



# EnerGeo Newsletter

Count Down Net 0 Carbon

# 08

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**Karl Farrow**  
- CEO CeraPhi® Energy

# Welcome to the eighth edition of the CeraPhi Energy newsletter.

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**In these challenging and uncertain times: climate change, rising energy costs, financial instability and the uncertainty of the geopolitical landscape, the energy we use and the security around this has become ever more important.**

The opportunities for Geothermal Energy as a viable, clean, continuous and secure part of the energy mix are considerable.

In our eighth newsletter we look at the latest announcement of funding for CeraPhi Energy and our successful award from the Net Zero Technology Centre.

We introduce you to a new member of our team as we continue to bolster the CeraPhi Energy business.

We explore World Geothermal EnergyDay, what this is and what CeraPhi Energy is doing to recognise and celebrate this hugely important day.

We introduce our very first guest editor - CeraPhi Energy Advisory Board Member, John Sewell - with an interesting and thought-provoking editorial on the Transition to Net Zero and the role Geothermal has to play in this.

The business celebrates achievement with the announcement we have been shortlisted for the Barclays Entrepreneurial Awards, a programme recognising entrepreneurs across the UK who are changing industries, the economy and society in a unique, original and positive way.

And we promote our recent accreditation as a Living Wage Employer with our certification from the Living Wage Foundation acknowledging CeraPhi Energy's commitment to making sure all staff earn a wage which is enough to live on.

We hope you enjoy the eighth edition of our newsletter and join us in our pledge to advance the use of Geothermal Energy both across the UK and the world and to our commitment in demonstrating the real viability of this energy source as a key player in the energy mix.

# Announcement of Funding Award



**We are delighted to announce that we recently received notification that our bid to the Net Zero Technology Centre 2022 Open Innovation Programme was successful. The announcement is a major milestone in CeraPhi Energy's journey to pioneering Geothermal Energy as a viable and necessary part of the energy mix.**

Our application to the Net Zero Technology Centre Open Innovation Programme will focus on a programme of work

to demonstrate how oil and gas liabilities can be repurposed into geothermal assets for net zero targets.

We are hugely excited and honoured by the funding award and very much look forward to embarking on the next stage of our journey to demonstrate how oil and gas wells - and the skillset surrounding this industry - can be repurposed into geothermal assets.

## Announcing New Appointments

CeraPhi Energy remains committed to bolstering our team with some of the very best talent both in the industry and across distinct skill sets.



### **Nigel Pooley** - Chief Finance Officer

As part of this commitment, we are delighted to announce our recent appointment in Nigel Pooley who joins CeraPhi Energy with more than 35 years' international finance and investment experience. With a vast knowledge of insurance and reinsurance, portfolio management, brokering, recruitment and project finance - gained across industries including private healthcare, manufacturing and property development - we welcome Nigel to the CeraPhi Energy team and look forward to gaining insight from his vast knowledge and experience.



# Celebrating World Geothermal Energy Day

**Today marks World Geothermal Energy Day - a day showcasing geothermal success across the globe and recognising the work of individuals, businesses, Governments, educational institutions, and the many other stakeholders highlighting the environmental benefits of renewable geothermal energy worldwide.**

Geothermal as an energy source has been available for centuries and is the only true baseload energy. Available everywhere and anywhere - and with 99% of the earth's volume having temperatures exceeding 1000°C - Geothermal is a baseload energy meaning it provides 24/7 energy and can be viewed as one giant battery with enough clean renewable energy to help meet the 2050 Paris Agreements net zero targets and to potentially last billions of years.

To mark World Geothermal Energy Day, CeraPhi Energy is running a schools engagement initiative. This has involved producing a lesson plan and activities for various primary school age groups. We have also introduced a colouring competition for the younger years where the winning entry will receive a tree planted in honour of their school. CeraPhi Energy aims to inspire the next generation and create a conversation about clean energy production.



