

JRG ENERGY

Quarterly Newsletter

Merry Christmas and welcome to our 2024 Year in Review Newsletter.

In this issue, we're excited to share:

- A JRG Christmas Message
- Geothermal News
- Project Highlights
- Events
- New Team Members
- Special Thanks
- 2024 Snapshot



A Christmas Message from JRG



Happy Holidays and welcome to our 2024 Year in Review!

As we close the chapter on an extraordinary 2024 at JRG Energy, I want to take this opportunity to express my deepest gratitude to everyone who has been part of our journey—our valued clients, esteemed collaborators, and the truly exceptional team that drives our success. Your trust, partnership, and dedication have been the cornerstone of our achievements this year.

This year has been marked by growth, innovation, and impact. From taking on groundbreaking projects across continents to exploring new frontiers in geothermal energy, we've continued to push boundaries and demonstrate our commitment to delivering world-class sustainable energy solutions.

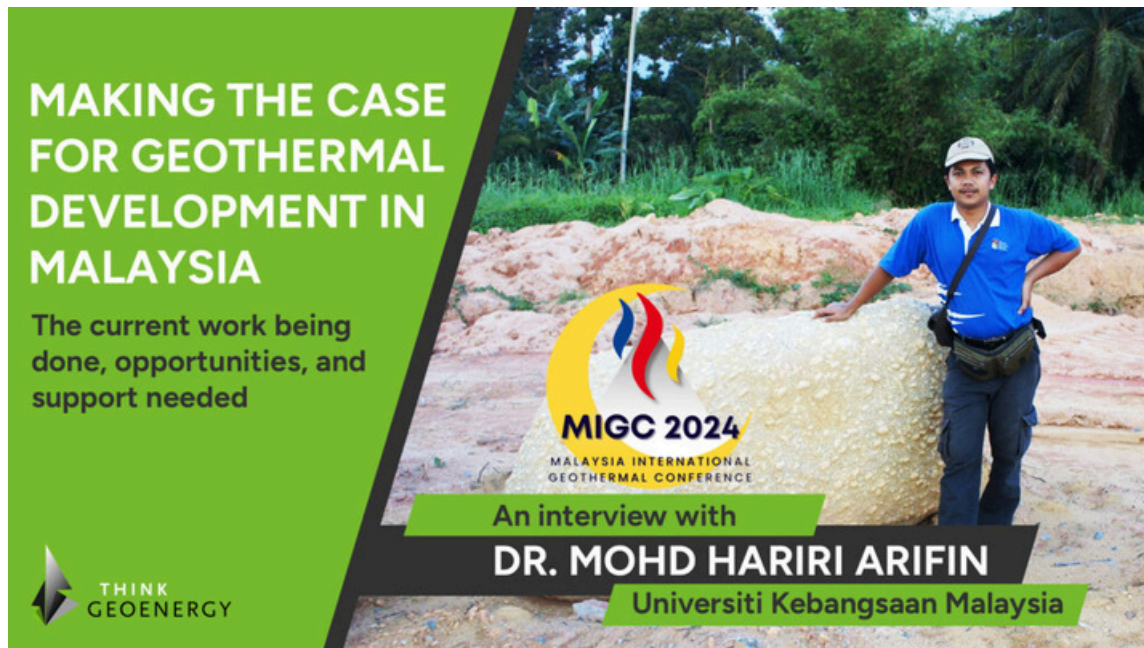
The expansion of the JRG Energy team has been another highlight of 2024. Welcoming new talent and diverse expertise has strengthened our ability to tackle complex challenges and develop innovative strategies. It's a testament to the collective passion and teamwork that define who we are.

Looking ahead to 2025, we're filled with enthusiasm and ambition. We aim to further accelerate progress in the geothermal sector, contribute meaningfully to global sustainability goals, and deepen the relationships that empower us to achieve so much together.

Thank you for your unwavering support and for being an integral part of our mission to harness the potential of geothermal energy for a more sustainable and prosperous future.

