

Deliverable 7.4: DESTRESS 3 Newsletter series published

WP7: Dissemination, communication and outreach

Lead Beneficiary	
Type	<input checked="" type="checkbox"/> R - report, document etc. <input type="checkbox"/> OTHER - software, technical diagram etc. <input type="checkbox"/> DEM - demonstrator, pilot etc. <input type="checkbox"/> E - ethics <input type="checkbox"/> DEC - website, patent filing etc.
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Introduction

Approximately four times a year, DESTRESS mails an internal and an external newsletter alternatingly via the email marketing service MailChimp to its members or to the interested public respectively. Available feedbacks and experiences proof the effectiveness and relevance of this communications means and will therefore be continued.

Coverage / Reach of mailing list

The email marketing service MailChimp allows tracking the mailing lists' changes. As the following table shows, both newsletters continuously gain subscribers.

	Internal Newsletter	External Newsletter
No. of subscribers Oct 2016	91	115
No. of subscribers Dec 2016	100	130
No. of subscribers March 2017	118	176
No. of subscribers Oct 2017	133	205
No. of subscribers Feb 2018	133	210
No. of subscribers July 2018	132	233
No. of subscribers October 2018	137	240
No. subscribers January 2019	144	252

Appendix: published internal and external newsletters between March 2018 and February 2019

	Internal Newsletter	External Newsletter
Newsletter #5	21 August 2017 (in D7.3)	28 May 2018
Newsletter #6	19 December 2017 (in D7.3)	15 October 2018
Newsletter #7	25 Juli 2018	-
Newsletter #8	23 January 2019	-

Liability claim

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Korea Institute for Advancement of Technology (KIAT)
Swiss State Secretariat for Education, Research and Innovation (SERI)



Full steam ahead

Just in time for the summer holidays, we received good news from the EC: our latest amendment has been approved. This means, additionally to our well-proven sites, we can further advance our soft stimulation experiments at new locations.

Immediately after summer, the DESTRESS agenda will be rather full: the interim report is due as well as the Pohang workshop, and the executive board meeting will take place in Zurich in September. You will find details to these events as well as latest project advances in this newsletter. And last but not least: don't miss our first DESTRESS video clip!

Save the dates!

20 September 2018: Executive Board meeting in Zurich (Switzerland)
For detailed information contact [Justyna Ellis](#).

18 - 20 February 2019: 4th General Assembly in Strasbourg (France)
Hosted by UoS, contact: [Jean Schmittbuhl](#).

Organizational Matters

A new grant agreement for DESTRESS!

After months of negotiations with the EC, various changes regarding the description of action and finances have been approved finally and DESTRESS has a new legally binding contract to work with. Thus, the [amendment from July 2018](#) is the new grant agreement for DESTRESS and must be immediately considered by each partner and each person working on the project!

The main changes refer to the introduction of the new participants KIGAM and University of Utrecht and the new research sites such as Mezőberény (Hungary) and The Hague (Netherlands) for WP4, Bedretto (Switzerland) and Gabbro Intrusion (Iceland) or Cornwall (United Down project in the UK) for WP5. Therefore, task descriptions had to be adapted, scientific leads for tasks and related deliverables modified, and deliverables and milestones postponed. In addition, various budget transfers and financial changes were made.

Please make yourselves familiar with the latest changes on DESTRESS as we must work according to the descriptions and promises laid down in the amendment from July 2018!



Next interim report due soon

The next interim report will be due on 3 September 2018. Please make sure that all activities carried out by individual partners and each work package/task between March and August 2018 are described in this [google sheet](#).

Please explain therein all activities from the previous six months: preparation and timing for upcoming stimulations, publications (open access, find further information in this newsletter), dissemination activities, difficulties, challenges, and completed tasks. Do not elaborate scientific results in the interim report, since they are presented in official deliverables. However, you can mention the main results. The last interim report may serve you as a guideline, you find it on EMDESK / Document Manager / Reporting / Interim reports.

Do not forget: your contribution to the interim report is obligatory and team work is required. In case of any questions, do not hesitate to contact [Justyna](#).



DESTRESS measures for GDPR compliance

As of May 2018, the General Data Protection Regulation (GDPR) is in force. DESTRESS is taking different measures to comply with the GDPR which concern the following aspects:

DESTRESS newsletter distribution

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.