# The Role of Geothermal in the Transition to Net Zero

Guest Editor and CeraPhi Energy Advisor, John Sewell, Writes on the Transition to Net Zero

In a relatively short period of time the world and particularly Europe has been turned upside down with first the Corona Virus pandemic and more recently the appalling invasion of the Ukraine by Russia, causing geopolitical tensions and an energy crisis that many of us have never experienced before. Security of supply is now at the forefront of politicians minds throughout Europe, with the UK reversing a move away from Oil and Gas exploration and fracking for shale gas reserves, and Germany reversing its decision to abandon its nuclear energy strategy. Many other European countries are revisiting their energy strategies with a key focus on security of supply and affordability.

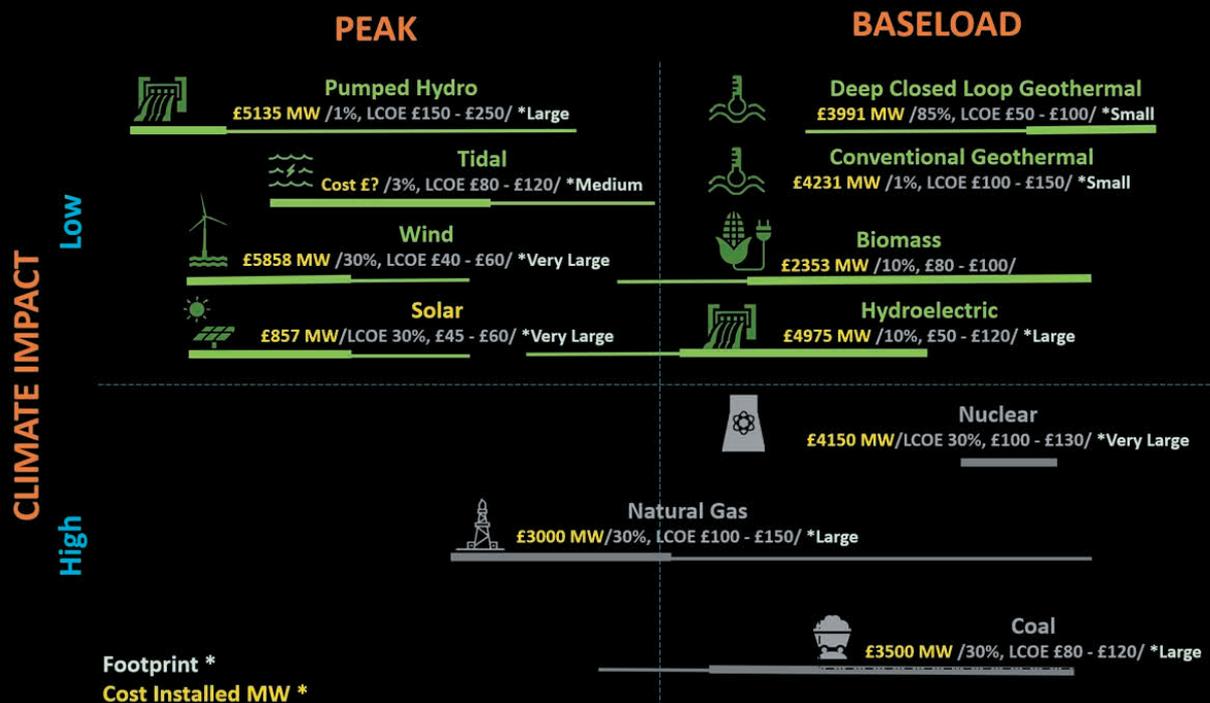
The effective transition to a future of net zero emissions where renewable energy plays an increasingly important role was always going to be achieved by the continued use of oil and gas. Currently we cannot live without it, but we can find ways to reduce the amount we use, and we can find ways to offset the emissions through its extraction and use.

This must continue along with an even greater focus on continued enhancement of our renewable energy mix if we are to achieve net zero emissions and affordable security of supply.

Renewable energy sources such as wind, solar, tidal, nuclear, etc are all playing their part in reducing carbon emissions with investment, R&D, technology, and political messaging all making great strides to speed this up. Indeed many have received and continue to receive substantial financial support from the UK and other countries governments to enable the incubation and global emergence of these technologies.

Table 1 below, with some data provided by the International Renewable Energy Agency (IRENA) gives a very high level comparison of the main renewable sources. I have added some other criteria to compare and introduce a course traffic light system to try and demonstrate at a high level the differences in the technology's. None of them are perfect and hence why they all play a role in our strategic aim of Net Zero.

