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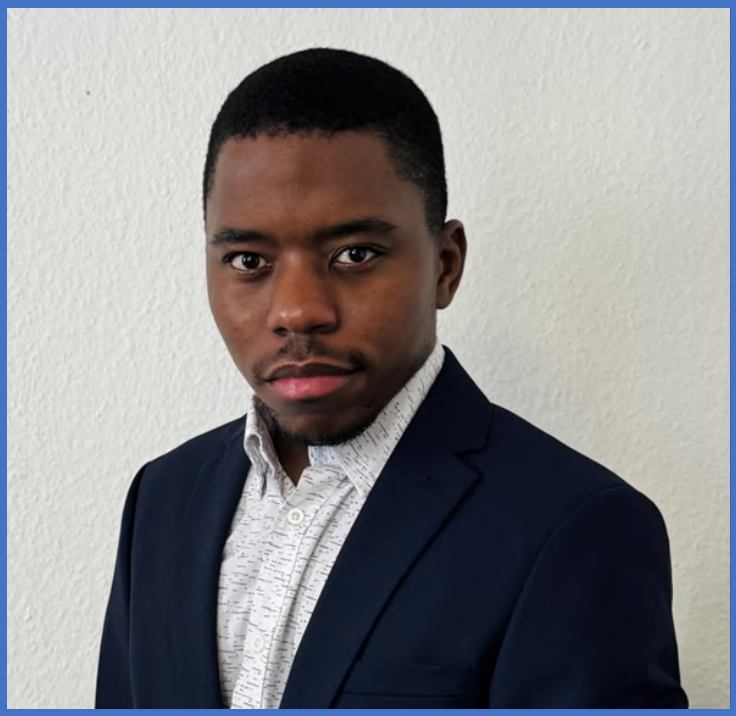
GSSPE STUDENT AWARD 2025



Leonel Sebastião Machava
TU Bergakademie Freiberg

Yousra El Bouhlali
TU Clausthal

GERMAN SECTION OF
THE SOCIETY OF PETROLEUM ENGINEERS
STUDENT AWARD 2025

SPE International

Society of Petroleum Engineers

2025 PRESIDENTIAL AWARD FOR OUTSTANDING STUDENT CHAPTER

Technical Dissemination and Professional Development

University of Clausthal

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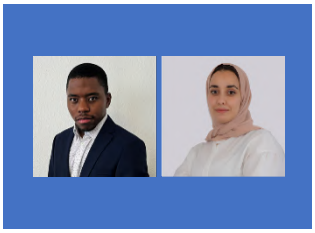
PRESIDENTIAL AWARD ★ SPE 2025 ★ OUTSTANDING STUDENT CHAPTER

OLIVIER HOUZÉ
2025 SPE PRESIDENT

Content

COVER



IMPRESSUM

Leonel Sebastião Machava and Yousra El Bouhlali – Student award winners 2025

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Event Calendar

For latest information and details on SPE Germany events visit our website.

connect.spe.org/germany

Date	Type	Event	Location
02-05 Sept	Conference	Offshore Europe	Aberdeen, UK
16-17 Sep 2025	Conference	Celle Drilling 2025	Celle, Germany
26 Sep 2025	Barbecue	GSSPE turns 35 – A BBQ to remember	Celle, Germany
06-10 Oct 2025	Conference	European Geothermal Congress	Zurich, Switzerland
14 Oct 2025	Webinar	Geomechanical challenges of gas-based thermo-mechanical Energy Storage	Online
20-22 Oct 2025	Conference	SPE Annual Technical Conference and Exhibition (ATCE)	Houston, TX, USA
18-20 Nov 2025	Conference	Geothermie Kongress 2025	Frankfurt, Germany
09 Feb 2026	Distinguished Lecture	A Framework Delivers Multiparty Technologies Enhancing Drilling Operations Control	Hannover, Germany
07-10 Apr 2026	Conference	Petrobowl & Student Paper contest European Qualifier Student Technical Congress 2026	Clausthal, Germany
12 May 2026	Distinguished Lecture	Carbon Storage Risks and Costs: Busting Perceptions & Myths	Hannover, Germany

German Section SPE Chairperson Letter

Edna Michelle Bisso Bi Mba, GSSPE Chair & HARBOUR ENERGY

Dear SPE Germany members and friends,

As we move into the summer holidays, I'm excited to share updates about our recent events and activities. During the annual membership meeting held on June 19th in Barnstorf in the facility of Harbour Energy, a new GSSPE Board was elected, and as re-elected Section Chairperson I look forward to leading our section through the next term.