Wishing you a joyful holiday season surrounded by loved ones and a new year filled with success, health, and inspiration.

Unlocking Malaysia's Geothermal Energy Potential



While Malaysia continues to rely heavily on fossil fuel for its energy capacity, there is a growing effort to diversify its energy sources with renewables like solar and hydropower. Alongside these efforts, geothermal energy is emerging as a promising complement to the country's energy mix, with potential across various regions, including Sabah, Sarawak, and Peninsular Malaysia.

In an insightful interview of ThinkGeo Energy with Dr. Mohd Hariri Arifin from the Department of Earth Sciences and Environment at Universiti Kebangsaan Malaysia, he discusses the opportunities and challenges in harnessing geothermal energy in Malaysia. He shares valuable insights into current initiatives and the support driving this sector forward: [Article Link](#).

JRG Energy is proud to have recently signed an MOU with Dr. Mohd Hariri Arifin to further explore and develop Malaysia's geothermal potential. Stay tuned for more updates on this exciting collaboration later this year!

Exploring Geothermal Wellness: JRG Energy and Peninsula Hot Springs Collaborate in Kenya's Menengai Steamfield



We're thrilled to share snapshots from our visit to the Menengai steamfield in Kenya, where we're partnering with Peninsula Hot Springs to assess the feasibility of a geothermal spa for the Geothermal Development Company (GDC).

Our Engineering & Consultancy Manager, Duncan Steven was joined by the rest of the project team on site. Together, we conducted an initial site inspection to identify the perfect location for the spa, delivered some capacity building training for GDC and carried out community consultations. The team was greeted by breathtaking views of lush landscapes, vibrant wildlife, and sunshine-filled days, providing inspiration for the project.

Looking ahead, the study will delve into the technical and economic feasibility while carefully addressing environmental, social, legal, and market considerations. Stay tuned for more updates as the project unfolds!

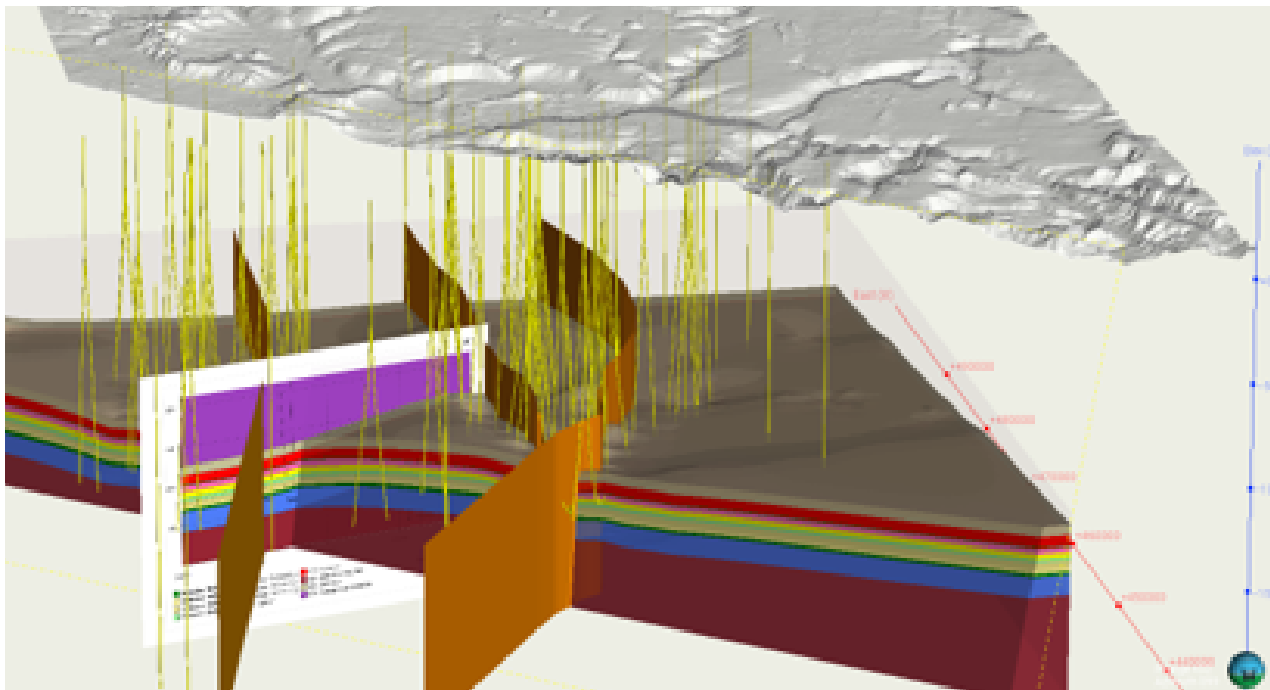
JRG Energy Awarded Tender for Major Geothermal Project in Europe