## Strategic Positioning of Geothermal Energy



ENERGY SOURCE: Renewable / Non-Renewable  
IN BRACKETS: % capacity to cover total energy requirements / £ - Levelized Cost of Energy / LCOE (£/MWh)



Whilst all sources of renewable energy, carbon offsetting and storage, all play their part in the solution to net zero, they are not the full solution as supply intermittency issues demonstrates. The recent and continued rise in wholesale gas prices demonstrate the fragility of the market and we are moving towards a world of higher oil, gas, and carbon offset prices and taxation.

We need to have secure baseload, zero emission renewable energy as a significant part of the future solution. Geothermal Energy can be, and should be, a significant part of the solution going forward. As can be seen in table 1, geothermal energy ticks a lot of the boxes in terms of low footprint, baseload heat and power at high levels of availability, very low life cycle carbon footprint, and rapid time to market. Whilst geothermal capital costs and hence LCOE are still relatively high this will reduce as technology and projects are enabled, in the same way as offshore wind and solar costs have reduced by some 60-70% in the last 5 years.

Geothermal Energy has other key advantages over other renewable sources which focus on the production of electricity. Geothermal can be used for electrical power generation where heat sources are high enough, generating electrical power for Green Hydrogen and other stand alone and grid applications.

It can also be used for a multitude of heat requirement applications such as:

- **Industrial heat requirements including applications in carbon capture and storage**
- **District heat systems**
- **Agricultural and greenhouse heating**
- **Aquaculture**

Heat applications through geothermal are far more efficient than using heat from the burning of fossil fuels and via the use of electrical power.

The CeraPhi monobore closed loop deep geothermal solutions offer many benefits and de-risks conventional geothermal and can be used virtually anywhere, including the repurposing of onshore and offshore depleted oil, gas and water injection wells.

Deep geothermal heat is inexhaustible and should be a central pillar to energy strategies both in the UK and worldwide. Why would you not use the heat beneath our feet?

Currently government help and support for deep geothermal is sadly lacking. I believe that the UK government must get behind and actively support the R&D and greater use of deep geothermal energy in the UK. The 2020's and 2030's must be seen as the geothermal decades where significant support should be given by government and investors to realise the vision of a sustainable net zero world by 2050. The industry has the potential of transitioning thousands of jobs from existing hydrocarbon industries as well as attracting new young talent who want to be involved in low carbon industries that safeguard the future of our planet.

**CeraPhi Energy - Saving the Planet - One Megawatt at a Time**



# CeraPhi Energy Signs Heads of Terms with GreenGlove Boreholes, Market Leaders in Borehole Drilling

**We are pleased to announce that CeraPhi Energy has signed Heads of Terms with GreenGlove Boreholes and will be working in partnership to build scalable, cost-effective heat networks as part of our combined efforts to pioneer large-scale commercial geothermal heating networks to meet the challenge and resilience of the UK energy supply.**

Driving large-scale industrial, urban and residential geothermal heat networks in the mist of the UK's growing energy crisis, the exclusive UK and Ireland agreement will combine GreenGlove's deep drilling capability for wells up to 1,500 meters in depth - using state of the art next generation equipment - with the installation of CeraPhi's patented technology CeraPhiWell™, comprising a closed loop downhole heat exchanger that draws subsurface heat to be used for different applications for scalable baseload energy.

These applications include:

- Low Temperature Heat Networks
- Low Temperature Climatised Agriculture
- Medium Temperature Heat Networks
- Medium Temperature Heating Systems and Industrial Processes
- Desalination and Water Treatment
- Power Generation
- Green Hydrogen through Electrolysis

CeraPhiWell™ is at the heart of CeraPhi Energy's strategy to de-risk the commercialisation of geothermal energy at scale, both drilling new wells and repurposing end-of-life and non-producing oil and gas wells, and prove the "huge commercial potential" for geothermal energy production in the UK and globally.



