WING
Women in Geothermal

"Knowledge is power, community is strength and positive attitude is everything"
-Lance Armstrong

WING UK GOAL

Our goal is to support and contribute to the development of Geothermal technologies and the role of women in this thriving industry

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WING UK

Exchange knowledge, supporting the development and improvement of the Geothermal technologies.
Find news and relevant information on the Geothermal activity in the UK.
Network with likeminded individuals to share experience and advice.
Advertise internship and job opportunities.
Find Match-Making Opportunities, where the solutions of one body/organization, can help another

WORLD GEOTHERMAL CONGRESS

has been postponed

to may 21 - 26, 2021

For more info:
https://www.wgc2020.com

https://www.womeningeothermal.com

Women in Gothermal (WING UK)

WOMEN IN GEOTHEMAL (WING UK)

@UK_WING

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WING UK 'Think & drink' webinar series

In light of the recent Covid-19 outbreak and consequent self-isolation, working from home measures and postponement of geothermal conferences and events such as the World Geothermal Congress 2020, WING UK have organised a 'Think and drink' webinar series.

This will take place as a virtual meeting held fortnightly using 'GoToWebinar' as a platform.

We see this as a time for WING members to get to know each other and for networking within the geothermal community. This can also be an opportunity to share research and developments within the geothermal industry.

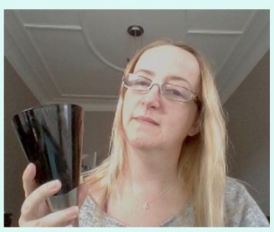
To kick off we held an icebreaker session at the start of April. The event was a great success and saw the WING UK committee joined by several new members. This allowed for introductions between members of the geothermal community and sharing of experiences and insight in the geothermal industry.

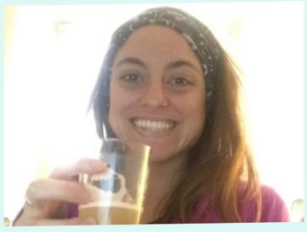
Future sessions will vary between presentations delivering geothermal related topics, and geothermal quizzes for a more social get together.

If you're interested in giving a presentation at one of our events please contact us at **womeningeothermal.uk@gmail.com**

Our next 'Think & drink' event will take place on 1st May, 2020.

We hope to see you there!

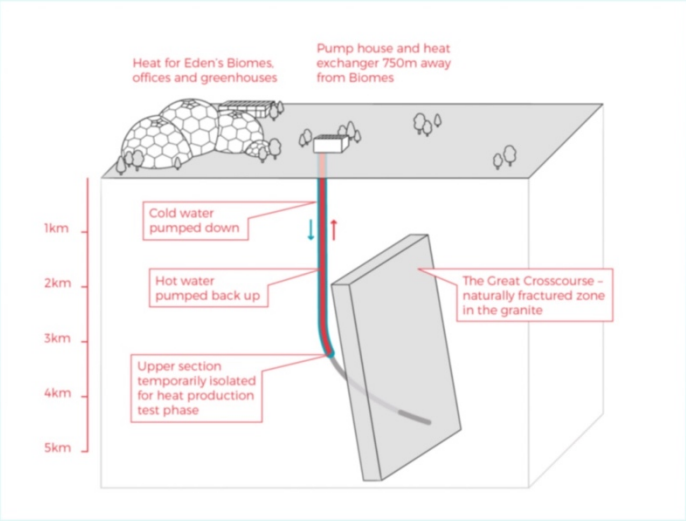



EDEN GEOTHERMAL PROJECT UNDERWAY

Claire J

Preparations are being made to start drilling the long-anticipated first deep geothermal well at the Eden Project in Cornwall towards the end of this year.

