



Spotlight on Women in Geothermal USA 2025

Roland Horne, Stanford University Professor of Energy Science and Engineering and Director of the Stanford Geothermal Program

Roland Horne's name is synonymous with innovation and dedication in the geothermal energy and reservoir engineering space, which spans more than five decades.



Early Fascinations in New Zealand

Growing up in New Zealand, Horne's fascination with geothermal energy was sparked by the region's significant reliance on this energy source. As a graduate student in the 1970s, he was captivated by the technological advancements in geothermal energy, similar to the excitement surrounding the Apollo moon program in the United States. This period marked the beginning of his career.

Pursuing research in geothermal energy at the University of Auckland, Horne completed his PhD. His academic journey then led him to Stanford University in 1976, a time when geothermal energy was gaining momentum in the U.S., especially in California. His arrival at Stanford marked the start of a long-standing relationship with the institution, where he became a pivotal figure in the geothermal program.

Echoes of the Past in the Present

The similarities between the 1970s and today are fascinating, according to Horne. Both periods were driven by the quest for alternatives to fossil fuels. In the 1970s, the motivation was the perceived depletion of oil and gas supplies, leading to a search for sustainable alternative energy sources. Today, while the reasons have evolved, the pursuit of renewable energy remains constant.

Significant breakthroughs for geothermal energy are anticipated in 2025. Reflecting on the progress made in 2024, Horne highlighted advancements by Fervo and FORGE in drilling. These companies have successfully improved their drilling rates and reduced drilling time by up to 50%. This breakthrough makes Enhanced Geothermal Systems (EGS) economically competitive with the average cost of electricity from any source. Moreover, cheaper and faster drilling benefits all geothermal sources, leading to significant improvements in geothermal deployment worldwide.



Exploring New Frontiers

Research and discussions about other types of geothermal systems, such as advanced geothermal systems and hot sedimentary aquifers, are ongoing, though many remain unproven. Stanford's research focuses on the most promising and widely deployable technologies like EGS. Research topics are driven by various sources, including projects from developers, DOE interests, and grants. While interested in other systems like hot sedimentary aquifers in different regions, Stanford's expertise lies in fractured rocks, guiding their research focus.

Several projects have been conducted examining geothermal fields that have been in production for 30-40 years. These fields are at a stage where developers aim to maximize the

remaining energy. Research includes geothermal and other areas of energy development, leveraging expertise in energy science and engineering.

Scheduled for February 10th, the upcoming Stanford Geothermal Workshop marks its 50th anniversary. This event serves as a platform for experts to share ideas, present half-finished research, and engage in meaningful discussions, making it a unique and valuable gathering for the geothermal industry.

Dedicated to Mentorship and Education

Despite extensive involvement in geothermal research, Horne's work remains his primary focus. In his younger years, he enjoyed climbing mountains and skiing, but now his passion lies in working with smart and engaged students. Reflecting on early years, impactful mentorship from department chairman Hank Ramey played a crucial role. Ramey, a pioneer in geothermal reservoir engineering, provided invaluable guidance and advice. Mentorship is emphasized, not just formally but also as a personal commitment to helping students succeed.



Advice for Aspiring Geothermal Professionals

For the younger generation, building a strong foundation in the basics is crucial. Understanding geoscience, fluid mechanics, thermodynamics, and geology is emphasized. While industry knowledge and practical skills are essential, a solid grasp of these fundamental subjects is vital for long-term success in the field.

Optimistic Outlook for Geothermal Energy

Optimism about the future of geothermal energy is evident. Horne believes that the field has always been promising and will continue to improve, making it an exciting time to be part of the geothermal community. Whether just joining or already involved, opportunities in geothermal energy are abundant and growing.

Author of Spotlight on Women in Geothermal USA



Elizabeth Cambre is the North America Geothermal Business Development Manager at **Vallourec**, a global leader in steel manufacturing. Beyond her professional role, Elizabeth is deeply involved in the geothermal community. She hosts the **Geothermal Unleashed Podcast** and serves as the Mentoring Committee Chair for the **Women in Geothermal (WING) USA Chapter**, where she authors the Spotlight Articles celebrating industry leaders' achievements. Additionally, she holds the position of Rig Champion for the **Geothermal Rising TxLaOk Rig**. With over 16 years of industry experience, Elizabeth has held various leadership roles including Senior Sales Manager for Turbomachinery at **Baker Hughes** and Global Product Manager for Hydraulic Fracturing. She began her career as a hydraulic fracturing Field Engineer with **SLB**, working in Oman, Qatar, and Abu Dhabi, before relocating to Houston, Texas. Elizabeth graduated Magna cum Laude from the **University of Colorado at Boulder**, earning degrees in Chemical Engineering, Mathematics, Economics, Chinese, and International Affairs. Outside of her career, she is a devoted mother of two daughters, a fitness enthusiast, and an active member of **the Southeast Houston Toastmasters Club**, where she is working toward Distinguished Toastmaster status. Additionally, she founded **Grace & Grit Mentoring**, a free virtual global mentoring program for her daughters and their peers.