JRG Energy is proud to announce its successful bid for the Design, Project Management, and Superintendent Role in the third multilateral geothermal project, targeting one of Europe's most prolific geothermal reservoirs. This exciting project positions JRG Energy at the forefront of geothermal innovation in the region.

The scope of work for this project encompasses overseeing the Definitive Feasibility Study (DFS) and Basis of Well Design (BoWD) and the documentation of the drilling and drilling services work packages. Our team will be responsible for coordinating and supervising all drilling operations and well testing, offering expert guidance to contractors throughout the drilling process, particularly during the complex multilateral section. Additional responsibilities include managing the commissioning phase, ensuring compliance with Environmental and Occupational Well Reports (EOWR), and securing all necessary permitting to ensure the project meets regulatory standards and operates efficiently from start to finish. Drilling is set to kick-off in Q3 2025.

JRG Energy Advances Geothermal Projects with Cutting-Edge Reservoir Modelling



Over the last two years, JRG Energy has successfully developed a number of reservoir models for a client in Europe to assess the potential of future low enthalpy direct-use geothermal projects while optimizing the management of existing geothermal assets. This comprehensive approach plays a crucial role in ensuring the long-term sustainability and efficiency of geothermal energy systems.

The key tasks involved in this project include:

- **Geological Modelling:** Utilizing Leapfrog Energy to create an updated geological model, building upon an existing foundation in Petrel for enhanced accuracy and depth.
- **Data Review:** Thorough analysis of available geoscientific data and historical production records, providing vital insights into the performance and capacity of the geothermal system.
- **Reservoir Modelling:** Implementing Waiwera to develop a robust reservoir model, incorporating over 40 years of historical production and injection data.
- **Predictive Simulations:** Running advanced simulations to assess the viability and long-term performance of future geothermal wells, ensuring that upcoming projects meet both environmental and economic goals.

By leveraging state-of-the-art modelling tools and decades of data, JRG Energy continues to drive innovation in geothermal energy, paving the way for more efficient and reliable energy solutions.

Project Highlights

Exploring Australia's Largest Direct-Use Geothermal Project



JRG Energy has completed a preliminary feasibility study for a direct-use geothermal heating solution at a large industrial facility in Western Australia. The study revealed that the target geothermal reservoir is expected to be hot, shallow, and permeable enough to support the project.

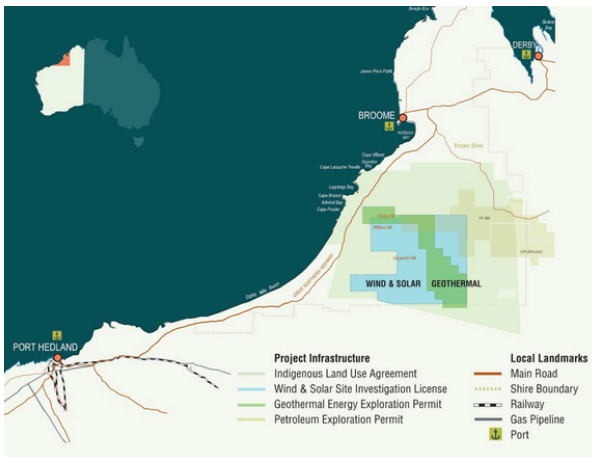
A conceptual design for an 11 MWth system has been developed, which is projected to offset 55% of the facility's current gas demand and achieve a 40% reduction in CO₂ emissions, amounting to approximately 8,500 tons annually.