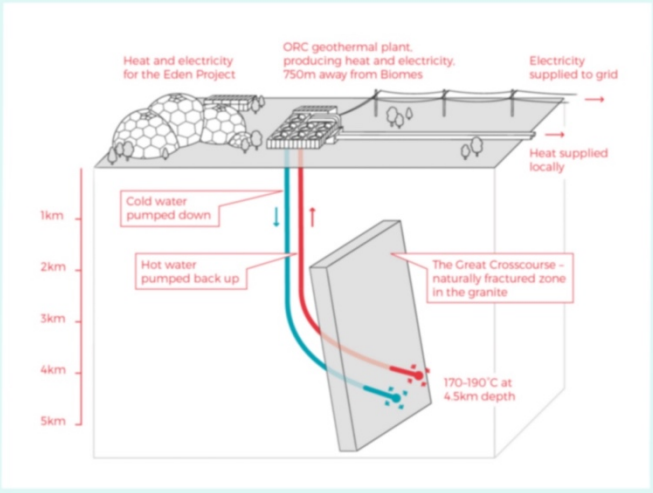


Following a 10-year development programme, £16.8m funding has been secured from the EU through the European Regional Development Fund, and from Cornwall Council and an institutional investor, for the first phase of the Eden Geothermal Project.

This involves firstly drilling and testing a 4,500m well into the granite beneath the Eden site, followed by one year of heat production and demonstration. It will build on existing research and knowledge of the deep geothermal resource in Cornwall by providing greater understanding of the geology at depth, enabling resources in the region to become characterised as reserves.

After well testing in spring 2021, a coaxial system and heat main will be installed to enable the supply of heat to the Biomes and other facilities at Eden, including new greenhouses due to be constructed on site.

In addition to demonstrating the benefits of greenhouse gas savings achievable from the single well to over 1 million visitors to the Eden Project each year, it will provide an indication of the resource potential achievable from a two-well system. In this way, it's hoped that this first stage will pave the way for the second 4,500m well and a combined heat and power plant, enabling Eden to become carbon neutral by the end of 2023, as well as providing heat and power for the local area.



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Bringing Experts Together

To deliver the plan, a new company, Eden Geothermal Limited (EGL) has been formed. EGL is a partnership between: Eden Project Limited, the world-renowned educational charity and visitor attraction; EGS Energy Limited, a leading geothermal development and consultancy group; and BESTEC (UK) Limited, which is affiliated with BESTEC GmbH, the specialist geothermal developer and drilling advisor.

The partners were part of the Hot Dry Rocks geothermal project in Cornwall in the 1980s, the follow-on EU programme in Soultz-sous-Forêts, France and the subsequent commercial power generating projects in Landau and Insheim, Germany, among others.

The University of Exeter is the academic and research partner on this project.

Project Director Augusta Grand and the EGL team are currently busy with the procurement programme, with site works set to get underway in early summer. Project Manager Max Skerratt from Contact Energy in New Zealand started in mid-February.

The restrictions posed by COVID-19 mean that the EGL team is currently working from home. But, as the project is still in the 'paper phase', progress has been largely unaffected so far, and the programme is on track. Tendering is underway for the drilling rig and a microseismic monitoring network, and an invitation to bid for the site construction tender is about to be released, with others to follow very soon. Site preparation will start in the summer, with drilling commencing in January 2021.

Contact info@edengeothermal.com

eden geothermal

European Union
European Regional Development Fund

HM Government

CORNWALL COUNCIL
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FROM BLACK TO GREEN GEOTHERMAL

Joseph Ireland

"Anton, I need to hand in my notice, how do I do it?" I nervously asked my Drilling Superintendent at the BP office in Aberdeen. I was due to go offshore as Rig Site Engineer to the Clair Ridge Platform, BP's new £4.5billion project. I loved being offshore and drilling into the Earth for oil since joining BP in 2012. Yet, here I was resigning.

A week previous, I returned to work following 6-months leave, during which I moved from my beloved home in Newcastle, Co. Down to the Port of Spain, Trinidad and Tobago for the birth of my son Charlie Roy, born on 13th May 2017. A beautiful big boy!

The happenings pre and post his birth have had a profound impact on my life and on what it means to me to be a human being.

Following news of the pregnancy, my then partner lost her job and VISA.

My mental health struggled, and I moved with her to Trinidad hoping to get better mentally leading up to the birth. I actually got worse. When Charlie was born, my mental health was very low. I struggled to identify with him, had feelings of being replaced and couldn't cope with the pressure I felt to be his father. I loved him but found it very difficult to express. This caused concerns for my partner and ultimately led to the breakdown of our relationship.

I was hopeful that getting back to BP would help me to recover, instead I started to hear voices in my head;

"Stop drilling into me and taking what's not yours. You are hurting me, it is time to stop and change"

Was I completely losing my marbles? Was Mother Earth talking to me? I didn't know what to do, so like any Irish man, I hit the drink in my hotel. On the third night, Avatar was on the TV. When Neytiri said to Jake, "I see you". I saw myself and I didn't like it.