To ensure that also the recipients of the external newsletter are aware of the data policy, a consent statement will be added to the next newsletter. To comply with the new regulations, we have activated a double-opt-in process where interested readers receive a second message following their initial sign-up asking for their permission and their agreement to MailChimp's privacy policy.

DESTRESS website

With an updated data policy statement underway, DESTRESS will follow a template developed by ETH Zurich specifying several aspects: Users will be informed about the data collected including IP addresses, access times, resources requested and information about the type of web browser and/or operating system used. Log data is at no time assigned to an individual. No data is shared with third parties or linked to personal data obtained from third parties. No cookies are used.

DESTRESS internal workspace

DESTRESS uses Emdesk as an internal workspace. The data servers are primarily hosted by [Emdesk GmbH](#) in Germany and must therefore comply with the new EU regulations. If you would like to know more about Emdesk's Privacy Policy, please refer to their [website](#).



Publishing open access

During our last progress meeting, we discussed the topic "open access" in detail. Below, we have summarized the most important aspects you have to keep in mind when publishing under Horizon 2020. Additionally, you can [here](#) find the slides "Open Access in EU projects" which Holger Cremer presented in Glasgow.

What does open access mean?

Open access means providing online access to peer-reviewed scientific publications that are free of charge for a reader.

3 steps to accomplish the regulations

1. Store your publication in an online repository.

An electronic copy of the published version must be deposited in an online archive (institutional, subject-based or centralised). Repositories that claim rights over deposited publications and preclude access are not eligible. This must be done at the latest upon publication.

2. Provide open access

Beneficiaries can freely choose between 'green' or 'gold' open access.

A green open access means that an article is archived in an online repository which allows the author to delay access to the article. Access to the article must be ensured within a maximum of six months after publication.

A gold open access provides immediate access to the article. Sometimes, additional fees will be charged. Those fees are eligible for reimbursement during the duration of the project. Open access must be granted at the latest on the date of publication.

One must also give open access to all data needed to prove the publication's results. Any 'open access costs' are part of the overall project budget.

3. Do not forget

Beneficiaries must also provide open access to the bibliographic metadata that identify the deposited publication. These must be in standard format and include terms, name of action, acronym, grant number, as well as publication date, the length of the embargo period and a persistent identifier.

Detailed information is provided on this website: ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-dissemination_en.htm

Upcoming milestones

M9: Establishing an adequate injection strategy by minimising the environmental impacts and by enhancing the hydraulic and thermal performance in time (UoG)

M24: 33 days of physical access reached (ETH)

Written evidence for reaching the milestone in form of a short report or PP-presentation to be sent to Justyna (ellis@gfz-potsdam.de) **by 27 August 2018**



Scientific workshop on Pohang incl. a visit to the underground lab Bedretto

Date: 17 to 19 September 2018. We will start at 10 a.m. on the 17th and close not before 19.30 on the 19th as travelling back from Bedretto, where the field visit is taking place, is time consuming.

Venue: ETH Zürich, Sonneggstrasse 5, 8092 Zürich, Room HG E42

Purpose: topics going from seismic data analysis, hydraulic and geomechanical modeling, to public acceptance and how to undertake EGS projects after Pohang

Participants: mainly people involved in WP5 and 6, but anyone interested in EGS is welcome to join.

Registration: <https://doodle.com/poll/9yhqe8s24yzbndze> until September 7, 2018.

Proposals for presentations to be sent to Frédéric Guinot (f.guinot@geo-energie.ch) until 15 August 2018.

Insights



Ready to soft stimulate Mezőberény

DESTRESS members visited Mezőberény last summer and realised that it would 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 WP4 will design a chemical stimulation concept.

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



Installation of a seismic station in Keffenach

In the framework of the DESTRESS WP3.4 (non-standard risk monitoring) ES-Géothermie organized together with GFZ the installation of a seismological station in the town hall of Keffenach, a village located in the vicinity of the Soultz-sous-Forêts and Rittershoffen geothermal plants.

After the approval of the municipal council, the DESTRESS team installed on 14 May 2018 a velocity-meter station inside the building. This station is now operational. An additionally installed screen, which allows visualizing the seismic signals, serves as an educative tool and can sensitize pupils to seismology. In fact, the signals and other parameters are directly sent to GFZ for that purpose.

Vincent Maurer



The installed equipment in the town hall of Keffenach.



