mcm/day
100%	230	188
50%	170	203
30%	122	222
10%	60	213

Performance of Ukrainian UGS allows us to fully supply gas to domestic consumers as well as to fulfill orders of non-residents – even during a peak winter demand.

A procedure for providing services is determined by the Gas Storage Code. Customers who book a year ahead have the first priority, followed by those who book a month ahead, and finally go those who book a day ahead. In the latter category, a sequence of fulfillment is determined by the time of nomination.

<sup>62</sup> The maximum possible (rated) loading is 230 mcm per day for withdrawals and 188 mcm for injections.



## GAS QUALITY CONTROL

Ukrtransgaz thoroughly controls the quality of gas supplied from GTS to UGS as well as withdrawn in an opposite direction.

During gas withdrawals from UGS natural gas is comprehensively treated, including purification, removal of mechanical impurities and dehumidification to achieve the required humidity levels.

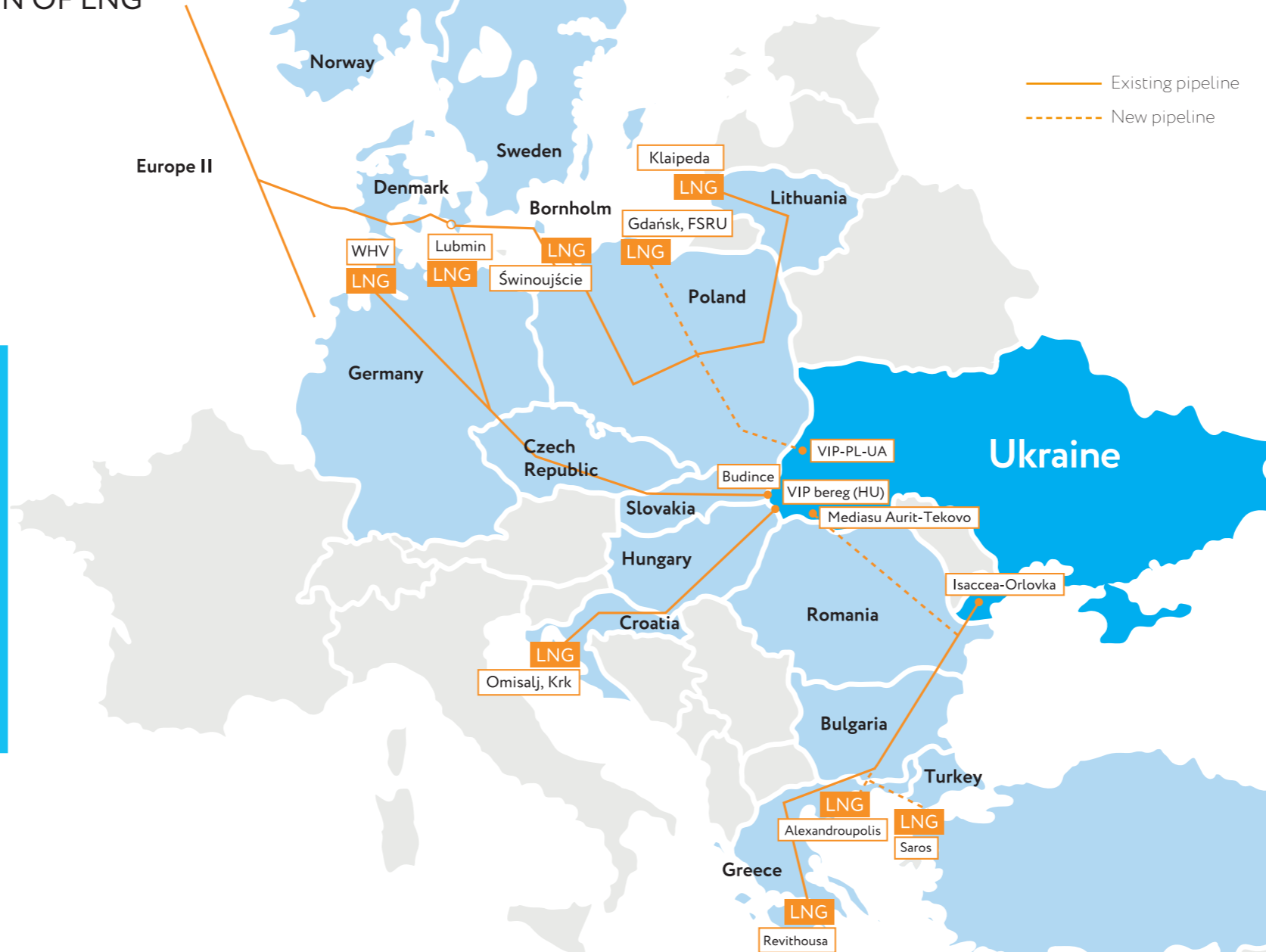
All gas quality control activities are carried out by our own chemical and analytical laboratories using the latest control systems. Ukrtransgaz laboratories have passed the conformity assessment according to DSTU ISO 10012:2005. Currently, the company is actively installing flow chromatographs and moisture meters that allow for continuous gas quality control and record in both metric and energy units. Such systems have already been installed at 4 UGS of Ukrtransgaz, installation is underway at 3, and another 4 are planned for next year.

