

ENGINE – ENhanced Geothermal Innovative Network for Europe
Workshop 3, Stimulation of reservoir and induced microseismicity
Kartause Ittingen, Zürich, June 29 – July 1, 2006, Switzerland



Thursday afternoon, 29 June 2006

12:00-14:00 **Lunch Break**

Session I Review of stimulation techniques (14:00-18:00)

| | | |
|--------------------|--|------------------------------|
| 14:00-14:20 | Welcome Introduction to Workshop | Thomas KOHL Patrick LEDRU |
| 14:20-14:40 | Stimulation of geothermal wells in basaltic rock in Iceland | Gudni AXELSSON |
| 14:40-15:00 | Hydraulic fracturing in the hydrocarbon industry | Peter A. FOKKER |
| 15:00-15:20 | Review of Hydraulic Stimulation Technology | Fritz RUMMEL |
| 15:20-15:40 | Stimulation Techniques and implications from microseismicity | Thomas KOHL |
| 15:40-16:10 | break | |
| 16:10-16:25 | Hydraulic Fracturing and Formation Damage in a Geothermal Sedimentary Reservoir | Andreas REINICKE |
| 16:25-16:40 | Modelling the geochemical effects of acid treatments and comparison with field observations at Soultz-sous-forêts geothermal site. | Sandrine PORTIER |
| 16:40-16:55 | The importance of natural rock stress in the stimulation process, and the difficulty of its characterisation | Keith EVANS |
| 16:55-17:10 | Induced seismicity during EGS operation? | Ladislaus RYBACH |
| 17:10-18:00 | <i>Last Minute Contributions and Discussion</i> | |
| 18:30-20:00 | Dinner | |
| | <i>Discussion</i> | |

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Session II Case studies on reservoir stimulation (08:45-12:30)

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|--------------------|--|---------------------|
| 08:45-09:05 | Results of flow-meters measurements in Soultz-sous-Forêts well GPK4 and implication for mechanisms of fracturing processes in crystalline rocks | Reinhard JUNG |
| 09:05-09:25 | Microseismicity and stimulation strategy: the case of soultz-sous-forêts, france | Jean CHARLETY |
| 09:25-09:45 | Control of induced seismic hazard associated with the hydraulic stimulation of a hot fractured rock geothermal reservoir | Steve OATES |
| 09:45-10:05 | Detection of pressure and flow distribution in reservoirs from hydraulically-induced microseismic events and application to the Soultz and Cooper Basin HDR fields | Takatoshi ITO |
| 10:05-10:35 | break | |
| 10:35-10:50 | Enhancement of productivity after reservoir stimulation of the hydro-thermal reservoir Gross Schoenebeck with different fracturing concepts | Günter ZIMMERMANN |
| 10:50-11:05 | Hydraulic Stimulation and Geophysical Fracture Monitoring in the GeneSys-Project | Jens ORZOL |
| 11:05-11:20 | Simulation of mineral precipitation in geothermal installations: the soultz-sous-forêts case | Emmanuel STAMATAKIS |
| 11:20-11:35 | Pre-Stimulation Analyses of a Low Permeability Geothermal Well at Desert Peak, Nevada | Ann ROBERTSON-TAIT |
| 11:35-11:50 | Characterization of reservoir using microseismicity induced during stimulation tests: contribution from tomographic analysis and faulting mechanisms | Nicolas CUENOT |
| 12:30-14:00 | Lunch Break | |
| 11:50-12:30 | <i>Discussion</i> | |

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Session III Reservoir characterization during stimulation (14:00-18:00)

| | | |
|--------------------|--|---------------------|
| 14:00-14:20 | Microseismicity and flow path identification | Keith EVANS |
| 14:20-14:40 | Micro-Seismic Interpretation of Hydraulic Fracture Treatments | Hans DE PATER |
| 14:40-15:00 | Fault mechanisms of induced seismicity at the superdeep KTB borehole and their relation to fault structure and stress field | Marco BOHNHOFF |
| 15:00-15:20 | Elements governing the ratio (Hydraulic Performances)/(Induced Microseismic Nuisances) during the stimulation of “EGS Soultz type” reservoirs. | André GERARD |
| 15:20-15:40 | Analysis of induced microseismic events from HDR/EGS reservoirs by super resolution mapping techniques | Hiroshi ASANUMA |
| 15:40-16:10 | break | |
| 16:10-16:25 | A Methodology for the hydro-mechanical characterisation of EGS reservoirs | Thomas MEGEL |
| 16:25-16:40 | Hydro-mechanical behaviour of GPK3 and GPK4 during the hydraulic stimulation tests – Influence of the stress field | Arnold BLAISONNEAU |
| 16:40-17:40 | <i>Discussion</i> | |
| 17:40-18:00 | Workshop Summary in view of ENGINE Project | Sverrir THORALLSSON |
| 18:30-20:00 | Dinner | |
| | <i>Discussion</i> | |

Please note departure time for scientific excursion on Saturday, July 1st is at 6.45 am. Take-away breakfasts will be provided.