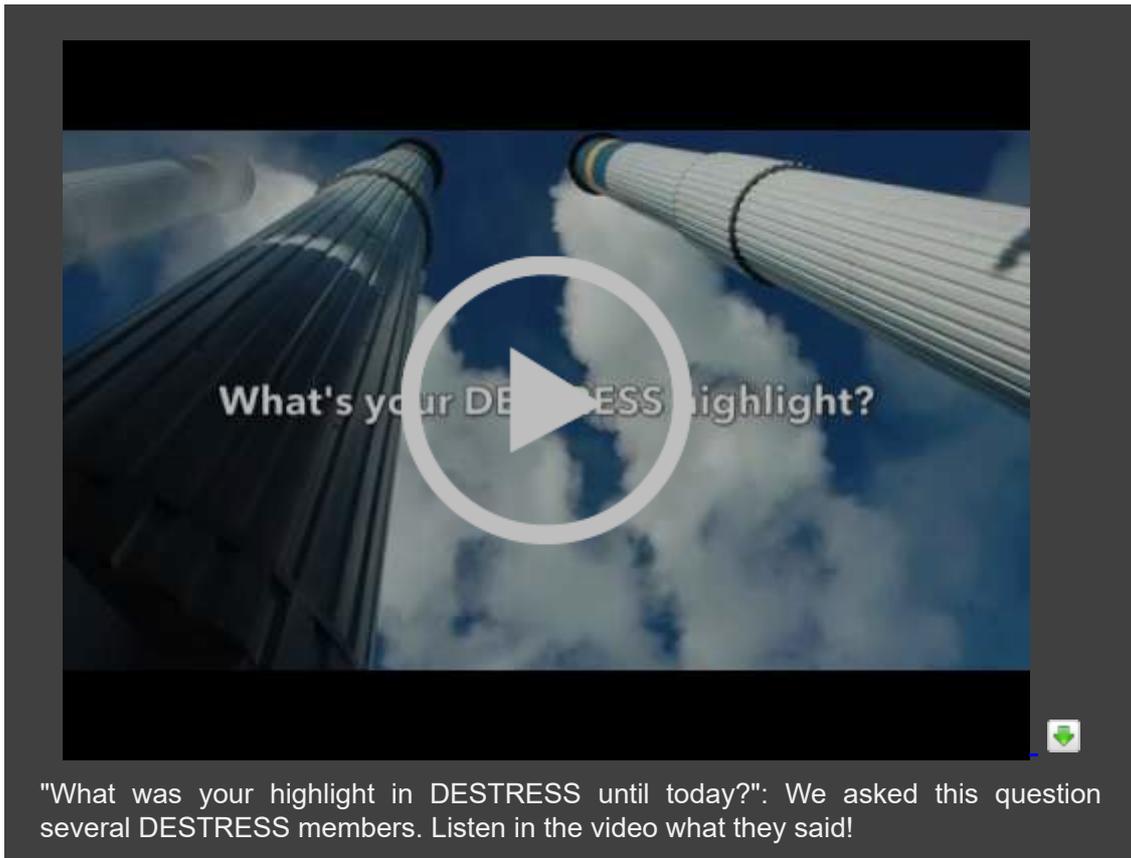
A step forward in designing the chemical stimulation in Soultz

As presented in Glasgow on April 2018, casing integrity and production logging have been realized in the GPK-4 well (Soultz-sous-Forêts, France) on January 2018 in order to evaluate the risk of casing failure during the chemical stimulation. The preliminary log results have been presented during the mid term conference in Glasgow and a task force has been created in order to gather efforts on the interpretation of these logs. Between April and May 2018, the nature of major integrity issues and the most suitable chemical stimulation design were debated among other means in a video conference. Then, it was decided between ESG and UoS to log again a production log in the GPK-4 well before performing any stimulation job due to some unexplained anomalies. Technical specifications, the logging programme and the choice of the logging company are still under discussion.

Régis Hehn & Nicolas Cuenot

"My DESTRESS highlight..."

Have a look at what DESTRESS members appreciate the most about working and collaborating in this project. The video is for internal use only and will not be published on our website.



Behind the Scenes

Janine Aeberhard takes over Stephanie's tasks in the DESTRESS communications department. Janine works together with Michèle at the SED in Zurich and is looking forward to hearing from you whenever you have exciting DESTRESS news, interesting facts, or funny stories.

Reminder

If there is a new member in your team working for DESTRESS, please inform [Justyna](#). She will grant the person access to EMDESK.

