International Geomechanics Symposium: Unlocking the Potential of Sustainable Energy in Saudi Arabia

Al Khobar witnessed a gathering of minds from across the globe as the International Geomechanics Symposium (IGS) 2023 unfolded between October 30th and November 2nd, 2023. Under the theme of "The Role of Geomechanics for Efficient and Sustainable Energy Supply," this landmark event served as a vibrant platform for over 300 leading experts to engage in a stimulating exchange of knowledge and ideas.

Marking its first-ever edition in Saudi Arabia, IGS 2023 resonated deeply with the Kingdom's Vision 2030, which places sustainability and economic diversification at its core. This strategic alignment drew a record number of participants, with 234 technical presentations, over 100 publications, and the support of 16 sponsors, solidifying the event's significance and impact.
One of the most remarkable features of IGS 2023 was the unprecedented level of collaboration among nine prestigious societies. Joining forces were the American Rock Mechanics Association (ARMA), Dhahran Geoscience Society (DGS), Society of Exploration Geophysicists (SEG), American Association of Petroleum Geologists (AAPG), Society of Petroleum Engineers (SPE), Society of Petrophysicists and Well Log Analysts (SPWLA), Society for Mining, Metallurgy & Exploration (SME), China Society of Rock Mechanics and Engineering (CSRME), and European Association of Geoscientists and Engineers (EAGE). This unified front showcased the unwavering global commitment to advance the field of geomechanics.

On behalf of Saudi Aramco, Dr. Mohammad Duhailan of Exploration and Dr. Ghaithan Al Muntasheri of EXPEC ARC welcomed all professional societies and attendees from 33 countries to AL Khobar and shared the company’s dedications and efforts in achieving Vision 2030.
The symposium kicked off with a flagship legacy program, “Rock with Fellows”. The acclaimed ARMA Fellows shared their know-hows on a wide range of geomechanics topics; including Prof. Priscilla Nelson on Underground Resources for a Sustainable Future, Maurice Dusseault on Subsurface Energy Storage Geomechanics, John McLennan on Geothermal, Mark Zoback on Geomechanics Challenges of Massive Scale CO$_2$ Sequestration, and Ahmed Abu-Sayed on Mining Waste Disposal. Through keynotes, technical discussions, a campus visit, and interactions with faculty and students from ARMA chapters, the Fellows clearly demonstrated what ARMA stands for: excellency, professionalism, and dedication.

Beyond its historical significance, the IGS 2023 also broke new ground by introducing dedicated programs on mining and geothermal energy. This expansion reflected the evolving landscape of geomechanics, acknowledging its growing relevance beyond the traditional oil and gas domains. The symposium delved into a diverse range of topics, sparking insightful discussions and igniting further research endeavors. Some key areas covered included:

- **CO$_2$ Sequestration**: Exploring innovative solutions for capturing and storing carbon emissions, a crucial step in mitigating climate change.
- **Hydrogen**: Evaluating the potential of geomechanics in the development and utilization of hydrogen as a clean and sustainable energy source.
- **Mining**: Addressing geomechanical challenges and exploring sustainable practices in the mining industry.
- **Geothermal Energy**: Discussing the application of geomechanics in harnessing the vast potential of geothermal energy resources.
- **Petroleum Exploration and Production**: Sharing best practices and cutting-edge technologies in geomechanics to optimize oil and gas production, a vital component of the global energy landscape.
The symposium also hosted a series of captivating ancillary programs. For examples,

1. An Educator Forum welcomed Dr. Muhammad Al-Saggaf, the President of King Fahd University of Petroleum & Minerals (KFUPM), and leaders from global universities in KSA, USA, China, Canada, and Europe to discuss challenges and opportunities in energy education and landscape, followed by an eye-opening campus tour with faculties and students of KFUPM.

2. A President Panel, featuring presidents and leaders of the participating societies, who shared their insightful perspectives on the future of energy transition and the importance of collaborative efforts for achieving sustainability. These resonated deeply with the audience, leaving a long-lasting impression.

3. Field trips to Dammam Dome and Dhahran Techno Valley, organized by Dhahran Geoscience Society and local businesses, showcased world-class outcrop rock formations and technology innovations.
Looking beyond the success of the 2023 event, the excitement continues as the IGS sets its sights on the future. The next chapter unfolds in Kuala Lumpur, Malaysia, from November 18th to 21st, 2024. This further eastward expansion reflects the growing global reach of geomechanics and its increasing importance in the international energy landscape. The 2024 symposium promises to be another landmark event, fostering dialogue, promoting collaboration, and driving innovation in the field of sustainable energy.

With its commitment to knowledge sharing, collaborative efforts, and advancements in geomechanics, the International Geomechanics Symposium is poised to play a pivotal role in shaping a brighter and more sustainable future for energy.