

THE GLOBAL GAS VILLAGE

Underground Gas Storage Workshop

The Changing Role of UGS within the Energy Chain

UGS Facility Tour 23 May 2005
Workshop 24 & 25 May 2005
Seminar 26 May 2005

Prague, Czech Republic

The Global Gas Village is fast becoming the gas hub where gas companies and their clients discuss technologies, new market trends and gas strategies

EnergyWise

A IJsselburcht 3
P.O.Box 5486
6802 EL Arnhem
The Netherlands

T +31 26 3653 444
F +31 26 3653 446
workshops@energywise.nl
www.energywise.nl

Hotel InterContinental Praha

A Nám. Currieových 43/5
101 00 Praha 1
Czech Republic

T +00420 2 2488 9519
F +00420 2 2488 1123
prague@interconti.com
www.intercontinental.com

UNDERGROUND
GAS STORAGE

EUROPE



This workshop is supported by :



HALLIBURTON

HALLIBURTON

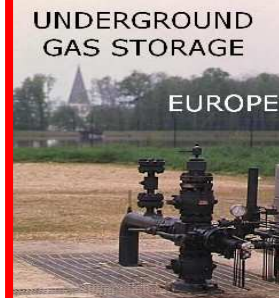
Digital and Consulting
Solutions



THE GLOBAL GAS VILLAGE

Underground Gas Storage

The Changing Role of UGS within the Energy Chain



Workshop Programme 24 May 2005

Session I: The Changing Role of UGS within the Energy Chain

Chairman: Mr. Hans Plaat, HP Petroleum Engineering Services

08.00 - 12.30

Coffee & Registration

Opening,

Mr. Gerard Kreeft, Managing Director, EnergyWise

The Changing Role of UGS within the Energy Chain,

Mr. Helmuth Heneman, President, NRG

Overview and Technical Highlights of UGS in the Czech Republic,

Dr. Vladimír Onderka, Manager, UGS Development, Transgas

Mr. Radim Blažej, UGS Department, MND

Coffee Break sponsored by:



Good Practices for TPA for Storage Operators (GGPSSO),

Mr. Philippe Mannoni, Executive Secretary, Gas Infrastructure Europe (GIE)

Why are UGS's so Inflexible? The Reason Behind the Technical Limitations,

Mr. Hans Plaat, HP Petroleum Engineering Services

12.30 - 14.00 Lunch sponsored by:

HALLIBURTON

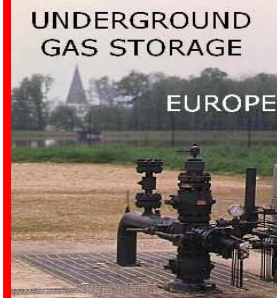
HALLIBURTON

**Digital and Consulting
Solutions**

THE GLOBAL GAS VILLAGE

Underground Gas Storage

The Changing Role of UGS within the Energy Chain



Session II: Current UGS Trends

14:00 – 17:30 The Role of Romania in the European Gas Transit Chain,

Mr. Gheorghe Stefan, Manager, Transgaz S.A. Medias

Adding Value to Underground Gas Storage; Performance & Optimization,

Mr. Perry Harris, North America, Business Development Manager,
Landmark Consulting & Services, Halliburton Digital and Consulting
Solutions

Lessons Learned from Recent UGS Incidents,

Mr. Brent Miyazaki, Consultant, Innovateur International

Coffee Break sponsored by:



Redefining the Energy Chain: from LNG to UGS,

Mr. Michael McCall, Conversion Gas Imports L.P.

Outline the Role of UGS in the CIS/ Europe,

Mr. Fabien Favret, Project Director, Gaz de France

17.30 - 19.00 Reception

- End of day one -

THE GLOBAL GAS VILLAGE

Underground Gas Storage

The Changing Role of UGS within the Energy Chain

Workshop Programme 25 May 2005

Session III: Business Development & Emerging Trends

Chairman: Dr. Rob van Dorssen, Marketing Manager, Energy Delta Institute

09.00 - 12.30

The Changing Role of UGS within the Energy Chain,

Mr. Joost Ketting, Reservoir Engineering, Discipline Lead
Groningen, NAM

The Ten Commandments of What Not to Do Concerning
Europe's Gas Regulatory Market; A Dutch Perspective, .