Services

DESTRESS Activities

17.-19.9.2018 Zurich, Switzerland
Pohang - workshop
hosted by GES, contact: [Frédéric Guinot](#).
Register [here](#) until 7 September 2018.

Conferences

10.-11.10.2018 Strasbourg, France
[6th European Geothermal Workshop](#)

16.-18.10.2018 Munich, Germany
[Praxisforum Geothermie.Bayern](#)

20.9.2018 Zurich, Switzerland

Executive Board meeting at ETH Zurich

For detailed information contact [Justyna Ellis](#).

18.-21.2.2019 Strasbourg, France

4th General Assembly hosted by UoS, contact: [Jean Schmittbuhl](#).

Call for Abstracts

17.-19.09.2018 Zurich, Switzerland

Pohang Workshop, send abstracts to [Frédéric Guinot](#)

Submission: 15.08.2017

11.-14.07.2019 The Hague, Netherlands

[European Geothermal Congress \(EGC\)](#)

Submission: 7.09.2018

14.+15.02.2019 Offenburg, Germany

[GeoTherm expo & congress](#)

Submission: 17.08.2018

27.-29.11.2018 Essen, Germany

[Geothermal Congress DGK 2018](#)

14.+15.02.2019 Offenburg, Germany

[GeoTherm expo & congress](#)



Demonstration of soft stimulation treatments of geothermal reservoirs

DESTRESS is a Horizon 2020 supported programme aiming to demonstrate methods of EGS (enhanced geothermal systems) and thereby expanding knowledge and providing 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





DESTRESS launches into the new year

2018 came to an end and with it many changes within the DESTRESS project. This year already starts exciting with the General Assembly in Strasbourg from 18 to 20 February 2019. This newsletter provides more information on the agenda and additional activities. We also have the second periodical reporting coming up in March, so make sure to read about the requirements in the next section.

This newsletter will also inform you about abstracts for the WGC2020, the EURO 2019 and the EUSEW2019. We also provide some insight into what happened at the different sites, such as Soultz-sous-Forêts or Bedretto, where the ceremony of Saint Barbara was held.

Organizational Matters



4rd General Assembly in Strasbourg (18 - 20 February 2019)

The registration for our annual meeting has been closed. We expect 51 participants and lively discussions in the consortium about the latest results and upcoming stimulations. The final agenda can be seen [here](#) and the overview of the participants [here](#). Please check whether your name is listed. Templates for presentations will be send to the leaders next week.

Registration to the additional Wednesday activity needed by Monday, the 28th of January!

We planned three different activities to be chosen by people interested in staying in Strasbourg after the official closing of the DESTRESS meeting, namely a touristic tour, a visit to the European Parliament and a visit to the Soultz site. As all the three activities will happen at the same time and require preparations, we kindly ask you to [register here](#) for one of them immediately. Please note that the registration is binding and that people attending the workshop on the site in Geldinganes (WP5) on Wednesday afternoon should not register for any additional activity.



The second periodical reporting coming up

As already announced, the second periodical reporting ends in February 2019, meaning that we must get started with writing technical reports from the last 18 months covering the period **between September 2017 and February 2019** and the time is tight.

Good news is that the two last interim reports already covered the period between September 2017 and August 2018 (find the Technical Reporting [here](#), the Interim Report September 2017 - February 2018 [here](#) and the Interim Report March - August 2018 [here](#)), meaning that these contributions should flow into the periodical report and be only improved and updated with the activities and results from the last six months. For that, we will use the google sheet again:

<https://docs.google.com/document/d/1r-gLIU6bfQRMn0o4owtJHg9uHX9ARvR4034khFcNbs/edit?usp=sharing>

Please explain therein all activities from the previous 18 months carried out in each work package and task: preparation and timing for upcoming stimulations, publications (open access only), dissemination activities, difficulties, challenges, and completed tasks. Do not elaborate detailed scientific results, since they are presented in official deliverables. However, you should mention the main results (submitted deliverables and milestones) and the contribution to the objectives of DESTRESS.

Important!

- Each partner should also mention the personal months used for each work package from the beginning of the project until now (see the table under each work package, currently old numbers are saved in red).
- Each partner should reflect on any changes, deviations from the description of action (tasks and use of resources), which occurred lately and are not included in the last amendment and explain them under point 5 in the google sheet.
- Each partner should save details on any meeting and skype conference in the calendar on EMDESK.
- **Each partner, especially each person involved in the task or work package is supposed to support the leader with any contributions needed! Please be aware of the fact that the leader is not able to write summaries of the results or finalise the job without your help!**
- As we will jointly work in the google sheet again, please be careful while deleting or improving any entries from the others and insert your contributions only if they are ready and agreed upon by all partners involved in the work package/ task.