If implemented, this project would become Australia's largest direct-use geothermal initiative, marking a significant milestone in sustainable energy adoption.

JRG Energy is now conducting a detailed feasibility study and assisting the client with funding applications to ARENA (Australian Renewable Energy Agency) to bring this transformative project closer to realization.

Project Highlights

JRG Energy Drives Progress with Gingerah Geothermal Project (GEP-47)



JRG Energy provided specialist consulting services for the pre-feasibility study of the Gingerah Geothermal (GEP-47) Project, laying the groundwork for its future development.

The study included comprehensive data collection from existing sources and literature, a detailed review of geoscientific information supplied by the principal, and a gap analysis to pinpoint additional data needs. Leveraging this information, a 3D conceptual model was developed, integrating key geological, structural, hydrogeological, and geothermal reservoir data.

State-of-the-art temperature modelling was conducted using the advanced Waiwera geothermal simulator. The initial resource assessment examined the feasibility of geothermal resources for power generation or direct-use heating.

The study also explored current geothermal reconnaissance methodologies, drew comparisons with similar projects globally, and identified potential investors and off-takers, setting the stage for strategic decision-making.

This critical step underscores JRG Energy's commitment to advancing sustainable energy solutions through innovative geothermal technologies.

Exploring Low-Temperature Geothermal Potential in Azerbaijan



The World Bank, in collaboration with the Government of Azerbaijan (GoA), has engaged JRG Energy to conduct a nationwide assessment of geothermal energy potential. This initiative aims to evaluate the technical and commercial viability of geothermal resources across the country.

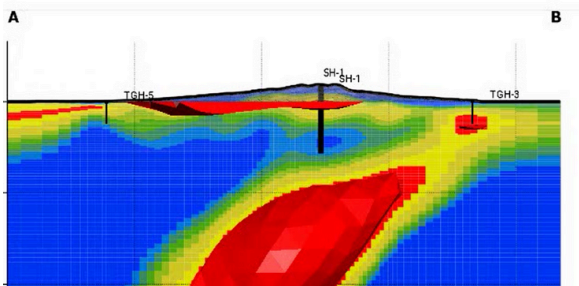
Key objectives of the project include:

- Leveraging Azerbaijan's existing oil and gas expertise to explore geothermal resources.
- Mapping the geothermal resource distribution nationwide.
- Advancing energy independence and reducing demand by introducing geothermal heat as a reliable energy source for businesses and industries.
- Recommending next steps to decarbonize industries, minimize emissions, and enhance local economies by utilizing geothermal energy for heat and power.

The project prioritizes geothermal direct-use applications, offering an efficient and environmentally friendly alternative to conventional fossil fuel-based heating. By providing a consistent heat source, geothermal energy has the potential to support Azerbaijan's sustainability goals while boosting its local economies.

Project Highlights

Driving Innovation in Geothermal Exploration

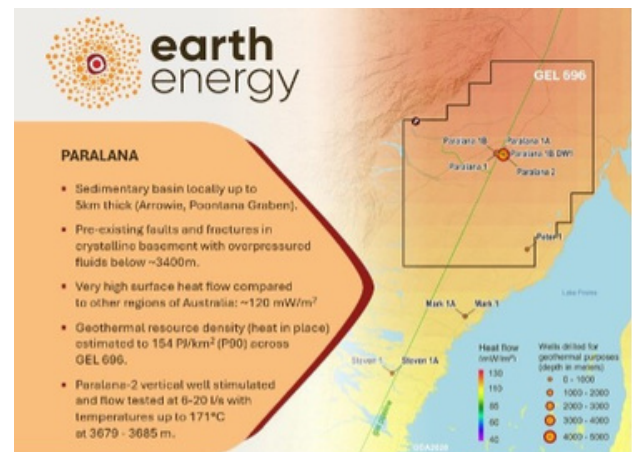


At JRG Energy, we're proud to have partnered on a cutting-edge geothermal project in Alaska. Leveraging a combined Magnetotelluric (MT) and Gravity 3D Inversion Model, we delivered a precise analysis of the region's subsurface geothermal elements.

