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## DESTRESS Keeps On Developing!

DESTRESS reached its half-time mark! This offers an excellent opportunity to look back at what was achieved so far and how it will continue. For this purpose, firstly, we have interviewed Ernst Huenges, DESTRESS Project Coordinator. Secondly, preliminary results of the different DESTRESS team members analyzing the Pohang event are shared. We also look into the future by introducing our new test sites: Mezőberény, Hungary; Bedretto, Switzerland; and Geldinganes, Iceland.

Last but not least, do not miss the latest best practice report, a new paper on Klaipeda, and DESTRESS's compliance with the new GDPR regulations.

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## News and Progress



## Interview with Ernst Huenges on DESTRESS reaching its half-time mark

DESTRESS has already passed its half-time mark which provides an excellent opportunity to look back at what was already achieved and what is still to come. Ernst Huenges on past and future plans, success and what excites him about DESTRESS.

**Please describe the past 18 months of DESTRESS in three words.**  
Exciting. Full of surprises. Fantastic team.

**What was your personal highlight in the first half of DESTRESS for you?**  
One of my personal highlights was the second General Assembly where we met in Klaipeda, Lithuania. It was extremely interesting being able to spend some days in the northeast of Europe and the overall spirit of the conference was just wonderful.

**What were the biggest drawbacks?**  
Well, the earthquake in Pohang was of course a major hurdle for us to overcome. However, I think that through this experience we had the possibility to learn a lot, be it about communications or other things.

**What can we expect for the second half of the project?**  
The second phase is now all about the implementation of what we have tested and prepared in the first half of the project. Many of those first results will now be applied in demonstration tests in several geothermal plants in Europe.

**What future plans are you most excited about?**  
I am excited about all of them, but if I had to choose one, I guess the new site in Geldinganes, Iceland, looks very promising. I am curious what the experiments will bring to light there.

**What is your wish for the DESTRESS community?**  
DESTRESS already offers many different lessons learnt jointly and I wish for the future that even more synergies can be formed and used in order to promote the exchange of knowledge - which is one feature that makes DESTRESS so special - even more.

**Would you change anything about the past 18 months and if so, what would it be?**  
Reliability in terms of communication is one aspect where we can still improve the status quo. The task is to gather all available information a priori about all direct activities at the site. We have to provide reliable general framework conditions that then help us to act and react when problems are encountered at the demonstration sites. We need this because most test sites belong to other parties and although we take all the possible precautions, things can go wrong. A concrete guideline on application of good practice and related communication with the site owners would make it a lot easier to deal with such events.

**What would you consider to be the greatest DESTRESS success so far?**  
Definitively the quality of the contributions so far. They were all of a very high

standard and demonstrated the high level of competence represented in DESTRESS. Also, bringing together the knowledge of different research teams isn't always an easy task but within DESTRESS, it works really well.

**What makes DESTRESS special to you?**

The feedback I receive. Since I am involved in many of the project ideas, it is very nice to see that we are generally onto something when we come up with ideas. The feedback is also important as it helps us to adapt future project plans by looking at past experiences. This ensures a continuous improvement in the DESTRESS community.

**Could you name three "lessons learned"?**

1. You can never be too prepared before you start a treatment. Also, this preparation takes a lot of time which should never be underestimated. If something fails, you can always find more than one single reason why it did not work out and preparing helps minimizing this risk.
2. Soft stimulation seems to be possible. It is not proven possible 100 % as of right now but we are very optimistic that, as soon as the second phase (the implementation phase) starts, this will be confirmed.
3. Soft stimulation seems to be increasing the economic efficiency of geothermal applications under the condition that preparations were carried out conscientiously and accurately.



**The Pohang earthquake under DESTRESS's scrutiny**

On 15 November 2017, an earthquake with a magnitude of 5.4 occurred near Pohang in South Korea. Its proximity to the nearby, now closed geothermal project and its shallow depth triggered numerous national and international investigations with DESTRESS members contributing. In a workshop in September, the DESTRESS teams involved discussed their analyses and first results.