I would like to express my deepest gratitude to the outgoing board members and officers **Wolfgang Weinzierl**, **Philip Wolniak** and **Susanne Kuchling** and hereby welcome the new board members and officers: **Hiwa Abdullah** (DEEP.KBB) as Secretary, **Mohamed Eita** as Communication Chair, **Maxim Boreiko** & **Eike Beckmann** as the STC Co-chairs, **Barbara Teresa Cortez** and **Marcela Vargic** as Newsletter editors and **Nicole Grobys** as DGMK Liaison. Kindly turn to the final page of this newsletter to get acquainted with the entire 2025/2026 GSSPE leadership team and officers.

As per tradition, the annual meeting served as the occasion to present the 2025 GSSPE Student Award to two outstanding students from our student chapters: **Yousra El Bouhlali** (TU Clausthal) for her exceptional work in the organization and implementation of the Microdegree "Geothermie4ALL" and the dissemination of knowledge in subsurface energy systems to the public; **Leonel Sebastiao Machava** (TU Bergakademie Freiberg) for his valuable contribution in the investigation of relevant effects in the storage of hydrogen in depleted oil/gas reservoirs and his outstanding service to the Student Chapter Freiberg.

Additionally, I am proud to announce that this year, SPE Germany is represented among the winners of the prestigious SPE Europe regional awards in several technical categories:

Matthias Hartung, Manager Business Relationships & Exploration Manager at Harbour Energy is the distinguished recipient of the Regional Sustainability & Stewardship in the Oil & Gas Industry Award; **Hakan Alkan**, Senior Advisor EOR at TU Bergakademie Freiberg is the distinguished recipient of the Regional Reservoir Description & Dynamics Award; **Ansgar Cartellieri**, Senior Principal Engineering and Science at Baker Hughes is the distinguished recipient of the Regional Formation Evaluation Award

These awards recognize outstanding achievements, contributions, and impacts to the advancement of petroleum engineering/upstream oil and gas industry in their respective technical disciplines. Congratulations Matthias, Hakan and Ansgar! The awards will be presented at the SPE Europe Regional Officer Meeting on September 20th, 2025, in Krakau, Poland.

Moreover, our **TU Clausthal SPE Student Chapter** has won *for the first time* the Presidential Award for Outstanding Student Chapter in the Technical Dissemination and Professional Development category. Our chapter is among the elite fourteen student chapters who received a global Presidential Award for Outstanding Student Chapter. The award will be presented during the President's Luncheon & Annual Meeting of Members in Houston, TX, USA at our Annual Technical Conference and Exhibition (ATCE) in October 2025.

Finally in our effort to create interest in Science, Technology, Engineering and Math (STEM) careers, we are pleased to feature a special article about the STEM Racing Team **Echo Racing** on its way to the World Championship in Singapore. STEM racing is an interdisciplinary educational project in which high school students learn critical thinking, team collaboration, and technology skills applied to real-world challenges. Read more about the achievements of the German based Echo Racing team and how you can support the team to get one step closer to the Worl Championship.

I hope you enjoy this edition.

Edna

SPE Germany Chairperson

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HERRENKNECHT VERTICAL

EU-HyDRA. Diagnostic tools and rick protocols to accelerate underground hydrogen storage