Why is this significant?

Our innovative approach provided the client with unparalleled insights into the area's geothermal potential. This empowered them to make informed, strategic decisions, paving the way for sustainable exploration and development.

Earth Energy: Advancing Geothermal Innovation on the ASX



Earth Energy stands out as the only pure-play geothermal company listed on the Australian Stock Exchange (ASX), driving geothermal innovation across the nation. Its flagship asset, GEL 696 in South Australia, includes the Paralana 2 well, drilled to nearly 4 km depth. The well demonstrated promising results, with flow rates of up to 20 L/s and temperatures reaching 171°C at 3.7 km.

Inspired by recent advancements in Enhanced Geothermal Systems (EGS) technology in the U.S.—where new-generation EGS wells have achieved flow rates exceeding 90 kg/s—Earth Energy is reevaluating the potential of the Paralana site to harness cutting-edge geothermal developments.

JRG Energy played a key role in supporting Earth Energy by collating legacy data for GEL 696 and other South Australian tenements. Additionally, summary maps generated by JRG Energy were instrumental in Earth Energy's project updates to the ASX, showcasing the value of collaborative expertise in advancing geothermal projects.

Project Highlights

MFAT East Africa: Optimizing Asset Management for Drilling Equipment Efficiency



This month marks the completion of NZ-Africa Geothermal Facility (AGF) training course on Asset Management of Geothermal Drilling Equipment. The training course was held at AGF Partner Organisations in Ethiopia, Djibouti, Tanzania and Kenya, after a successful course held in New Zealand for elected Asset Management Leaders from each country. The training programme is being delivered through a partnership between the African Union Commission (AUC) and the Ministry of Foreign Affairs & Trade (MFAT), with the aim to provide geothermal technical assistance and capacity building for the East African geothermal sector.

evokeAG. 2024: The Premier Agrifood Tech Event (Australia)



Earlier this year, JRG Energy Team led by Martin Pujol and Duncan Steven, attended the evokeAG. 2024 in Perth, Western Australia. This event brought together over 1,800 delegates, marking its largest gathering yet. The event highlighted the transformative role of Generative AI in agriculture, with keynote speaker Nina Schick showcasing its potential to reshape industries and humanity. Another key discussion centered on the synergy between mining and agriculture, as Rebecca Tomkinson explored opportunities for collaboration and shared growth.

The two-day program covered diverse topics such as biofuels, circular economies, and equitable agrifood supply chains, fostering a dialogue on sustainable and innovative agricultural practices. Delegates engaged in workshops, tours, and sideline events, strengthening global connections between producers, investors, researchers, and innovators. By spotlighting cutting-edge technologies and collaborations, evokeAG 2024 underscored its role as a global platform for driving advancements in agriculture and agrifood technology.

GEO THERM 2024: Europe's Leading Geothermal Event (Germany)



GEO THERM 2024, Europe's largest geothermal trade fair and congress, showcased the latest advancements and trends in the geothermal energy sector. In this event, our colleagues, Emmanuel Dimakis and Nadia Domanski, JRG Energy's Business Development Manager and Energy Services Specialist respectively, attended this event along with the other global geothermal professionals in Offenburg, Germany.

The event provided a dedicated platform for industry professionals, bringing together around 4,900 visitors and 160 exhibitors from 40 nations, fostering invaluable networking opportunities and knowledge sharing. A key highlight of the event was the two specialized congresses on Shallow and Deep Geothermal Energy, which delivered in-depth insights into current developments, cutting-edge technologies, and real-world applications.