Read the [full article on our website](#)

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## Ready to start stimulation in Mezőberény

DESTRESS members visited Mezőberény last summer and identified it to be a perfect place to implement one of the soft stimulation treatments for a sandstone formation aiming to solve injection problems at the site. The local authority of Mezőberény Város Önkormányzata, which is the operator and owner of the geothermal plant, agreed to join forces with DESTRESS. The cooperation agreement was signed at the beginning of July 2018 and we are now ready to act at an operational level. In a first step, members of DESTRESS will design a chemical stimulation concept.

*For detailed information concerning Mezőberény contact [Maren Brehme](#).*

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## New demonstration site in Iceland

DESTRESS has found a new demonstration site in Geldinganes, Iceland. The general assembly of DESTRESS accepted to include Geldinganes in the project. The Management Board went for a site visit earlier this summer to assess the possibility to perform a cyclic hydraulic stimulation and confirmed the plan. The stimulation shall be executed by August 2019 under the lead of GFZ supported by ETH and GES.

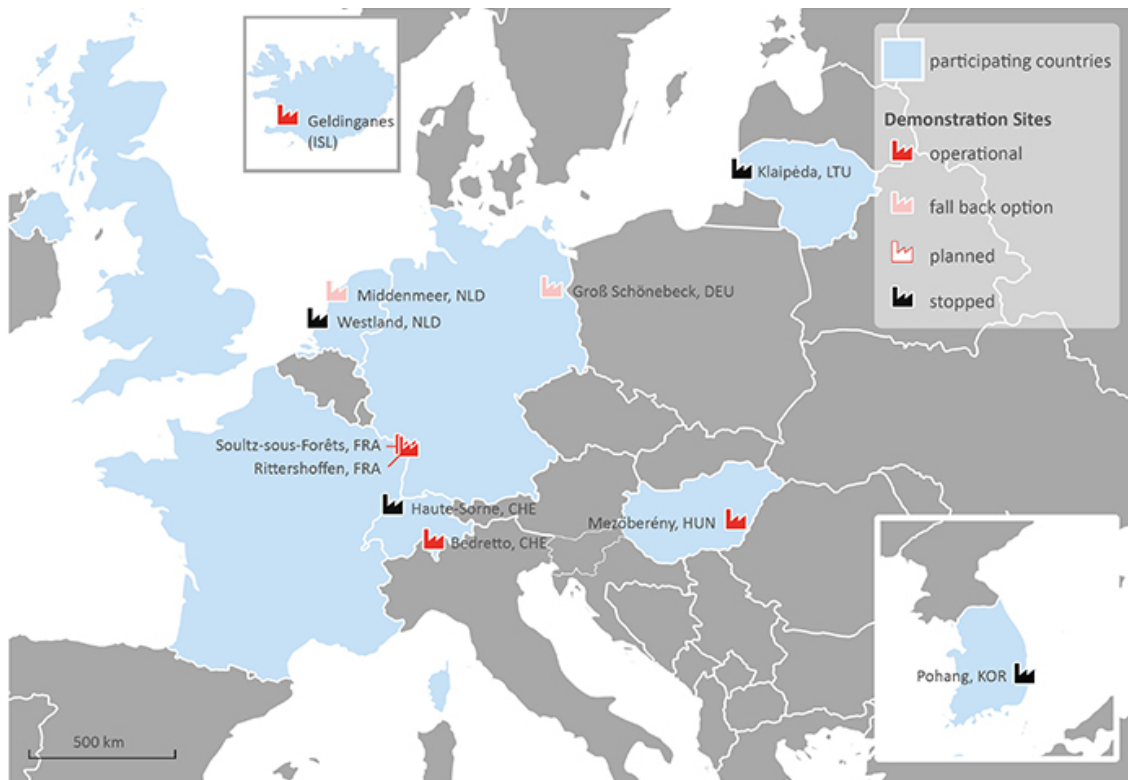
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## Bedretto Underground Laboratory launched

Another opportunity for demonstrating soft stimulation approaches has come up in Switzerland, where ETH Zurich is currently building a new underground laboratory for geo-energies. The Bedretto Underground Laboratory for Geo-energies (BULG) provides favourable conditions for large-scale geothermal research experiments. DESTRESS will be one of several research partners using this new infrastructure to conduct cyclic and multi-stage treatments aiming to reduce fluid-induced seismicity.