Requirements for the quality of natural gas injected into and withdrawn from UGS are set forth in the Gas Storage Code of Ukraine.

### Standard physical and chemical parameters characterizing the quality of natural gas in Ukrainian UGS:

calorific value (higher)	10.06...10.64 kWh/m <sup>3</sup>
methane content	not less than 90%
nitrogen content	not more than 5%
carbon dioxide content	not more than 2% of the total volume
moisture dew point temperature	not higher than minus 8°C (when reduced to a pressure of 3.92 MPa)
hydrocarbon dew point temperature	not higher than 0°C at operating pressure

## ROUTES FOR TRANSPORTATION OF LNG FOR STORAGE IN UKRAINE



Close proximity to the EU borders is a strategic advantage of Ukrainian UGS.

It gives an opportunity to store LNG which was brought to Europe and transported through the GTS to Ukraine.



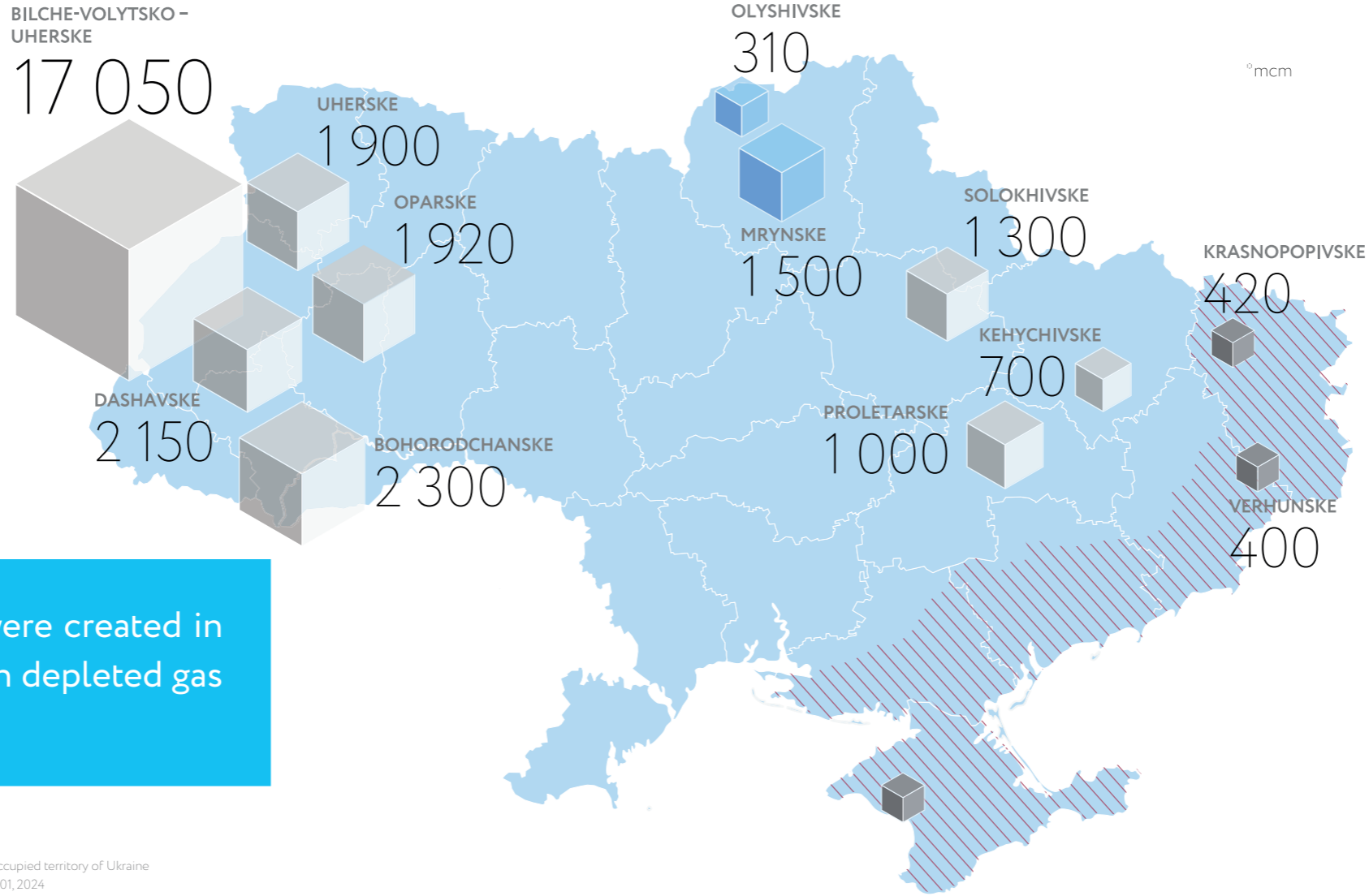
# UGS SYSTEM ON THE MAP OF UKRAINE

Ukrtransgaz operates 12 UGS with total working gas volume of 30.95 bcm.

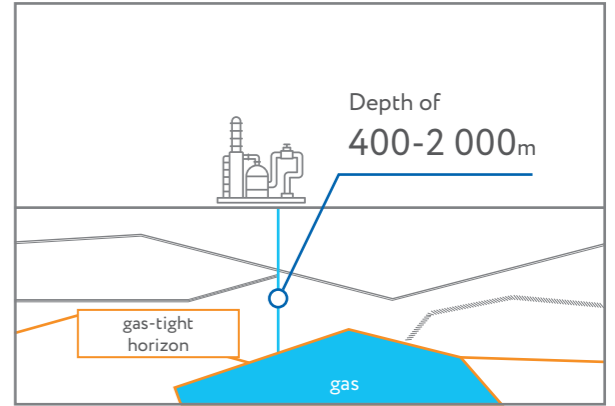
Most of UGS are created in depleted gas fields. 2 of them – Mrynske and Olyshivske (the oldest in Ukraine, founded in 1964) – are based in aquifers.

Bilche-Volytsko-Uherske UGS is the largest not only in Ukraine, but in the whole Europe and can hold more than 17 bcm.

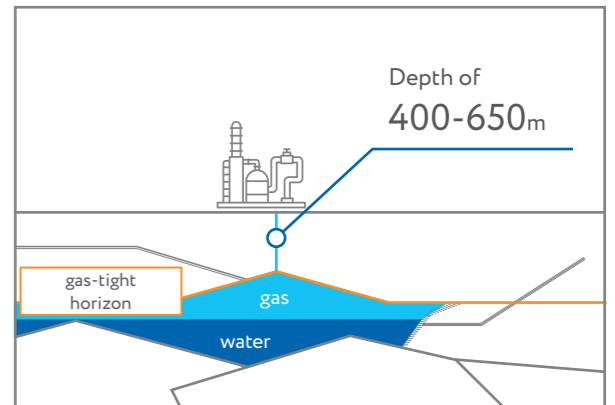
80% of the UGS are concentrated on the western border of Ukraine. Proximity to Europe and convenience of logistics make underground gas storage advantageous for both foreign traders and Ukrainian companies working with cross-border natural gas transmission and storage.