6th International Sustainable Energy Summit 2024 (Malaysia)



JRG Energy is excited to announce a significant milestone in our geothermal energy journey! At the 6th International Sustainable Energy Summit 2024 in Kuala Lumpur, Malaysia, our Managing Director, John Gilliland, signed a Memorandum of Understanding (MoU) with the Institute of Geology Malaysia and Geothermal Resources Sdn Bhd.

In addition to this landmark agreement, John delivered a successful presentation at the inaugural IGM Geothermal Workshop highlighting the processes involved in Geothermal Feasibility Study.

A special thank you to the Institute of Geology Malaysia for hosting this impactful event. Terima kasih, Malaysia!

Gippsland New Energy Conference (Victoria, Australia)



At the Gippsland New Energy Conference on September 3rd, JRG Energy was represented by Kennard Maturgo, to co-present the results of a geothermal direct-use project.

The geothermal reservoir model, developed by Martin Pujol and the team, plays a crucial role in supporting sustainable energy efforts, especially as rising gas prices in Victoria highlight the growing need for renewable energy solutions.

This project marked an exciting opportunity to explore new challenges and demonstrates the team's expertise in working with sedimentary basins, both in Australia and globally.

10th Indonesia International Geothermal Convention (Indonesia)



JRG Energy joined the 10th Indonesia International Geothermal Convention & Exhibition in Jakarta, held under the theme “Powering Together: Stakeholder Unity in Geothermal Innovation and Acceleration.”

At the event, Energy Services Manager Neale Young and Reservoir and Well Test Engineer Kennard Maturgo, shared valuable insights on strategies for optimizing geothermal well performance and overcoming key challenges to improve geothermal production.

We were also proud to participate as part of the New Zealand delegation, alongside New Zealand Trade and Enterprise (NZTE), strengthening our commitment to advancing geothermal energy in the region.

5th Philippine International Geothermal Conference (Philippines)



JRG Energy proudly participated in the 2024 Philippine International Geothermal Conference (PIGC) in Makati, themed "Gaining Greener Global Geothermal Generation." This year's event showcased a bright future for the country's geothermal sector, and JRG Energy continued its active support for this pivotal conference, driving sustainable energy development.

Ahead of the conference, JRG Energy representatives Kennard Maturgo, and Neale Young, in collaboration with New Zealand Trade and Enterprise (NZTE), engaged with the Philippine Department of Energy, Board of Investments, and National Economic and Development Authority. Their discussions focused on the current state and future opportunities in the Philippine geothermal industry.

At the conference, Neale and Ken, shared strategies for optimizing geothermal well performance and addressing key challenges to boost production efficiency.



Geothermal Rising Conference (Hawaii)

Last October 27-30, 2024, JRG Energy proudly joined the global geothermal community at the Geothermal Rising Conference (GRC) 2024 in Hawaii. As the leading event in the geothermal industry, GRC brought together key stakeholders from industry, academia, government, and the public to drive innovation and progress in sustainable energy.

Representing JRG Energy, our Director, John Gilliland, and Geothermal Specialist, Dr. Pablo Aguilera Bustos, engaged with top experts to explore advancements, foster collaborations, and identify new opportunities shaping the future of geothermal energy.



46th New Zealand Geothermal Workshop

JRG Energy concluded its 2024 event calendar at the 46th New Zealand Geothermal Workshop in Auckland. This prestigious gathering of over 300 international professionals offered a platform for exchanging groundbreaking insights into geothermal advancements.

Representing JRG Energy, John Gilliland, Duncan Steven, and Martin Pujol, highlighted key updates on our global projects spanning North America, Europe, the Caribbean, the Middle East, Africa, Indonesia, and Australia.

The JRG Energy team continues to grow!

Introducing



Maëlle Brémaud **Geothermal Reservoir and Geoscience Specialist**

Maëlle Brémaud has built a remarkable portfolio in geothermal reservoir and geoscience. Her work includes developing reservoir and geological models for high-enthalpy geothermal systems in the Caribbean and conducting detailed petrophysical and geological characterizations of carbonate reservoirs in the Middle East.