By Dr. Chaojie Cheng., KIT – Karlsruhe Institute of Technology

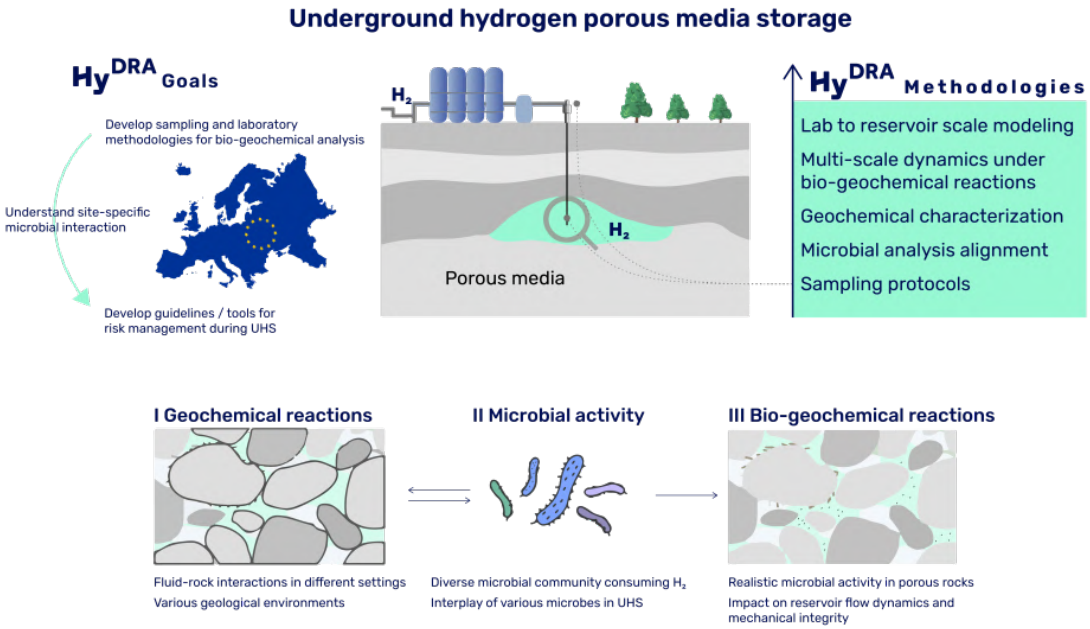

Figure 1: Underground Hydrogen porous media storage

New EU-Project to Advance Underground Hydrogen Storage Across Europe

The Clean Hydrogen Partnership and its members have awarded €3 million to the HyDRA project, a groundbreaking EU-funded initiative launched on 1 January 2025. HyDRA gathers together eight leading research institutions and one enterprise across six countries: BGR, GNS Science, IDAEA-CSIC, ISO, KIT, TUC, UEDIN, UiB and UNINA. These institutions are collaboratively addressing the pressing need for large-scale hydrogen storage solutions to support Europe's transition to a low-carbon energy future.

KIT's Structural Geology department at Institute of Applied Geosciences leads a key work package focused on understanding bio-geochemical reactions that impact reservoir flow, hydrogen combustion in porous media and mechanical stability.

Why Underground Hydrogen Storage Matters

To meet EU climate goals and ensure energy security, Europe must scale up hydrogen infrastructure. Underground storage in naturally sealed formations like sedimentary basins offers a cost-effective, high-capacity solution. However, knowledge gaps, especially around microbial activity, must be addressed to ensure safety and efficiency. The HyDRA project aims to address these gaps by developing scientific protocols and regulatory frameworks to ensure hydrogen can be stored safely and efficiently.

HyDRA's Core Objectives

• Innovative Research: Study microbial interactions with hydrogen to develop risk mitigation strategies.

• Process Understanding: Investigate bio-geochemical effects on hydrogen behavior in porous media.

• Standardization and Regulation: Provide science-based input for ISO standards and regulatory frameworks.

A Pan-European Effort

HyDRA collaborates with storage site operators across more than 20 sedimentary basins, covering diverse geological settings. It also includes sampling from natural hydrogen seeps to better understand microbial ecosystems in hydrogen-rich environments—critical for future monitoring and remediation technologies.

For more information about the HyDRA project, visit www.hydrahydrogen.eu or contact contacthydra@uib.no.

Project consortium

• BGR (Federal Institute for Geosciences and Natural Resources)

• GNS Science (Institute of Geological and Nuclear Sciences Limited)

• IDAEA-CSIC (Institute of Environmental Assessment and Water Research at Spanish National Research Council)

• ISO (Isodetect GmbH)

• KIT (Karlsruhe Institute of Technology)

• TUC (Clausthal University of Technology)

• UEDIN (University of Edinburgh)

• UiB (University of Bergen)

• UNINA (University of Naples Federico II)

Disclaimer:

The project is supported by the Clean Hydrogen Partnership and its members. Co-funded by the European Union under Grant Agreement No. 101192337 — HyDRA. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the Clean Hydrogen Partnership. Neither the European Union nor the granting authority can be held responsible for them.

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Comparative Simulation of Hydrogen Transport Processes in Porous Structures and Analysis of Storage Performance