UGS CREATED IN DEPLETED GAS FIELDS



UGS CREATED IN AQUIFERS



2 Ukrainian storages were created in aquifers, the other 10 in depleted gas fields.

\* including Verhunske UGS in the temporarily occupied territory of Ukraine

temporarily occupied territory of Ukraine as of January 01, 2024

## 3D MODELS

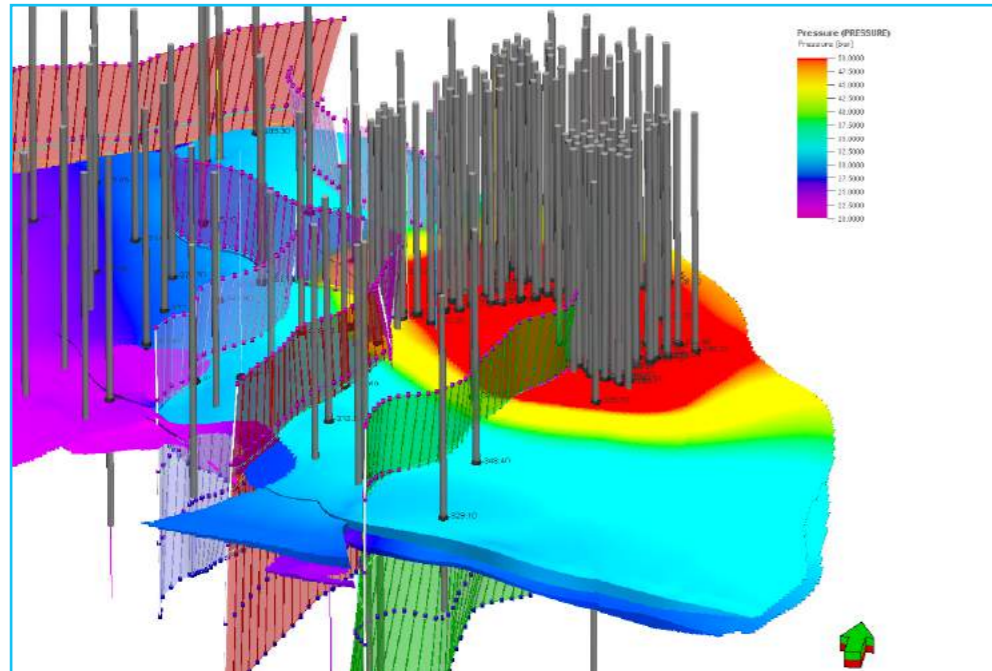
Ukrtransgaz uses the most advanced engineering approaches and methods in its work. These include the development of geological and gas hydrodynamic UGS 3D models.

3D models give our specialists a better understanding of the UGS geological structure and its visualization. Thus, we plan our work, choose the best solutions and strategies based on the sound geological data on location of gas in storage layers. We receive such data promptly,

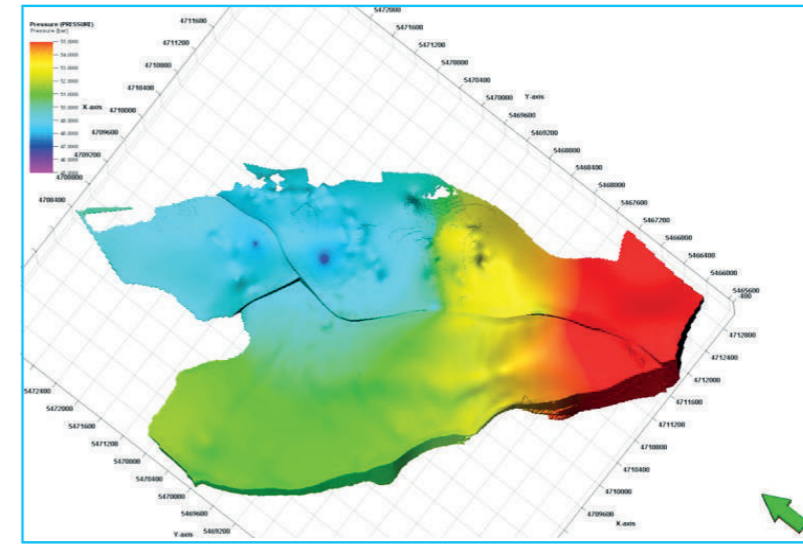
systematically and with necessary details, which makes the withdrawal and injection processes faster and more efficient, and management of a UGS network more flexible and effective.