Deadline: 15th February 2019! The technical reports will be discussed during the general assembly in Strasbourg, therefore delays are out of question.

The financial statements to be submitted by the partners receiving the EU-contribution are due at the end of March 2019.

We expect a good team work again!

Good luck!

If you have any questions, please contact Justyna (ellis@gfz-potsdam.de)



Presenting preliminary results during the World Geothermal Congress 2020

Assuming that DESTRESS will be extended to November 2020 (still awaiting an official agreement from the EC), the final DESTRESS conference would take place in October 2020. As most activities except the research activities in Bedretto will be finalized by February 2020, we encourage you to present your preliminary results during the WGC2020 in Island. DESTRESS results at a glance will be introduced by the leading team (EB). Please discuss possible

contributions to this congress in your teams and submit your abstracts **by the end of January 2019** [here](#).

A short notification about the planned contribution should be circulated within the consortium: destress_generalassembly@list.emdesk.eu

Insights



An update on Soultz-sous-Forêts

"Exploitation of the Soultz-sous-Forêts power plant has been ongoing for the whole year 2018. Production of geothermal fluid has been performed through the GPK2 well, equipped with a production pump and reinjection has continuously been done into both reinjection wells, GPK3 and GPK4.

Since the end of October 2018, the reinjection flowrate into GPK4 has been slightly increased from 8-9 l/s to 10-11 l/s, which allowed to get new information about its current injectivity. In parallel, a tendering document has been prepared for the future chemical stimulation of this well, planned to be conducted in the framework of DESTRESS. We're currently waiting for technical and commercial submissions from service companies."

From Albert Genter, ES Géothermie



Successful collaborations in Mezöberény

"Ábel Markó, a student from Budapest, did an internship with Maren and then worked as a student for three months (October 2017 to June 2018). Meanwhile, he also started his student research project (supervised by Maren) and now finished and defended it. In December, Ábel presented his work on the

"Investigation of injection problems in geothermal energy using hydrochemical modelling" at the Eötvös Loránd University in Budapest and won the prize of the Erdélyi Mihály Foundation for Hydrogeology!
He has just started his Master's degree and will continue to support us in Mezöberény."
From Maren Brehme, GFZ Potsdam



New best practice report on hydraulic, chemical and thermal stimulation

A new best practice report, written by Guido Blöcher and Günter Zimmermann from GFZ Potsdam, has been published on our website. It describes the differences and similarities of hydraulic, chemical, and thermal stimulation in order to enhance well productivity or injectivity within different types of reservoirs ranging from sediments like sandstones and limestones to crystalline rocks like granites and basaltic rocks. The report provides a first insight into the use cases, possible difficulties, and risks of different stimulation techniques. Read more [here](#).



Celebration of Saint Barbara at Bedretto Underground Laboratory for Geo-sciences

On 4 December, the commemoration day of Saint Barbara took place in the Bedretto tunnel in Bedretto, Switzerland. As you might know, Saint Barbara is the patron of miners and geologists. As tradition demands, work was interrupted on that day and a statue of Saint Barbara was consecrated and installed in a niche. This was followed by a small celebration in her honour.

The laboratory should be accessible from spring 2019 on. DESTRESS will then be able to start its research.



DESTRESS at EGPD

The European Geothermal PhD day (EGPD) is intended to connect PhD researchers from all over Europe working in the field of geothermal energy and will celebrate its 10th anniversary at its original host institution, the German Research Centre for Geosciences (GFZ), Potsdam. Every year, between 50 to 80 young scientists from various research fields such as geology, geochemistry, rock mechanics, geophysics and mechanical engineering come together to share knowledge and experience on this promising energy resource.

The conference programme will include keynote lectures from experienced researchers and academics about recent scientific and technical developments in geothermal energy, as well as socio-economic aspects, a poster session with drinks and snacks, a conference dinner and a guided tour to the geothermal underground laboratory and power plant of Groß Schönebeck, one of DESTRESS's fall back options.

For more information check their [website](#) or their [flyer](#).

