

DESTRESS

19.06.2018

Demonstration of soft stimulation treatments of geothermal reservoirs

Duration: March 2016 – February 2020

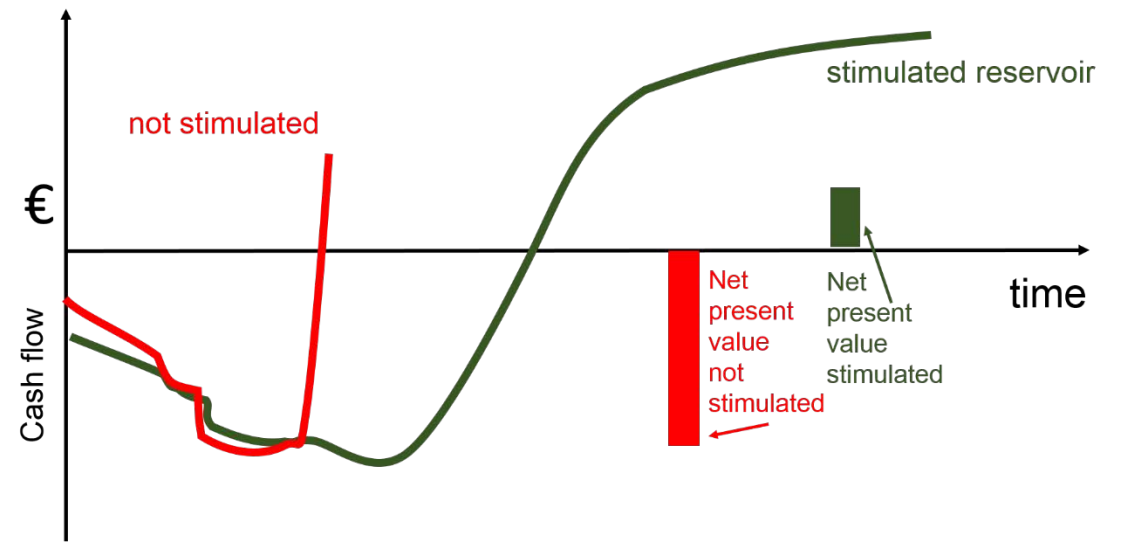
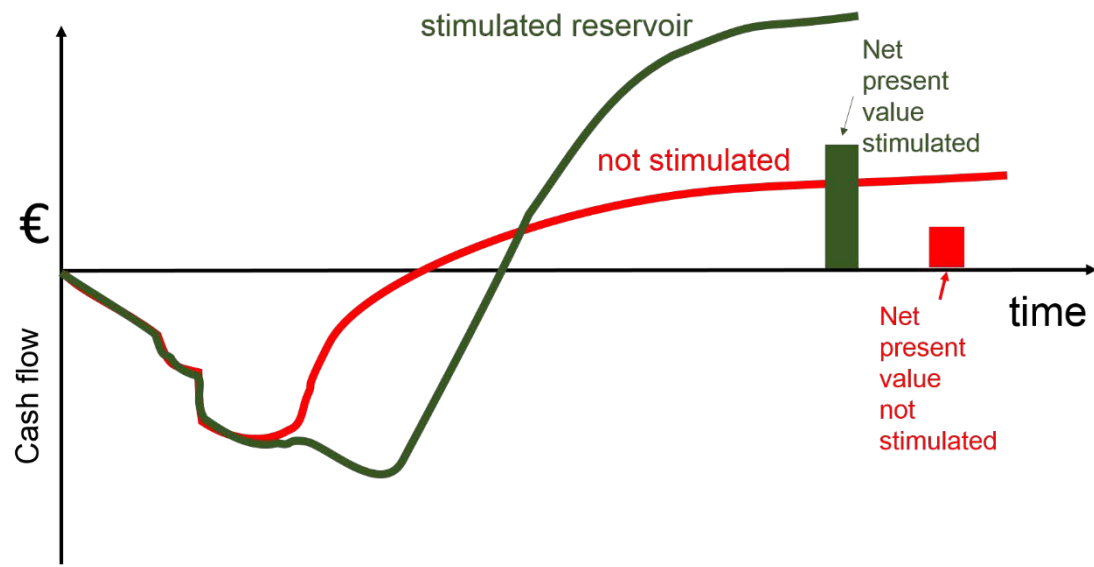
By Ernst Huenges



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Objectives

- Demonstration of a concept-based approach to develop Enhanced Geothermal Systems (EGS) by
 - the increase of the reservoir transmissivity,
 - the maintenance of the productivity and injectivity of the system (aiming at sustainable operation) and
 - the minimising of the level of induced seismicity and environmental impact






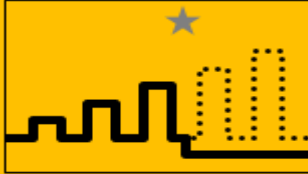


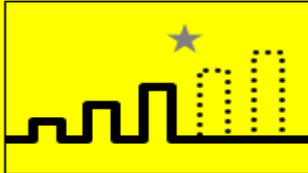
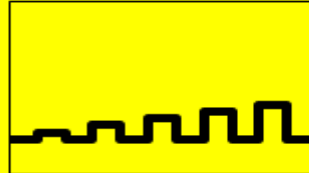



Key deliverables:

- Recommendations for soft stimulation risk management including risk assessment and strategies for risk mitigation, monitoring, governance and public acceptance,
- Good practices for applying the treatments and their specific costs,
- Good practice workflows and tools for monitoring and controlling performance and environment,
- Good practices for improving and developing sustainable productivity and injectivity of geothermal reservoirs.

Expected results:

Demonstrated practices for stimulation of geothermal reservoirs

- various geological settings
- minimized costs of the treatments
- optimized performance
- controlled impact on environment

M_L	Stage	Injection rate (Event @ high rate)	Injection rate (Event @ low rate)	Adjusted injection rates for next day
> 2.0	5	Flowback	Flowback	Flowback
1.7 – 2.0	4	Flowback	Flowback	Flowback
1.4 - 1.7	3			
1.0 - 1.4	2			
<1.0	1			

Legend: ★ Induced seismic event — adjusted injection rate ... planned injection rate

Initial results

- Ongoing laboratory experiments referring to soft stimulation, preliminary results promising to be implemented in the field experiments in hard and soft rock environment
- Completed swell packer testing in Switzerland, with positive results for the multi-stage hydraulic fracturing in Haute-Sorne resp. Bedretto (Switzerland)
- Design and workflow for stimulations in soft rock available (e.g. for Mezöbereny Hungary)
- Seismic traffic light system demonstrated for the cyclic soft stimulation treatment (Pohang)
- Numerical models for different sites set up
- Successful risk assessment for soft stimulation measures in geothermal projects drafted
- Public acceptability for deep geothermal energy evaluated in different European countries
- Lessons learnt with worst case scenarios from different operative actions

Contact details

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www.destress-H2020.eu

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for your attention!