Currently, Ukrtransgaz has already developed 3D structural models of 4 UGS and hydrodynamic models of 2. Work is underway to create analogous 3D visualizations for 3.

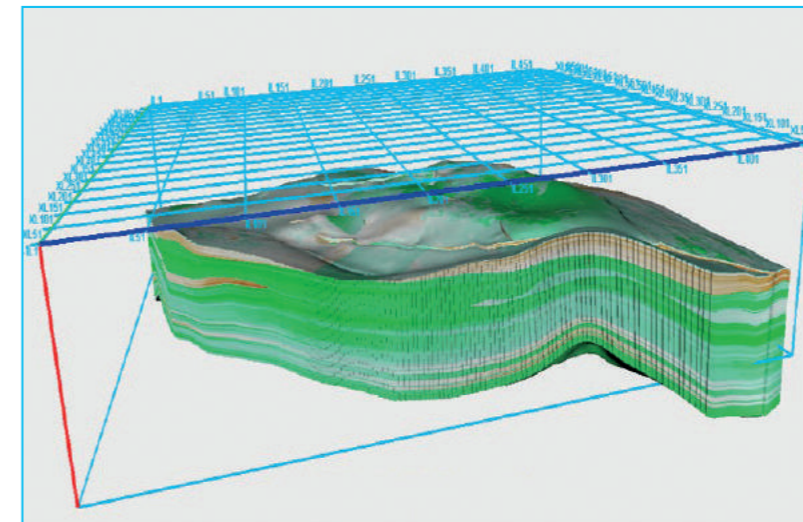
### ELEMENTS OF THE INTEGRATED MODEL



### HYDRODYNAMIC MODEL



### GEOLOGICAL MODEL





# SERVICES

## Basic services

Storage (injection/withdrawal)



Administration of natural gas transfers



Customs warehouse



Customs warehouse + short-haul



## Supplementary services



Pledged gas monitoring (incl. gas in CW)



Natural gas exchange trading in UGS (both cleared and uncleared gas)



For more information on service packages of the Ukrtransgaz

## Basic services

# STORAGE (INJECTION/WITHDRAWAL)

## Service packages of Ukrtransgaz:

### Annual capacity

Annual capacity is a package service rendered for a period of 1 year, which provides a customer with a guaranteed access to the injection capacity (during a basic injection season) and withdrawal capacity (during a basic withdrawal season), the most advantageous tariffs and an opportunity to use working volume on the firm basis during the whole booking period.

### Individual monthly services

Individual services on a monthly basis provide a customer with an access to the individual working volume on the firm basis and injection and withdrawal capacities on the interruptible basis during 1 gas month (regardless of a basic season).

### Individual day-ahead services

Individual day-ahead services are available only for customers, to whom annual capacity and/or individual monthly working volume have/has been allocated. In this format of cooperation, the customers receive individual injection and withdrawal capacities on an interruptible basis.

## ADMINISTRATION OF NATURAL GAS TRANSFERS (TRADE NOTIFICATIONS)

Free service, which provides customer companies with an access to the virtual trading point in UGS, includes confirmation with trade notifications and accounting of transfers of natural gas stored in UGS.

The service applies, inter alia, to gas stored in the customs warehouse, and allows for trade notifications for both resident and non-resident companies.

Trade notifications are submitted through the Information Platform (I-Platform) and confirmed by Ukrtransgaz within 2 hours.

### I - Platform

Web application that provides interaction between Ukrtransgaz and service customers. Through the I-Platform, customers can track their UGS portfolio, submit nominations/renominations, customs declarations, monitor the status of payments for services etc.

Access to the I-Platform is granted to each company that enters into a storage agreement with Ukrtransgaz. The web application is available 24/7 in Ukrainian and English after registration.



For more details on services please visit our website

## CUSTOMS WAREHOUSE

Ukrainian and foreign owners of gas can store it in Ukrainian UGS for 1 095 days without taxes and customs duties with a trading option on the domestic market or re-export it to the EU countries.