Events



Third Schatzalp workshop on induced seismicity in Davos, Switzerland, 5 - 8 March 2019

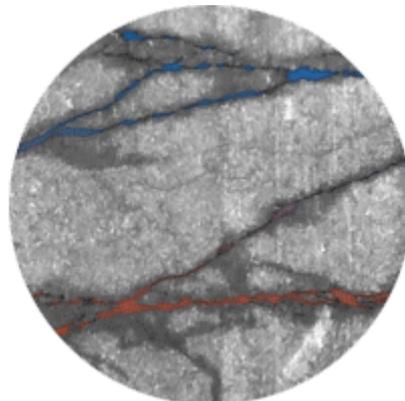
Induced seismicity remains a major challenge for numerous geo-energy applications around the world and a fascinating research topic. Two years full of scientific progress have passed and new, sometimes surprising developments took place since the 2nd Schatzalp Workshop on Induced Seismicity in Davos.

The [Swiss Seismological Service](#) is now inviting to [register for the third workshop](#) that will continue in the tradition of the previous editions in 2015 and 2017. The focus will again be on discussing the state of the art and future directions of all aspects related to induced seismicity. Special sessions are planned, for example, on lab and underground experiments, the Groningen experience, the Pohang earthquakes, and the use of induced seismicity to understand earthquake physics. Registration is open until 31 January 2019.



Application for session at EUSEW 2019 now open

Every year the European Commission organizes EU Sustainable Energy Week EUSEW – the biggest event dedicated to renewable and efficient energy use in Europe. This year it's all about “shaping Europe's energy future”. The EUSEW19 will be back for its 14th Edition in June 2019. Applications for [organizing a session](#) or [presenting your project](#) are now open.



EURO 2019 Abstract Submission now open

The 13th EURO-Conference on Rock Physics & Geomechanics will be held in 2019 in Potsdam, Germany. The overarching theme of the conference, “Rock fracturing and fault activation: experiments and models”, will provide a unique opportunity for international researchers and industry experts to discuss recent results and developments of rock fracturing and fault activation experiments, at laboratory, mine, and field scale, as well as related modeling efforts.

Abstract submission opened on 1 December 2018 and is still open until 15 April 2019. Find more information [here](#).

Services

DESTRESS Activities

General Assembly

18 - 20 February 2019
Strasbourg, France

Conferences

GeoTHERM expo & congress

14 - 15 February 2019
Offenburg, Germany
More details [here](#)

European Geothermal PhD Day 2019

25 - 27 February 2019
Potsdam, Germany
More details [here](#)

Schatzalp Workshop on induced seismicity

5 - 8 March 2019
Davos, Switzerland
More details [here](#)

European Geothermal Congress

11 - 14 June 2019
The Hague, The Netherlands
More details [here](#)

Call for abstracts

81st EAGE Conference & Exhibition 2019

3 - 6 June 2019
London, United Kingdom
[Call for abstracts](#) open until 15 January 2019

EUSEW 2019

18 - 20 June 2019
Brussels, Belgium
[Apply for a session](#)

EURO 2019

2 - 6 September 2019
Potsdam, Germany
[Call for abstracts](#) open until 15 April 2019

World Geothermal Congress 2020

27 April - 1 May 2020
Reykjavik, Iceland
[Call for abstracts](#) open until 31 January 2019



Demonstration of soft stimulation treatments
of geothermal reservoirs

DESTRESS is a Horizon 2020 supported programme aiming to demonstrate methods of EGS (enhanced geothermal systems) and thereby expanding knowledge and providing solutions for a more economical, sustainable and environmentally responsible exploitation of underground heat.

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Horizon 2020 research and innovation programme
under grant agreement No. 691728





Website



Mail us

Geothermal projects are challenging but fascinating!

Even though geothermal heat is a promising source to enrich and contribute to the renewable energy mix, it is not risk-free and challenges of a geothermal project are manifold. Also DESTRESS faced challenges during its second project year such as unproductive reservoirs or project termination due to seismic activity. However, DESTRESS is on track and allows for many exciting insights - learn more about the latest developments, changes and results in this newsletter!

By the way: did you know that geothermal energy has already been used for more than 10'000 years?

News and Progress



Welcoming a new site: Mezőberény

Mezőberény is a small town located in the South-East of Hungary. In 2011, a production and injection well was drilled, followed by a chemical and mechanical cleaning. DESTRESS members visited the site last summer and realised that it would 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 cooperate and join forces with DESTRESS. In a first step, members of [WP4](#) will design a chemical stimulation concept.