# Announced as Finalists in the Barclays Entrepreneur Awards

**We are thrilled to announce that CeraPhi Energy has been shortlisted as a finalist for the Barclays Entrepreneur Awards 2022. Shortlisted for Start Up of the Year, Barclays Eagles Lab Innovation Award and Barclays People's Choice Award, the awards recognise and highlight entrepreneurs from across the UK who are changing their industries, the economy and society in unique, original and positive ways.**



The awards celebrate some of the UK's most successful home-grown ventures and ideas and champions businesses that are making a significant impact, shining a spotlight on disruptors and game changes. We are delighted that CeraPhi Energy has been recognised as one of these businesses and look forward to celebrating with all other shortlisted companies next month.

## CeraPhi Energy Achieves Living Wage Accreditation

**We are delighted to announce that CeraPhi Energy is now fully accredited as a living wage employer.**

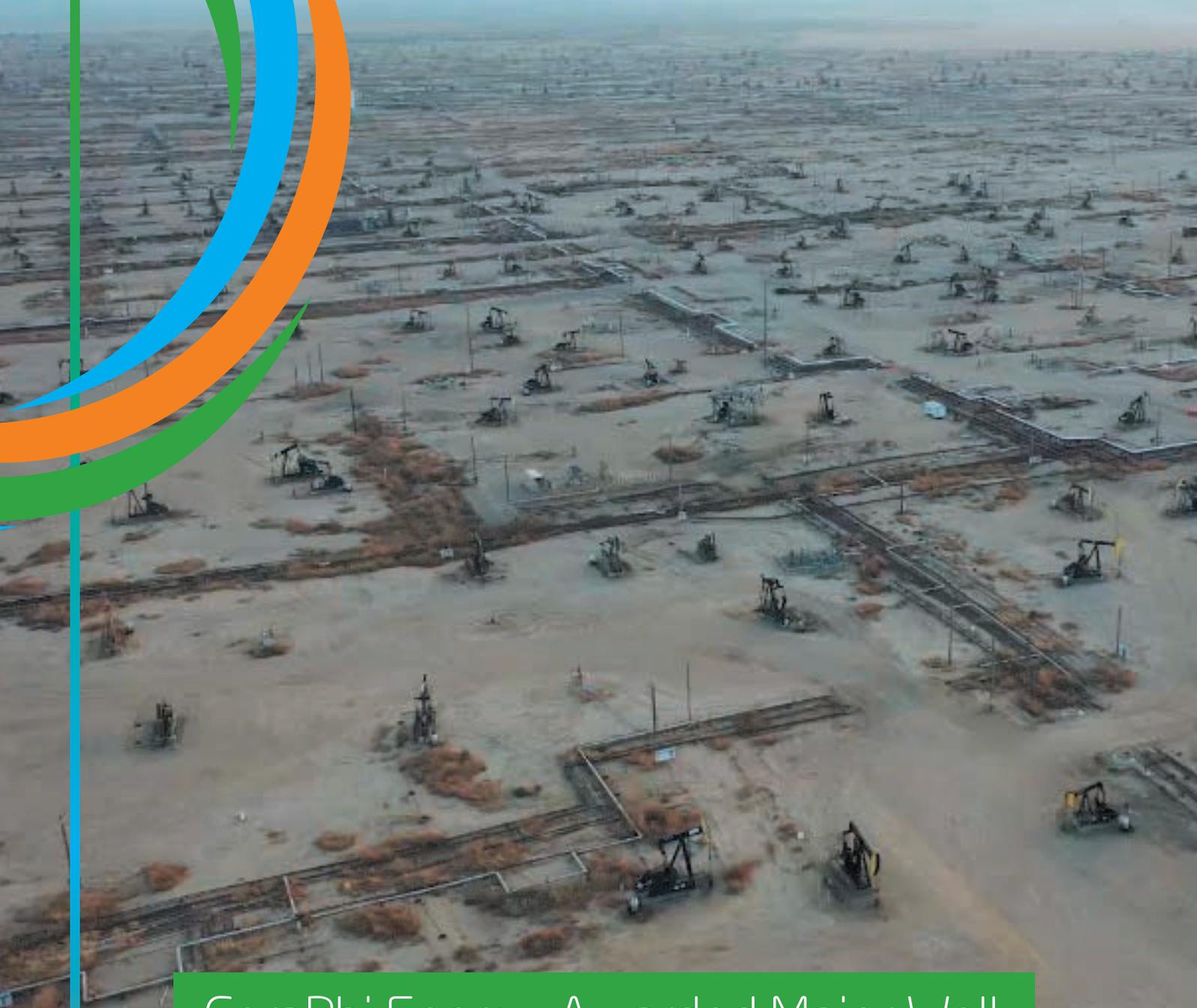
Our accreditation comes via the Living Wage Foundation and - as part of that - we have pledged to publicly commit to fair pay, have received full accreditation from the Foundation and are committed to annual pay increases linked to the cost of living. By paying the real Living Wage we are committed to making sure all CeraPhi Energy staff earn a wage which is enough to live on.