Neytiri also said,

"All energy is only borrowed and one day you have to give it back".

I was drilling into Mother Earth, taking her precious resources and giving nothing back. There is no "give back" associated with drilling, you take and then you create; whether that is the creation of plastics or fossil fuels, neither "gives back" to the ecological cycle of life. In fact, I was hurting Mother Earth through contributing to Climate Change.

The next morning, I woke up with the theme tune from Captain Planet in my head, "Captain Planet, he's our hero, Gonna take pollution down to Zero". I knew that morning what had to be done, so I packed my bag before leaving the hotel.

On arriving at work, I spoke to Anton, googled 'How to write a resignation letter', typed mine, sent it to HR and headed home.

On my return home, the first small hope of change was that I couldn't pass by litter and not pick it up. Before, I didn't even notice it! The second was that I couldn't handle the thought of drilling into Mother Earth for oil again.

I started therapy with a Psychologist to help me emotionally recover and I am still in therapy today. My close friends have been very supportive and I have always been very open about how I was feeling or what I was thinking. That is what has kept me alive, no matter how bad it gets in my head, I will always tell someone because it helps.

For the first two years of recovery, I just stayed working in our family business, Ireland's Appliance Centre. I started to experience gratitude for my family and friends on a level I have never felt before.

The journey in therapy has been a deep, painful and soul-searching inventory of my life. I have had to look at dark corners of my personality that I didn't even know were there, and when I did, I wanted to run from and just numb out. I discovered behavioural patterns, in which my treatment of both Mother Earth and of the Female Species was the complete opposite of what lies in my soul as a man. The guilt and shame I feel about that still overwhelms me at times.

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I have a massive wound as a result and can feel it bleeding, but no one can see it. However painful it has been, I am slowly starting to grow into the authentic man I would like to be. To quote the poet Rumi, "The wound is the place where the light enters you."

And just as in Na'vi said in Avatar "The old way is slowly dying and a new way is being born".

On 1st October 2019, I started a PhD at Queen's University researching Geothermal Systems that use production and injection wells to heat/ cool buildings. I absolutely love it and my fascination with the subsurface has been healthily rekindled. I feel like finally after 33 years on this planet, I can begin to express my true nature as a man.

There is a feminist Geo-Scientist living inside me that wants to be creative and imaginative.

The very thought that we can use the Mother Earth's hot rocks, to provide us with energy absolutely blows my mind. It sets me free from my critical voice and aligns me with this whole universe we are a tiny part of. Pain has opened the door to freedom. I may not have my son in my life, but he is the future and I plan to use my time to become involved with future Policies aimed at addressing the Climate Crisis we now all face. If I can learn to handle the 'hot rocks' life presents and change for the better, so can you, my brothers and sisters. Take a moment now and think about it, a moment is all it takes to start to change.

https://www.clipartkey.com/view/ixxhiT_captain-planet-captain-planet-and-the-planeteers/

MAN DOWN https://www.mandown-cornwall.co.uk

SAMARITANS https://www.samaritans.org

https://www.womeningeothermal.com

THE 7TH GEOTHERMAL SYMPOSIUM

Helen Robinson

With demand for heat growing, and the targets set by the Paris Agreement and the Sustainable Development Goal's (SDG's), geothermal has once again come in to play as a clean power source for the UK. Funding has been secured for several projects in Cornwall with the United Downs Deep Geothermal Project (UDDGP) leading the way.

The London Symposium on Deep Geothermal has been running as a bi-annual event with the 7th Symposium held at The Geological Society of London's Burlington House on the 5th November, 2019. The event was once again hosted by BritGeothermal and sponsored by The Geological Society, TownRock Energy Ltd. and EGS Energy Ltd.

With recent advancements in funding and project developments including UDDGP, Eden, Jubilee and UK GeoEnergy Observatories (UKGEOS), the academic and industry interest in the event was huge, with attendance exceeding that of previous years. The event was split into 6 key sessions: 1) UK and Industry Updates; 2) De-risking Geothermal; 3) UK Geothermal Research; 4) People and Places; 5) Research Beyond UK; 6) Policy and Regulation.