BY LEONEL SEBASTIÃO MACHAVA, TU BERGAKADEMIE FREIBERG

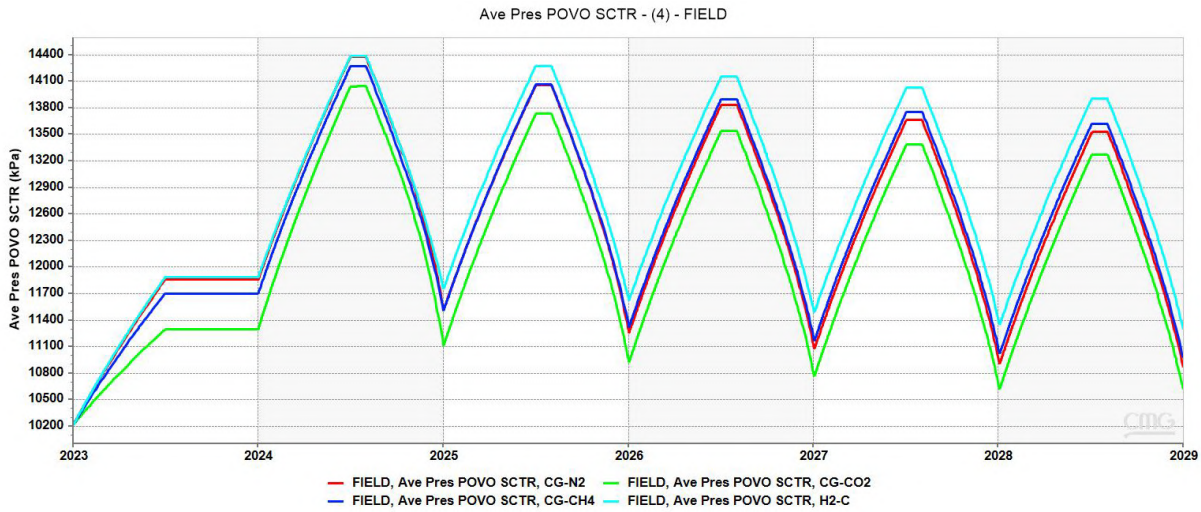

Figure 1: Average pore pressure over a period of 5 years (5 cycles) for the four scenarios investigated (H2, N2, CH4 and CO2 as cushion gases)

In the context of the energy transition, underground hydrogen storage (UHS) is regarded as a means of storing large amounts of energy (in the form of hydrogen) over extended periods. The objective of this approach is to stabilize the fluctuation in energy production from renewable sources, such as solar and wind power, which are characterized by their highly intermittent nature. In order to accommodate the storage capacities stipulated in the BMWK's long-term scenarios, it is recommended that the utilization of both pore storage facilities and cavern storage in Germany be considered in conjunction with one another. The present study aims to address this question by investigating the influence of reservoir-related and operational parameters on UHS in porous media, with a particular focus on aquifers and their storage efficiency. In this regard, a comprehensive literature review was conducted to identify the relevant parameters influencing UHS process. Furthermore, a homogeneous conceptual aquifer model was created using the CMG reservoir simulator to investigate the influence of different cushion gases, H2 solubility, hysteresis effect, hydrodynamic dispersion, and well placement, on the process efficiency over several injection and production cycles. It is important to note that this study does not encompass processes related to the integrity of the wellbore and cap rock, nor microbial processes in saline aquifers.

The simulation results demonstrate that the UHS in an aquifer is associated with numerous challenges. The storage process is predominantly influenced by gas properties (density and viscosity of hydrogen), type of cushion gas (N_2, CH_4 and CO_2), operational parameters, capillary pressure hysteresis and hydrodynamic dispersion. Aquifers offer large storage capacities and can serve as an alternative hydrogen storage system in regions where depleted natural gas reservoirs or salt caverns are not available. The hydrogen storage process is dominated by brine displacement. In the absence of a cushion gas, the hydrogen injection may result in a highly unstable brine displacement process. This instability can lead to viscous fingering and gravity override. The storage capacity of an aquifer depends on geological parameters such as shape, depth, porosity and permeability of the reservoir, with deeper reservoirs exhibiting higher permeabilities being preferred. Cushion gas plays an important role, as it improves the overall H2 storage efficiency, but it can cause H2 purity loss. CO_2 demonstrates the greatest