Currently completing her PhD at the University of Strathclyde, Maëlle's research focuses on identifying critical parameters and resolving challenges in hot sedimentary aquifer projects to minimize risks in geothermal systems. Her diverse experience across the geothermal and oil & gas sectors highlights her expertise in addressing complex challenges and advancing sustainable energy solutions.



Rosemarie Consignado **Marketing Specialist**

We're excited to introduce Rose, a highly experienced marketing professional with over 15 years of expertise across industries such as IT, Consulting, Manufacturing, Construction, Real Estate, and Heavy Equipment. Currently pursuing a Master's in Business Analytics and Enterprise Systems in Australia, Rose combines her rich industry knowledge with advanced analytical skills to drive impactful marketing strategies.

Her expertise in Digital Marketing, particularly in data-driven analysis of social media, content, email, and website performance, supports informed decision-making and fosters business growth. Rose's dedication and innovative approach make her an invaluable asset as we continue to evolve and expand.

Introducing



Nadia Domanski **Energy Services Specialist**

Nadia is a Chartered Engineer with over 8 years of experience in the Energy industry, specializing in Well Engineering and Process Engineering. Her career includes serving as a Wireline Supervisor in the Norwegian Sea. Highly adaptable, Nadia has successfully led diverse teams globally, with her most recent role as Global Lead Reliability Engineer for RSS Oil and Gas tools at one of the largest Oil & Gas service contractors.

Nadia brings extensive expertise in Asset Management and Technology auditing and has a proven track record in leading multi-disciplinary teams and managing service operations.



Kennard Maturgo **Geothermal Reservoir Specialist**

Ken is a mechanical engineer with over 10 years of experience in geothermal energy utilization, development, and optimization. He has played a key role in both the technical and commercial aspects of well drilling, testing, interventions, and operations. Ken has published and co-authored research presented at the World Geothermal Congress and has lectured on Alternative Energy Sources. He has also supervised capstone projects on small-scale electrification and other technological innovations using renewable energy.

Currently, Ken works as a specialist in geothermal reservoir engineering, with expertise in resource management and well testing, among other areas.

Special thanks



Mathilde Vindevoghe
Reservoir Engineer Intern

For the past three months, we've had the privilege of working with Mathilde Vindevoghe as a Reservoir Engineer Intern. Mathilde has quickly proven to be an asset, bringing her extensive knowledge of sedimentary basins, structural geology, and energy storage to our projects.

Currently pursuing her Master's in Geosciences at the renowned School of Engineering and Geology in Nancy, France, Mathilde also brings advanced technical expertise in Python, GIS, and reservoir modelling. Her skills have significantly advanced our reservoir modelling initiatives, showcasing her dedication and talent.

Our 2024 snapshot

- In May 2024, our team member, Pablo Aguilera, visited Nariño, a department in southwestern Colombia, and conducted hot springs field tests, collated samples for analysis to better understand the geothermal system and evaluate the hydrothermal sites, provided an inductive lesson to students from Tajumbina High School, engaged with local leaders and the mayor of La Cruz municipality and collaborated in a session with the regional government in Pasto.
- JRG Energy completed fieldwork in the West Indies in support of the Facility of Renewable Energy - New Zealand (FRENZ).
- JRG Energy participated in a coaching session at the residence of the New Zealand Embassy in Colombia aimed at developing a productive project to enhance the binational relationship between Colombia and New Zealand.
- Earlier this year, Martin Pujol presented case studies on exploration and testing methods designed for low-temperature geothermal reservoirs targeted for power production. The webinar included insights for regions without volcanic activity, such as Australia.
- In February 2024, our team conducted a focused PTS survey for a geothermal client in Southeast Asia. The successful campaign was carried out in collaboration with industry colleagues and partners, demonstrating the power of teamwork and innovation.