OpERA
Operational Issues of geothermal Installations in Europe
Summary & Outlook

Dr. Stephan Schreiber
Project Management Jülich
Renewable Energies
Geothermal Energy and Cross-Cutting Programmes
Overview

› The concept - Recap

› The workshop (JA1)

› The publication (JA1 Follow up)

› OpERApedia (JA2)

› Summary
The concept – Why OpERA?

- In WP 2 several barriers and RD&D-needs related to operation of geothermal installations were identified.

**Barriers:**
- Resource exploitation
- Operational issues
- Environmental impact
- Geochemistry & injectivity
- Reinjection

**RD&D-Needs:**
- Operational Issues
  - Aggressive thermal water
  - Pumps & components
  - Well cleaning & completion
  - High NCG concentrations
  - Power plant Emmissions
  - Gas treatment
- Injection Issues
  - Re-injection (mentioned 3x)
  - Underground storage
  - Re-injection methods (binary)
  - Geochemistry during re-injection
- Pumps & Components
  - Underground equipment
  - Efficient & durable pumps
  - Pumps
The concept – Why OpERA?

- Mentioned by:

Therefore: Knowledge exchange on operational issues can help to:

- Use knowledge on already solved problems European-wide
- Cluster research efforts
- Merge budgets for a higher output

* one country is missing
The OpERA Working Group

- RD&D Knowledge Exchange on operational issues of geothermal installations in Europe
- **Target Group:** Industry (plant owners, developer etc.), Research
- **Participants:** Germany, Netherlands, Iceland, Hungary, Italy, Slovenia
- **Focus:**
  - Identification of the most urgent operational issues in Europe
  - Foster Information Exchange & transnational cooperation
  - Creation of an expert working group on operational issues
OpERA in the context of the Bottom-up Approach

JA1 Information exchange (groups)
- regular meetings
- workshops
- visits
- idea factories, etc.

JA2 Joint work
- Joint assignment: detailed study on specific issue(s)

JA3 Joint call
- Jointly developing new insights, new systems
The Concept of OpERA

OpERA WS on Operational Issues in Europe

Expert Working Group

Possible ERA-NET follow-up JA (JA2/JA3)

European Cooperation Projects

The Magna Carta: “Operational Issues of geothermal installations in Europe”
2015

The Magna Carta
The OpERA Workshop
The OpERA Workshop

"Magna Carta"
The OpERA Workshop - Results

The „OpERA Magna Carta“
The OpERA Workshop - Results

› The „OpERA Expert Group“

~ 15 (24) experts from 10 (11) European countries

* one country is missing
The Publication

› Joint paper of the „OpERA Expert Group“
› Extended Proceedings of the workshop incl.
   › Country Overviews*
   › General Chapters on Scaling, Corrosion, Gas Handling & Re-injection
   › Technical Excurses on specific topics within the issue categories
   › ~ 100 pages
   › Appendix I: The Magna Carta (Update 2016)
   › Appendix II: Workshop presentations

› Publication Date: October 2016
6 Summary and outlook

This report, with contributions from the OGEA Expert Group and its workshop in Viad, brings together a wealth of information on operation energy. The workshop has been very successful in bringing up the exchange than is to large network and a horizon to the future.

The “Report for Europe” within is divided into Appendix A in the report, presenting results in the European countries. It indicates how the report is divided into another, and where joint activities are necessary to further the field.

The thematic approaches that the workshop adopted have helped the focus and the content on the report. However, there are some evident issues in the thematic energy and gas sector. The thematic approach (Figure 14) below illustrates this. The emphasis on the thematic approach will be supported by thematic activities (e.g. by thematic analysis). This thematic approach in the thematic analysis

Figure 14. The thematic approach of operational issues. Data by: modellier Bundesamt für Geoenergie, Germany, in cooperation with the UNDP, the European Commission, and the German Federal Ministry for Economic Affairs and Energy.

Based on the success of the OGEA workshop, the thematic analysis instruction and the thematic approach of operational issues. This will be done in two years, the thematic analysis instruction of OGEA, and secondly by stimulating innovations through ENERGIE Net GEOERENCE. The GEOERNIE will be supported by thematic analysis instruction.”

Operational issues in Geothermal Energy in Europe
Status and overview

Catch in 2015
OpERApedia

The logical next step:
Provide a webbased platform to allow the access to all relevant information on operational issues on geothermal energy installations in Europe and to all relevant experts (contacts).
OpERApedia - Framework

› Initial Partners: 🇨🇭 🇳🇱 🇮🇸 🇫🇷 🇩🇪

› Initial Budget: 20,000 – 50,000 € = 160,000 – 220,000 € (additional national financing)

› Version 1.0:
  › Basic Web-Infrastructure (Geothermal ERA-NET, in progress)
  › General Information provided by Editor-in-chief (done)
  › Country specific information collected in national tenders/contracts (in progress)
  › Online est. 1st half of 2017

* finally
The structure

OpERApedia

Technical Content
- Scaling
- Corrosion
- Gas
- Reinjection

Expert Pool

Access via:

Access via:
Login for registered users

or
Search
The structure – Technical Content
The structure – Expert Pool

Issue A

Project I

Issue B

Project II

L: Regenspurg, 2015; R: Lapanje, 2016
The structure – Expert Pool

Technical Content

- Scaling
- Corrosion
- Gas
- Reinjection

Expert Pool

➢ Find your answer! Direct link between the issue and the expert!
OpERA - The summary

› Successful JA 1 with Workshop & Follow-up Publication
  › Workshop:
    › 37 participants from 11 countries
    › First realization of trans-European knowledge exchange specifically focused on operational issues
    › Founding of the OpERA Expert Group to continue the discussion
  › Follow-up:
    › Joint publication by 24 experts
    › First Open Access Information Collection on OI
› Proof of concept for the Bottom-up approach from WP4
OpERA - The summary

- JA 1 which developed to a JA2
  - Successful JA 1 + Support by community = Sustainable Cooperation

OpERApedia

- Concept of JA will be continued and further developed in GEOTHERMICA
Thank you!

Picture credits front page:
3D-montage: Projekträger Jülich, Forschungszentrum Jülich GmbH
Motive: PN_Photo/iStock/Thinkstock, palau83/iStock/Thinkstock, ©istockphoto.com/vithib, IvanMikhaylov/iStock/Thinkstock