Production well, filters, and injection well in Mezőberény.



Map of the DESTRESS sites, including the new one in Hungary.



Changing plans for Trias Westland

In autumn 2017, the operators of the Trias Westland project in the Netherlands started a drilling campaign to a 4'000 metres deep sandstone reservoir. Unfortunately, drilling results showed that the reservoir is not suitable for extracting geothermal energy. One reason is the natural porosity of the sands being much lower than expected. Another that gas is trapped in micro-pores, which makes it impossible to run a test with a downhole pump. Consequently, the management team has decided to plug the reservoir with cement and open the lower cretaceous reservoir at 2'300 metres depth. This allows to finalise a doublet at lower temperatures and deliver heat to a part of the contracted greenhouses.



Second DESTRESS workshop at GeoTHERM Offenburg

What makes a geothermal project successful? Exactly this question was tackled by the DESTRESS side event in Offenburg, taking place on 2 March 2018. Not surprisingly, the around 30 participants learned that it is a difficult question to answer. To run a successful project, one needs to consider many factors including geological investigations, seismic monitoring, technological aspects and public involvement. The five speakers, international experts currently engaged in geothermal projects or research, offered best practices obtained from scientific analysis and practical case studies on how to take into account the challenges related to geothermal exploration. Their main consensus was: geothermal heat extraction is so multifaceted, that cooperation across institutions and borders is essential. Only through the exchange of experiences, data and know-how a project can be successful.

You can download some presentations given during the event [here](#).



The speakers (from left to right): Olivier Ejerdyan (ETHZ), Michel Meyer (SIG), Stefan Wiemer (SED), Marton Farkas (GFZ), Hans Veldkamp (TNO)



Progress meeting and midterm conference

From 3 to 6 April 2018, the DESTRESS community met for four days in Glasgow to discuss internally the current progress of the project during the 3rd General Assembly and to share its results with the public during the Mid-Term Conference. The progress meeting joined by over 50 DESTRESS participants concentrated on the presentation of the status quo, identification of challenging issues and debates on including additional research sites into DESTRESS. The Mid-Term Conference attracted around 30 external persons and offered short insights into DESTRESS' topics such as soft stimulation, risk management, social acceptance, and technological advances. DESTRESS' members and the audience lead fruitful discussions and exchanged on important cross-cutting issues in the field of geothermal energy.



The DESTRESS community in Glasgow.

During the conference, we recorded interviews with various DESTRESS participants, including the project coordinator Ernst Huenges. The video will be on our website soon - so stay tuned to get even deeper insights into our project.

Click here and have a look at the presentations from the midterm



Three new best practice reports online

New techniques, innovations, or crucial experiences gained within DESTRESS are made available to an interested audience via our best practice reports. "Harmonic pulse testing", "Reservoir characterization and well testing" and "In-situ stress estimation in geothermal reservoirs" are the topics of the three most recent reports. Read their summaries below.

Harmonic Pulse Testing as a Monitoring Tool for Enhanced Geothermal Systems

Harmonic pulse testing is a technology that has similar capabilities as regular well testing. It intends to determine hydraulic parameters such as transmissivity, wellbore storage, skin and storativity. In comparison to well testing, pulse testing has some important advantages: the deployment is simple, it can be performed during ongoing operations and it can be used as a monitoring tool. [Read more](#)

Geothermal reservoir characterization and well testing

After drilling a geothermal well into a reservoir, one needs to characterize its properties and assess the well properties. This knowledge is essential for efficient and fast decisions, for example to configure soft stimulation treatments, as well as for the design of surface facilities. [Read more](#)

In-situ stress estimation in geothermal reservoirs

The ability to estimate stresses in deep boreholes is limited because collecting data is challenging in these depths. Thus, it is desirable to combine various stress measurement methods and follow a set of steps to construct a reliable rock stress model. [Read more](#)



Anthropogenic or not? Investigating the magnitude 5.5 Pohang earthquake in South Korea

A recently published paper in [Science](#), written with contributions from DESTRESS partners, explores the potential link between [magnitude 5.5 \(Mw\) earthquake in South Korea](#) and the nearby geothermal project.

These indications combined in the study lead to the conclusion that a connection between the magnitude 5.5 earthquake in South Korea and the nearby geothermal project is plausible. However, the mainshock occurred about two months after the last stimulation activities. So far, there is no quantitative model available that relates the injection activities conducted to the occurrence of this event. The Korean government has appointed an independent expert commission to examine all pieces of evidence and to evaluate if the event was triggered or induced by the nearby stimulation activities. DESTRESS emphasizes the tentativeness of the results and therefore will continue to support analyses respective to the seismic events near Pohang.