This is an important accreditation for CeraPhi Energy which - as a business - has corporate social responsibility and fairness running at the heart of its DNA.

As part of our accreditation, we will be displaying the Living Wage Employer Mark and will be featuring our commitment across merchandise and digital assets - all provided as part of the Living Wage Foundation membership package. We will also be listed on the Foundation's website and employer map.

For CeraPhi Energy this is not just about doing the right thing, this is an accreditation which makes total business sense, making sure we attract the very best employees and retain them by paying the Living Wage.





# CeraPhi Energy Awarded Major Well Repurposing Study in the USA

**We are pleased to announce that we have been awarded a major well repurposing study by a US Oil Major for repurposing wells within the Haysesville and Wyoming region of the USA.**

Using our CeraPhiWell™ system, the study will incorporate looking at former shale gas wells and will provide a comprehensive business case for the operator which, if approved, will lead to a further development to a pilot test over the coming months.

# Upcoming Events



## **Farm Business Innovation Expo 2022 - NEC Birmingham 2 & 3 November 2022**

This event focuses on diversification and innovation for farmers and landowners to make more money from their land. Visit us at stand FB972 to find out how we can help with this transition.

[www.farmbusinessshow.co.uk](http://www.farmbusinessshow.co.uk)



## **Next Steps For UK Heat Networks - Government Strategy, Market Frameworks, Heat Pumps And Decarbonising Buildings 12 January 2023**

This is an online event and we are delighted to say that we will be participating in this digital forum.

[www.westminsterforumprojects.co.uk/conference/UK-Heat-23](http://www.westminsterforumprojects.co.uk/conference/UK-Heat-23)



## **Futurebuild 2023 - ExCeL, London 7 March - 9 March 2023**

CeraPhi Energy will be exhibiting at Futurebuild 2023. The event is about building a better future for the built environment and provides the stage for inspiring ideas, innovative solutions & knowledge sharing to drive sustainable construction and reach the goal of net zero.

[www.futurebuild.co.uk](http://www.futurebuild.co.uk)

Past

Events

**We are also pleased to reflect on some of the many events we have recently attended and the successful outcome of these for both the CeraPhi Energy business and the many stakeholders we have met, helped and advised as part of our attendance.**

These included the Operational Infrastructure and the Drive for Self-sustainability event held by The Institution of Royal Engineers and Team Defence Information.

The event focused on analysing solutions that could mitigate impact in operational environments and placed a strong emphasis on creating a low carbon, self-sustained defence capability.

The event provided us with the opportunity to meet defence stakeholders looking at how Geothermal could deliver an alternative energy source and deliver a reduced carbon footprint to the defence sector.

The two-day event – held at the Royal Engineers Museum in Chatham – was attended by innovators, designers, technologists and environmentalists who, in partnership with Defence personnel, successfully explored the use of Geothermal as a viable and realistic energy source to this sector.

## CeraPhi Energy Attends Green Energy Summit in Cape Town

**Dr Ken Seymour, Ceraphi's Commercial Manager Sub-Saharan Africa led a delegation to the Green Energy Summit in Cape Town during the first week in October 2022. The Green Energy Summit ran in parallel with the long-established Africa Oil Week. The conference focussed on energy poverty and a need for a just energy transition.**

The need for gas as a transition fuel and the potential of green hydrogen, solar and wind was debated in detail. Sadly, Geothermal was not given a central stage position however Ceraphi Energy, exhibiting on the UK Department of International Trade stand, received many curious visitors and was able to explain the potential of the Ceraphi Well closed loop system and the geothermal cascade.



# Global Energy Developer Delivering Integrated Geothermal Energy Solutions



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