The tunnel has a length of 5.2 km and consists of mostly homogeneous granite.



## New site map available

The DESTRESS site map has been updated and is now available on the DESTRESS website. For a variety of reasons, research within the DESTRESS framework had to be put on hold at different sites. In exchange, we are very happy to have found other test sites, such as Mezöberény and Geldinganes, and are excited to demonstrate new methods. The new map helps providing an up-to-date overview of all test sites. It is also featured [on our website](#).



## New best practice reports available

A new best practice report is now available on the DESTRESS website.

### **Monitoring the environment around geothermal sites**

The environment of a geothermal site includes all elements related to nature, people and infrastructures which can be impacted by geothermal operations. Environmental monitoring is a fundamental tool in order to identify and quantify the spatio-temporal consequences of geothermal exploitation as well as the causes of the observed impacts. Through surface and underground monitoring, the severity and frequency of the environmental impacts can be assessed, allowing the decision-makers to determine the appropriate treatment measures.

The following items should be monitored to minimize environmental impacts.

- Ground motion monitoring
- Resource monitoring
- Waste disposal
- Underground water monitoring
- Surface disturbance

[Read more](#)

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## Updated Data Regulations According to GDPR

We hope you enjoy receiving and reading the DESTRESS newsletter! To comply with the updated data regulations in the EU (GDPR), we need to remind you that we are using MailChimp to compile our newsletter. With your subscription, you agreed to the privacy policy and terms of MailChimp. No worries, if you have changed your mind in the meantime, you can easily unsubscribe by clicking on the respective link at the end of this newsletter or by sending an email to [destress@sed.ethz.ch](mailto:destress@sed.ethz.ch). No further action is needed if you would like to

continue to be informed about DESTRESS activities, results, and highlights.

To comply with the GDPR in the future, we have activated a double-opt-in process. Interested readers receive after their initial sign-up a message asking again for their permission and their acknowledgement of the privacy policies of MailChimp.

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## Did You Know...

... what the size of the usable energy reserves is?

The usable energy reserves - which can be tapped with today's deep drilling technology - are estimated worldwide at around 30 times more than all fossil reserves combined (coal, gas, and oil). Due to the quantities that can be tapped in the future, the geothermal reserve can be regarded as inexhaustible. The heat in the earth's interior is the engine that has been moving continents for over 4 billion years, piling up all the mountains in the world and making volcanoes erupt. Natural radioactive decay processes in the earth's interior have maintained the temperature for billions of years.

(Source: [Bundesverband Geothermie](#))

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## Miscellaneous



### Study on Klaipeda site now available

Reasons for injectivity decline were investigated in a low-enthalpy geothermal aquifer in Klaipeda (Lithuania). It is one of the study sites within the DESTRESS project aiming at demonstrating different stimulation techniques in geothermal reservoirs. Due to low injectivity, production rates from the Lithuanian field are currently reduced which leads to negative commercial implications for the site. Injectivity decline in aquifers is often related to clogging processes in spatially correlated highly permeable structures which control the main flow volume. Clogging processes were subdivided into (1) physical, (2) chemical, and (3)

biological processes and studied by analyzing fluid and solid samples as well as operational data. Read more about this interesting topic [here](#).

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## Services

### Conferences

**27.-29.11.2018 Essen, Germany**  
[Geothermal Congress DGK 2018](#)  
Register until 12 November 2018

**14.-15.02.2019 Offenburg, Germany**  
[GeoTherm expo & congress](#)



Demonstration of soft stimulation treatments  
of geothermal reservoirs

DESTRESS demonstrates methods of enhanced geothermal systems (EGS). The aim is to expand knowledge and to provide solutions for a more economical, sustainable and environmentally responsible exploitation of underground heat.

This project has received funding from the European Union's  
Horizon 2020 research and innovation programme  
under grant agreement No. 691728



*The content of this newsletter does not reflect the official opinion of the European Union and its Innovation and Networks Executive Agency (INEA). Responsibility for the information and views expressed here lies entirely with the author(s).*

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