Ryan Law (GEL) opened the first session with the eagerly anticipated updates on the UDDGP. Ryan spoke about the success of the deviated wells, the anticipated bottom hole temperatures and the aim to supply electricity to the grid by the end of 2021. Already the project has broken records, with the site hosting the UK's deepest onshore well. And by the end of 2021, it will also be the first to produce geothermal electricity in the UK.

Alison Monaghan (BGS) provided an update on site construction at the UKGEOS site in Glasgow, as well as how to access data and how to apply to access the site for research. David Townsend from event sponsor TownRock Energy Ltd., outlined the most important factors that need to be considered when designing an economically viable geothermal heat network for the UK.

Roy Baria and Richard Day from event sponsors EGS Energy Ltd., introduced the floor to plans for the long awaited Eden Project and finally Chris Rochelle (BGS) summarised the wide range of shallow to deep enthalpy projects the British Geological Survey (BGS) are involved in.

These include CHPM2030, GEMex, UDDGP, GWatt and REFLECT, showing the extent of the UK's involvement in geothermal research and development at home and abroad.

Whether it is high pressure/temperature (P/T) systems utilised for electricity or low P/T systems used for space heating and direct use applications such as agriculture, de-risking geothermal is a vital part of development. This session included talks on the need for a better understanding of the UK sub-surface, heat flow and hydrogeological conditions by Charlotte Adams (Durham University); the risks to the integrity of existing mine workings as a result of changes in thermal stresses by Fiona Todd (University of Edinburgh); exploring unconventional well design as a way to mitigate the risks associated with deep geothermal drilling by Theo Renaud (Cranfield University); and a critical assessment on the feasibility of repurposing oil and gas wells for geothermal in the UK by Gioia Falcone (University of Glasgow).

The third session of the day introduced the floor to some of the research into the UK's resource potential. First, C. Abesser (BGS) shows that despite the Carboniferous limestones of the UK lack the typical characteristics of an economically viable geothermal resource such as good porosity and/or permeability, other processes synonymous with limestone, eg. karstification, evaporite dissolution, dolomitisation and mineralisation, as well as fracturing, can improve groundwater flow and further unlock geothermal potential in the UK. Though Christopher Dalby (Camborne School of Mines), is in the very early stages of his Ph. D. His research will look to address the challenges posed by modelling heat flow in granites where the concentrations of the heat-producing radioelements is unknown. Mark Ireland (Newcastle University) indicates that lessons learned from the oil and gas industry show predictions and modelling of sub-surface temperatures vs actual down-well temperatures can sometimes vary considerably. From this work it has become apparent that the controls on heat flow are more complex than previously understood. Sean Watson (University of Glasgow) has incorporated an element of industry history into his research. Geothermal projects to utilise heat from mines will play a significant role in decarbonising heat in the UK. His work explores the role historical mining may have had on disturbing the natural sub-surface conditions, and what this might mean for geothermal-mine projects.

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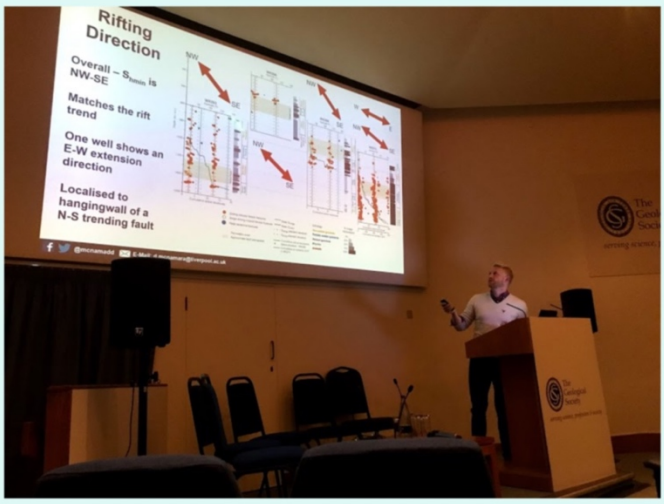
Hazel Gibson (University of Plymouth) presented the challenges and findings from studies surrounding public engagement in the development of geothermal projects, where geothermal phenomena are less visible and more unusual and unfamiliar technologies are more commonplace. Working with the UDDGP, researchers found that personal values, media framing, culture, science capital, social identity and attitudes towards renewable energy shape the narratives of a community surrounding an innovative project such as UDDGP.