Ukrtransgaz, as a customs warehouse holder, provides customs clearance services for placement and withdrawal of natural gas volumes to/from the Ukrainian UGS. Ukrtransgaz specialists provide professional support for customs clearance procedures, including filling up declarations, as well as consultations on operations in the customs warehouse regime.

## CUSTOMS WAREHOUSE + SHORT-HAUL

Short-haul, a service introduced by the TSO of Ukraine from January 1, 2020, opened the customers of Ukrtransgaz an access to UGS at lower tariffs for transportation between the determined points of entry/exit at the cross-border connections.

The service is available in combination with the gas storage services in the customs warehouse regime and is defined as restricted capacities.

Short-haul tariffs are on average much lower than standard ones in case of booking day-ahead capacities.

## PLEGGED GAS MONITORING

Owners of gas stored in the UGS can use it as a pledge when obtaining a loan from a bank, and the bank can monitor all transactions with the pledged gas. This functionality is available online 24/7 for banking institutions on the I-Platform.

### Service advantages for customers:

- Wider range of potential lenders
- Greater opportunities for borrowers
- Advantageous loan terms
- Pledge guaranteed security



For more details of Ukrtransgaz please visit our website

## NATURAL GAS EXCHANGE TRADING IN UGS

Ukrtransgaz grants an access to standardized products on exchange for trade in natural gas stored in Ukraine's UGS. Gas trading is available to resident and non-resident companies through the e-platform on the Ukrainian Energy Exchange.

### Service advantages for customers:

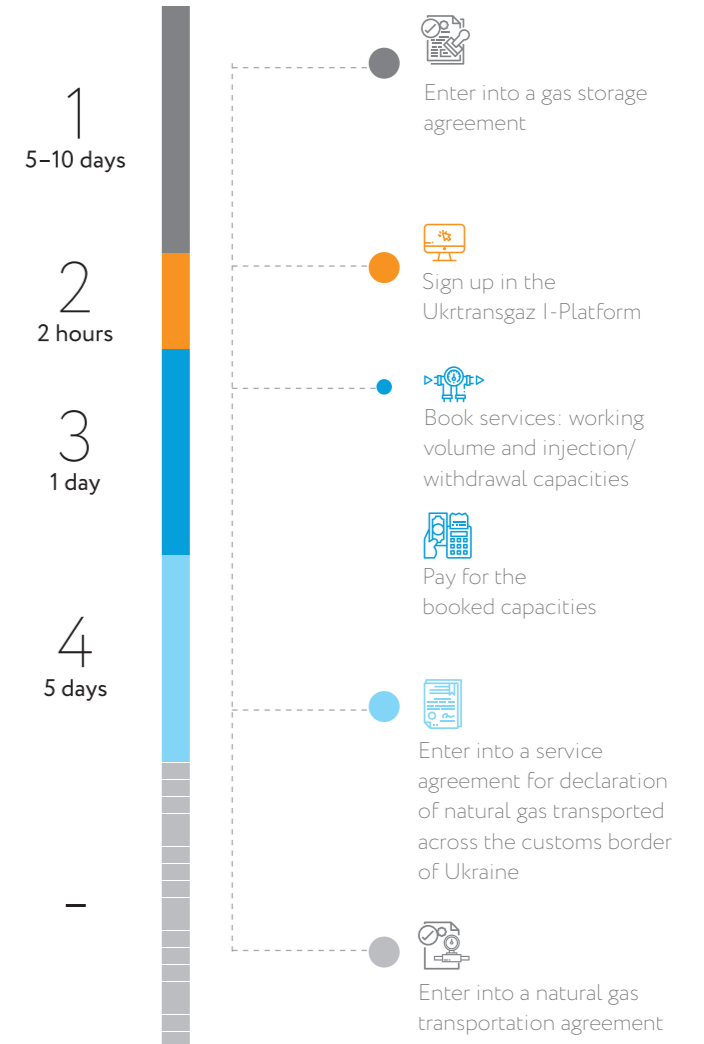
- Speed up the purchase / sale procedure up to 30 minutes
- Increase the liquidity of stocks
- Greater transparency and reliability of trade operations