[Read more](#)

Did You Know...



... when people used geothermal energy for the first time?

History says that the first use of geothermal energy occurred more than 10,000 years ago in North America by American Paleo-Indians. People used water from hot springs for cooking, bathing and cleaning.

The first industrial use of geothermal energy began near Pisa, Italy in late 18th century. Steam coming from natural vents (and from drilled holes) was used to extract boric acid from the hot pools that are now known as the Larderello fields.

Source: Conserve energy future

Services

Conferences

11. - 12. September 2018 in Celle, Germany
[Celle Drilling 2018](#)

16. - 17. October 2018 in Munich, Germany
[Praxisforum Geothermie.Bayern 2018](#)

24. - 25. October 2018 in Offenburg, Germany
[Geotechnik expo & congress](#)

11. - 14. June 2019 in The Hague, The Netherlands
[European Geothermal 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.

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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.

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](#)



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](#).



New demonstration site in Iceland

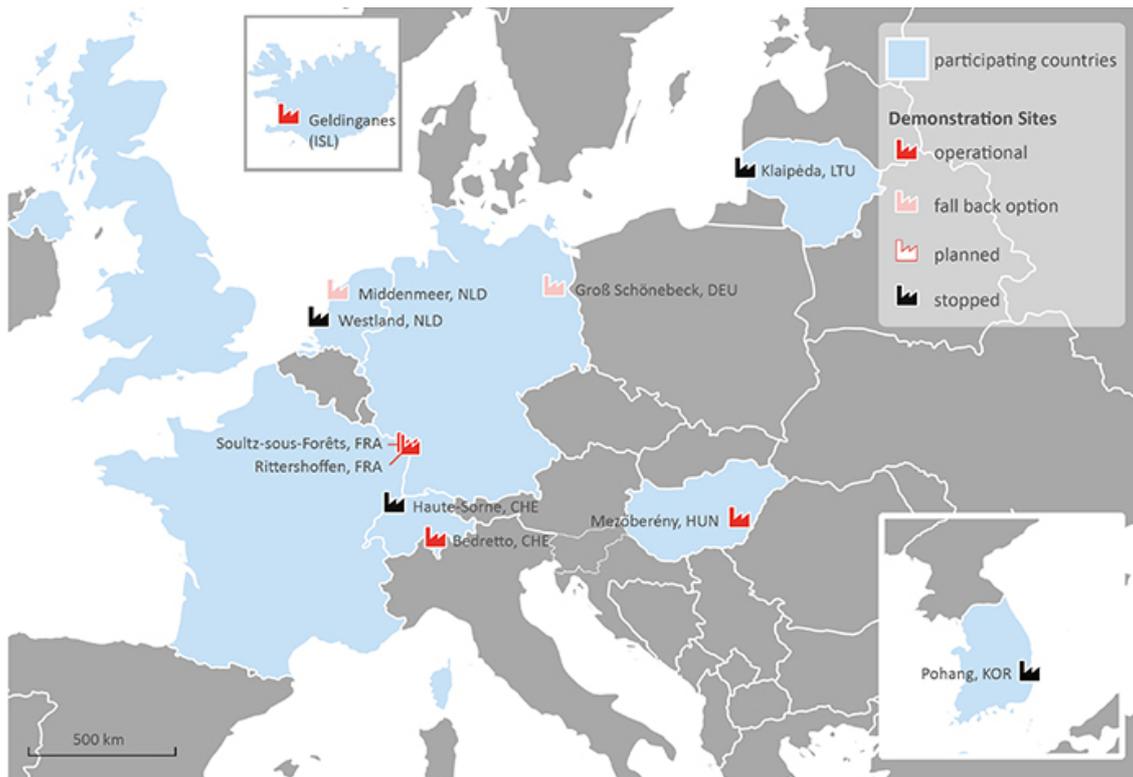
DESTRESS has found a new demonstration site in Geldinganes, Iceland. The general assembly of DESTRESS accepted to include Geldinganes in the project. The Management Board went for a site visit earlier this summer to assess the possibility to perform a cyclic hydraulic stimulation and confirmed the plan.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



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](#)



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. 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.

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](#))

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](#).

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](#)



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