WING had a strong presence at the symposium with many members of the WING community at the event and a presentation by Madelaine Constance

(GeoScience Ltd) who introduced WING UK and the main aim and goals of the organisation.



The fifth session explored some of the ongoing research UK institutions are involved in abroad. An interesting presentation by Nathan Magnall (CGG NPA Satellite Mapping) on the use of InSAR (Interferometric Synthetic-Aperture Radar) in monitoring the impacts of geothermal power generation on ground deformation, also demonstrating the use of InSAR to establish pre-development deformation baselines.
For anyone unfamiliar with InSAR, more information can be found at:

https://www.usgs.gov/centers/ca-water-ls/science/interferometric-synthetic-aperture-radar-insar?qt-science_center_objects=0#qt-science_center_objects

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The following presentation was by David McNamara (University of Liverpool). His research explores the structural controls on the Taupo Volcanic Zone (TVZ) in New Zealand, an area that hosts most of New Zealand's geothermal reservoirs. The take home message from this work is, "characterising and understanding the role of geological structures and tectonic evolution in permeability is key in identifying the nature of fluid circulation at a local and regional scale".

An interesting presentation by Rob Westaway (University of Glasgow), explored the possible relationship between well hydrochemistry, silica re-equilibration and delayed induced seismicity in granites. This work follows the developments, test injections, earthquake and subsequent suspension of the site at Pohang, South Korea. The final presentation of this session was by M. Johansson (Geode-Energy Ltd.). This research demonstrates the links between the research presented here by David and Rob, that being the role of fracture network characterisation in both fluid transfer and risk. Fracture characterisation is a key part of developing oil and gas fields and this research promotes the importance of this skill in the geothermal sector.

The final session of the day concentrated on policy and legislation with C. J. L. Willems presenting on the lessons learned from the Dutch Geothermal licencing and support schemes. Sadly, a representative from BEIS (the Department for Business, Energy and Industrial Strategy) was unable to attend at short notice. However, those attending used the time to start a discussion on the types of considerations needed for geothermal policies in the UK. A great deal of development is needed surrounding UK policy and legislation, but the government are working to address the significant challenges of decarbonising heat in the UK and the role of geothermal in addressing those challenges.

This year's symposium has shone a significant light on the development of the UK's geothermal resources, industry awareness of the work and policies needed to support the sector and our research role in the global market. The excitement for this year's event and the progress being made across the UK was clear for everyone to see.

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WING UK COMMUNITY

In each newsletter we want to share something about our WING members to let us get to know each other. If you'd like to share a bit about yourself please send through a photo and a blurb about yourself - womeningeothermal.uk@gmail.com

LUCY COTTON

I am a geologist who is passionate about the environment and sustainability. I was born and raised in Cornwall where I fell in love with the outdoors and the surrounding geology in the cliffs and on the moorlands. I work for GeoScience Limited in Falmouth and am lucky enough to be the Project Geologist for the United Downs Deep Geothermal Power project. The development is the first of its kind in the UK and I hope that it can lead the way for a new emerging geothermal industry in this country and a more sustainable future.

EREN GUNUC

I have been working as a senior geothermal energy specialist at Arup Group London Office since November 2018. Before Arup, I managed a geothermal engineering and consulting company for 6 years in Turkey. I have over 10 years of geothermal project experience covering 200 deep geothermal energy and GSHP heating & cooling projects worldwide. Since graduating as a geophysical engineer in 2008, I have developed extensive expertise spanning several geoengineering disciplines. I am a board member of the Geothermal Energy Commission of UCTEA Chamber of Geophysical Engineers of Turkey and have organized five international geothermal energy congress in Turkey. I have been a member of WING Turkey for 5 years and am proud to be a Wing-Man.

DAVID MCNAMARA

I am a geologist and spend most of my time trying to understand how fluids move through the Earth's crust and how that effects resources such as geothermal reservoirs. I use structural geology, borehole logging, geomechanics, and mineralogy to look at things from fracture fluid flow to reservoir scaling in geothermal systems around the World. I've been working on geothermal resources since 2009 when I went to work with GNS Science in New Zealand and now I am back in the UK and Ireland hoping to help develop geothermal further in Europe and further afield.

@aliceconstanceillustration