Website of Ukrainian Energy Exchange

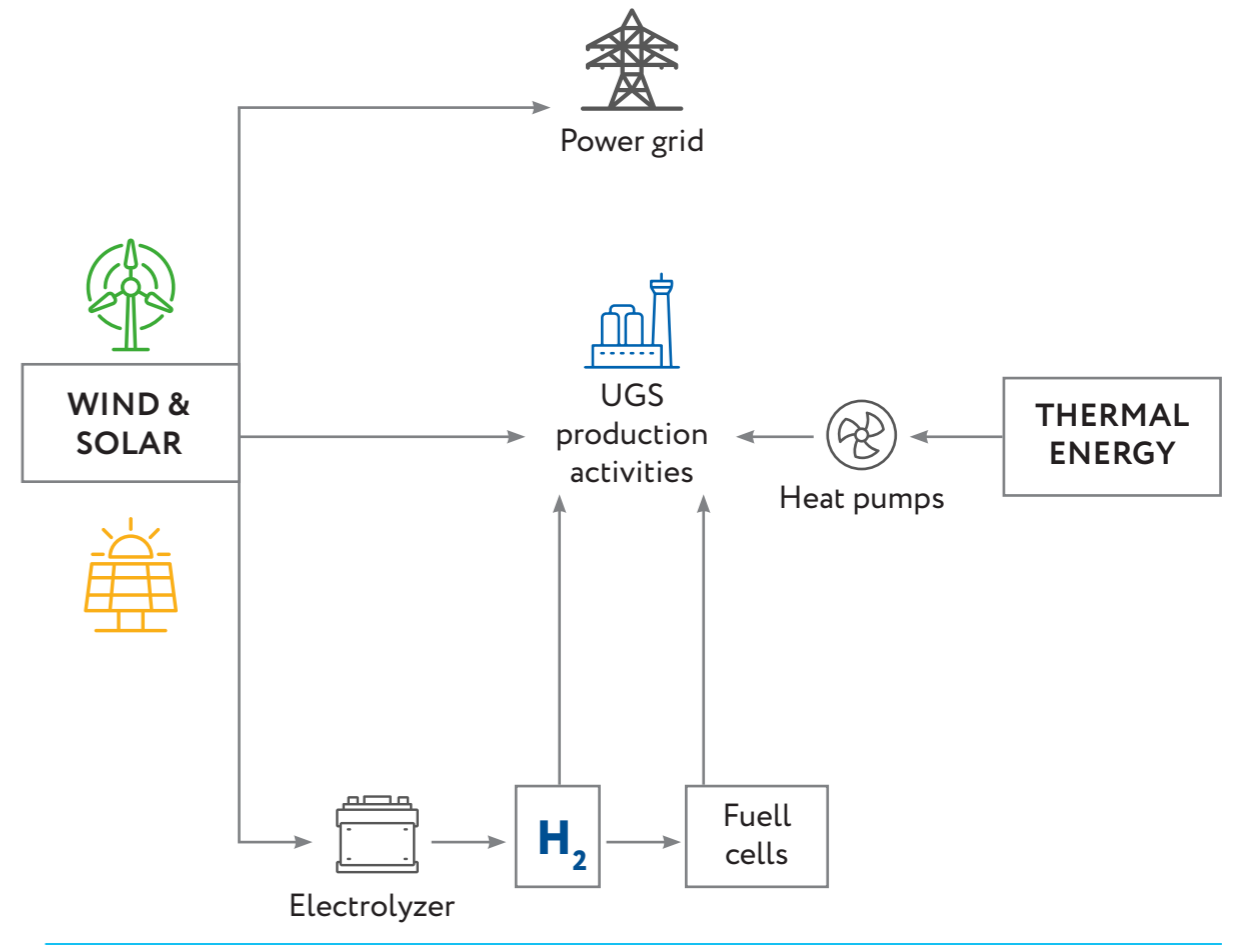


## HOW TO BECOME OUR CUSTOMER





## DECARBONIZATION AMBITIOUS TARGETS



## TOMORROW UGS TO STORE

Bio CH<sub>4</sub>

H<sub>2</sub>

CO<sub>2</sub>



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If you have any questions about cooperation, please contact  
the Ukrtransgaz team.

Data in the booklet are presented as of January, 2024



[www.utg.ua](http://www.utg.ua)

