

## WG 2: Summary of presentations

- Judith Schicks, Helmholtz-Zentrum Potsdam: Development and test of exploration and exploitation techniques for hydrate reservoirs at GFZ
- Yizhak Makovsky, Haifa University: The Mediterranean sea research center of Israel - a new research facility for the eastern Mediterranean
- Koji Yamamoto, JOGMEC: Geotechnical studies and sand production problems
- Sourav Sahoo, University of Southampton: Effect of Hydrate Saturation and Morphology on Acoustic and Electrical Properties of Sediments
- Thomas Mosch, Kongsberg Maritime Ambient GmbH: Monitoring Technologies and Strategies for Gas Hydrate Exploration
- Jinhai Yang, Heriot-Watt University: Methane recovery from gas hydrate reservoirs by flue gas injection
- Naill English, University College Dublin: MD simulation of clathrate-hydrate kinetics
- Göрге Deerberg, Fraunhofer UMSICHT: Submarine Gas hydrate Reservoirs: Production of Methane and Storage of Carbon Dioxide
- Tim Collett, State-of-the-art in Exploration Drilling for Hydrates

## **WG 2: Final Discussion**

### **1) What is MIGRATE?**

**What are the objectives?**

### **2) What is WG 2?**

**What is the mission of WG 2?**

# What is MIGRATE?

The COST action MIGRATE is designed to integrate the expertise of a large number of European research groups and industrial players to promote the development of multidisciplinary knowledge on the potential of gas hydrates as energy resource.

In particular, MIGRATE aims to

- i) estimate the European inventory of exploitable gas hydrates,
- ii) evaluate current gas hydrate technologies for exploration, production and monitoring,**
- iii) assess environmental risks, and
- iv) prepare a field production test in European waters.**

National efforts will be coordinated through Working Groups (WG) focusing on:

- WG 1: Resource assessment
- **WG 2: Exploration, production, and monitoring technologies**
- WG 3: Environmental challenges
- WG 4: Integration, public perception, and dissemination.

# What is WG 2?

## WG2 - Exploration, production and monitoring technologies

WG 2 will pool .... in order to stimulate the development of these technologies with respect to their usability and environmental soundness.

Conventional production technologies are not suitable. Novel down-scaled technologies tailored for the specific properties of gas hydrate deposits have been developed and tested by European research institutes and industries.

**MIGRATE will develop a plan for a field production test in European waters to test these novel technologies.**

### **To achieve these aims WG 2 participants will:**

1. review existing technologies and identify key areas where further technology development is required to develop gas hydrates as a new resource of natural gas
2. assess and employ reservoir modeling tools for the numerical simulation of gas production from hydrate reservoirs
3. Identify suitable technologies to minimize geotechnical risks (slope failure), to maintain well stability, and manage sand mobilization during the production process
4. develop a technical outline for the production test
5. estimate costs for the planned production test

# What is WG 2?

## WG2 - Exploration, production and monitoring technologies

WG 2 will pool .... in order to stimulate the development of these technologies with respect to their usability and environmental soundness.

Conventional production technologies are not suitable. Novel down-scaled technologies tailored for the specific properties of gas hydrate deposits have been developed and tested by European research institutions.

**MIGRATE** ... for a field production test in European waters to test recovery technologies.

To achieve these aims WG2 will:

1. review existing technologies and areas where development is required
2. assess the need for new technologies and areas where development is required
3. Identify suitable technologies to minimize geotechnical risks (slope failure), to maintain well stability, and manage sand mobilization during the production process
4. develop a technical outline for the production test
5. estimate costs for the planned production test

# WG 2:

## Final Discussion

### Tasks of WG2:

1. Existing technologies
2. Key areas where further technology development is required to develop gas hydrates as a new resource of natural gas
3. Reservoir modeling tools for the numerical simulation of gas production from hydrate reservoirs
4. Suitable technologies to minimize geotechnical risks (slope failure), to maintain well stability, and manage sand mobilization during the production process
5. Technical outline for the production test
6. Costs for the planned production test

### Further Work:

7. Document Structure
7. **Topics/Agenda for the next meeting in Haifa, Israel**

Where do we expect the/ our breakthrough technologies?

## Collection of keywords

**Existing technologies** and key areas where further technology development is required to develop gas hydrates as a new resource of natural gas

- **Process understanding Laboratory/Analytics**: Morphology of GH, characterization (depending on  $S_H$ ), kinetics
- **Resource Assessment**: Seismic, CSM, ESM, logging ...
- **Site Characterization, Monitoring**: Sonar, CSM, ESM, coring, logging, CH<sub>4</sub>-detection ...
- **Reservoir and Basin Modeling**: Characterization of reservoirs, production, geomechanics
- **Drilling Technology**: MeBo
- **Production and Monitoring Technology**: MeBo, sand/gravel-pack; downhole ESP with separator (Pump)
- **System Technology**: Ship/vessel, remote technologies on seafloor,

# Meeting in Haifa

## **Mission:**

### **Joining a parallel meeting of AUV-experts**

Site characterization , geomechanical aspects

## **Agenda:**

- State of the art – presentation
- Decision of further tasks