Mr. Max Oosterhuis, Energy Partner, Loyens & Loeff

Underground Gas Storage from a Service Provider's Perspective
Deliverability Enhancement & New Technology for Gas Storage,

Mr. John Guoyne, Principal Technical Advisor-Gas Team Leader,
Mr. Charles Cameron, Technical Manager, Africa for Baroid,
Mr. Andreas Ruch, Technical Advisor, Halliburton

Coffee Break sponsored by:



The Sustainable Assessment Model (SAM); Measuring Sustainable
Development,

Mr. David Cutteridge, Director, Inchferry Consulting

European Climate Exchange: A Central Marketplace for Trading EU
Allowances,

Mr. Albert de Haan, Commercial Director, European Climate
Exchange

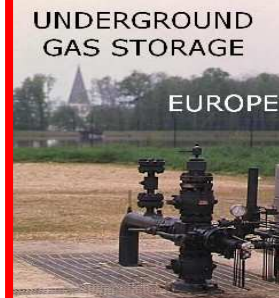
12.30 – 14.00 Lunch



THE GLOBAL GAS VILLAGE

Underground Gas Storage

The Changing Role of UGS within the Energy Chain



14.00 – 17.00 Markets & Projects, Contractual Implications for UGS within the Energy Chain,

Mr. John Varholy, Partner, Troutman Sanders, LLP

The Changing UGS Marketplace: A Perspective from the UK,

Mr. Adrian Fernando, Business Development Manager,
Star Energy

Coffee Break sponsored by:



Updating Peckensen: An Overview,

Mr. Heiner Ribbeck, EEG

Conclusions & Recommendations

- End of workshop -



THE GLOBAL GAS VILLAGE

Underground Gas Storage

The Changing Role of UGS within the Energy Chain

Facility Tour

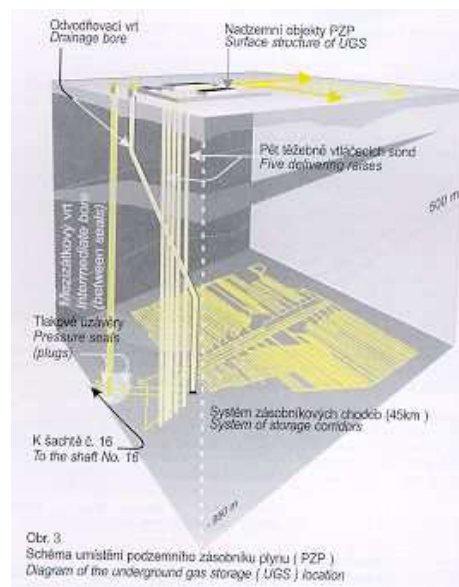
Tour to the Háje UGS Facility

The underground gas storage of Háje UGS Facility represents a considerable part of storing capacities of natural gas in the Czech Republic and even from the world point of view, it is a unique work. The site is located in a cavern excavated into granite massif. It consist of 45km of galleries situated on the area of 1.5 sq. km, in the depth of 950m.



On 23 May the Czech Gas Association and EnergyWise are organizing a tour to the UGS facility.

Participation is free for all workshop attendees.



THE GLOBAL GAS VILLAGE

Underground Gas Storage

The Changing Role of UGS within the Energy Chain Seminar

ABCs of Underground Gas Storage Seminar, 26 May 2005

Europe's UGS market place has changed significantly in the last 5 years. In the past UGS was mainly the responsibility of senior technology managers and their engineering staff.

Now UGS is dominated by senior marketing managers, planners and gas shippers. This seminar is designed to provide a technical basis for these persons.

Designed for non-technical persons (i.e. traders, shippers, economists and managers) to gain a general understanding of the UGS technologies, important issues, risks and benefits.

This seminar will be taught by UGS specialist Dr. Fabien Favret.

Dr. Fabien Favret's Profile

- Currently serving as, Project Director at Gaz de France
- Since the 1980s he has participated in many international conferences (see www.sofregaz.fr)
- Regular lecturer for UGS topics

Costing

- € 900 per participant;
- € 750 Euros per participant if also participating in UGS Workshop.

Including: seminar attendance, lunch and full workshop documentation.

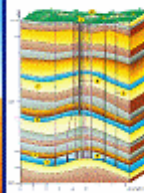


H History of UGS

- 1915 1st experiment (injection) on a field (Ontario, Canada)
- 1916 1st depleted field conversion into UGS (State of New York, USA)
- 1946 1st Aquifer (Kentucky, USA)
- 1961 1st UGS in salt cavern (Michigan, États-Unis)
- 1963 1st UGS in abandoned mine (Colorado, États-Unis)
- 2003 1st Lined Rock Cavern UGS (Skallen, Sweden)
- 2003 1st LNG LRC UGS prototype (Daejeon, Korea)



A Aquifers



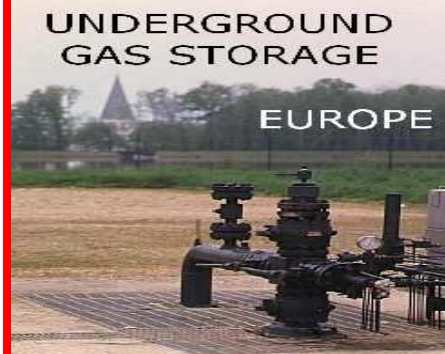
U UGS uses

- > Security of supplies
- > Seasonal modulation
- > Peak shaving (daily and intra-day)
- > Transmission flexibility and security tool
- > New: as a trading tool !!!

THE GLOBAL GAS VILLAGE

Underground Gas Storage

The Changing Role of UGS within the Energy Chain Seminar



ABCs of Underground Gas Storage Seminar

9.00 – 12.30

Technical Aspects of UGS

Needs for Modulation (balancing the gas market)

- **Uses of US**
 - Modulation
 - Volume
 - Peak Flows
- **Types of UGS3**
 - Porous Reservoir
 - Salt Caverns
- **Main Characteristics of UGS**
 - Total Stored Volume
 - Working Gas Volume
 - Cishion Gas
 - Peak Flow
 - Forecasts and Performances
- **Technical Overview**
 - Exploration Works
 - Development Phase
 - Well Design

12.30 – 14.00 Lunch

14.00 – 17.00

Economic Aspects of UGS

Costs and Tariffs

New Trends

- Trading tool
- New Services and Support

- #### Valuation of UGS Assets – In Regulated and Deregulated Markets
- Spot Market Margin Capture
 - Speculation
 - Arbitrages
 - Hubs

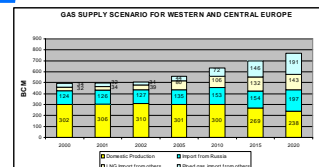
Conclusion; Discussions; Questions

17.00 end of seminar

Security of supplies (France)

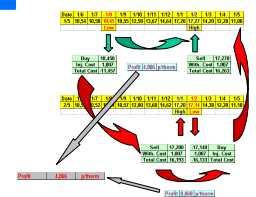
- **Gas volume**
 - ✓ Climatic alea (risks 2 or 10 %)
 - ✓ Supply shortage (one year with 30 % shortage)
- **Peak days**
 - ✓ Climatic alea risk 50 % without interruption
 - ✓ Climatic alea risk 2 % with supply crisis shortage but using all interruptible contracts

TRENDS IN EUROPE



- Global demand to raise from 562 bcm (2000) to 769 bcm (2020)
- Import dependency to raise from 38% (2000) to 75% (2020)
- EU directive for security of supply (today UGS = 13% of demand)

OPTION METHOD



THE GLOBAL GAS VILLAGE

Underground Gas Storage

The Changing Role of UGS within the Energy Chain

Registration Form

Workshop fee is € 1750 and includes: workshop attendance, reception, lunches, and full workshop documentation.

Mr./Ms.

Job Title

Company/Institution

Address

City and Country

Postal Code

Telephone

Fax

E-mail

- I would like to participate the 'Czech Gas Association Facility Tour' on 23 May 2005.
No cost.
- I would like to participate in the UGS workshop on 24 & 25 May 2005.
Fee € 1750.
- I would like to participate in the 'ABCs of UGS Seminar' on 26 May 2005.
Fee € 900 (€ 750 if also participating in UGS Workshop).

Date _____ Signature _____

VAT of 19% will only be applied to companies situated in the Netherlands

To secure your participation, the full registration needs to be paid before the workshop

Cancellation policy:

Should you be unable to attend, a substitute delegate is always welcome at no extra charge. Alternatively, we will make a prompt refund, less service charge of 10% of the fee for cancellations received in writing (letter or fax) no later than 30 days before the workshop. Thereafter we regret that no refunds can be made.

Send this form to EnergyWise

T +31 26 3653 444

F + 31 26 3653 446

E workshops@energywise.nl