storage capacity when employed as a cushion gas, whereas the models with lighter gases, such as CH_4 and N_2, have a higher recovery efficiency and pressure behavior (Figure 1). Light gases also help to minimize gravity override and viscous fingering. Aside from H2 trapping, the recovery efficiency is mostly influenced by the flow rates. At higher H_2 injection and production rates the flow is dominated by viscous forces, which can cause instabilities in the displacement front, rapid pressure loss, and increase risk of cushion gas and water production. On the other hand, lower H_2 withdrawal rates show a slower H_2 recovery, but higher withdrawal factor and hydrogen purity. The capillary pressure hysteresis is the most significant H_2 trapping mechanism and leads to substantial hydrogen losses, but higher hydrogen withdrawal purity. Furthermore, hysteresis can result in different pressure behavior, thereby increasing the risk of overpressure in the reservoir. Neglecting this effect results in an overestimation of H_2 recovery efficiency. The results also show that hydrogen solubility has only a minor influence on hydrogen recovery efficiency. The wellbore placement depends mostly on the geological structure of the reservoir. One well at the top of an anticlinal aquifer can inject and produce hydrogen; however, having multiple wells strategically positioned can reduce recovery time and minimize water production. Hydrodynamic dispersion significantly impacts the transport and distribution of gas, as well as gas mixing within the reservoir. The findings show that molecular diffusion has less influence on the UHS process than mechanical dispersion. While mechanical dispersion dominates at high flow rates, molecular diffusion has a greater effect at lower rates. When incorporating dispersivity into the reservoir model in CMG-GEM, numerical dispersion must also be considered. Neglecting it would otherwise distort the results. It can be concluded that, although UHS in porous structures is possible, the practical implementation in saline aquifers still requires the closure of critical knowledge gaps regarding its technological, technical and economic feasibility.

GEOThermie4All. Micro Degree in Geothermal Energy as a key to the energy transition in the district heating sector

By Yousra El Bouhlali, TU Clausthal

Figure 1: Participants, students, and lecturers during the visit to the TU Clausthal GeoSammlung, June 7, 2025

From the Idea to the Implementation.

TU Clausthal has launched a micro- degree to grant the interested public access to the field of geothermal energy. All relevant technological aspects of geothermal energy are prepared in a practice-oriented and easy-to-understand manner for decision makers, career changers, energy experts as well as privateers. This article offers insights into how the project was born – and why it has become much more than just a training program.

Project Origins and Goals.

The transformation of the global energy system requires not only technical solutions but also new ways of building and sharing knowledge. One of the areas. That is not valued appropriately in this context is the heat transition (Wärmewende) – especially in small and mid-sized municipalities, where the need for local, low-carbon heating systems is urgent, but technical expertise is often lacking.

Figure 2: Interior view of a technical Drilling

Geothermal energy offers a promising path forward. Yet, the sector faces a shortage of professionals and limited access to flexible, interdisciplinary training. This is where the project "GEOThermie4All" comes in: a modular, part-time training program developed at TU Clausthal that aims to make geothermal knowledge more accessible across disciplines and backgrounds.

GEOThermie4All was launched in 2024 as part of the funding initiative (NBank & ESF+). Recognizing the growing need for life-long education, especially in the highly dynamic field of energy systems, TU Clausthal initiated a new concept: a flexible, practice-oriented micro-degree focused specifically on geothermal energy. The project is coordinated by the Institute of Subsurface Energy Systems (ITE) and supported by lecturers from TU Clausthal and other partner institutes. The idea is simple: to offer a blended learning format that works for professionals, those that are intending to switch careers, that want to grow as experts in the energy sector and especially those that have private responsibilities e.g., little children to take care of.

Program Structure.

The micro-degree consists of four modules:

1. Planning and operation of geothermal-based grids
2. Technical Implementation of geothermal projects

3. Digitalization and simulation as a tool in design of geothermal plants

4. Communication as essential part of implementation of innovations

Each module includes self-paced online learning combined with intensive in- person sessions held at the Drilling Simulator Celle (DSC) and the Bohrmeisterschule (BMS). Upon successful completion of all four modules, participants receive a university-issued certificate. The program offers 24 ECTS credits in total.

Figure 3: Excursion to the Beta drilling rig operated by Baker Hughes – exploring large-scale geothermal infrastructure on site.

The course is designed for a broad range of participants: professionals in planning, public administration, engineering, and energy management; career changers and returning professionals; and people with limited access to traditional university programs, such as parents.

Importantly, the program does not require a technical background. Instead, it invites curiosity and openness – building bridges between disciplines to broaden participation in the energy transition.

Communication and Outreach.

From the start, visibility was a priority. The project developed its own logo, flyer, and brochure, and presented at different events. The team also engaged stakeholders from municipalities, energy agencies, universities, and industry.

Special emphasis was placed on informal exchange. Events like a networking evening, guided institute tours, and hands-on workshops gave participants a chance to connect, reflect, and share experiences.

Implementation and Milestones.

The project launched its first cohort in early 2025. Module 1 was delivered as an online semester course with interactive exercises. Module 2 took place on-site at the Bohrmeisterschule (BMS) in Celle. Modules 3 and 4 will follow in July 2025, hosted at the Drilling Simulator Celle (DSC) and focused on digital simulations and communication strategies.

Personal experience.

As the coordinator of GEOThermie4All, I am involved extensively in the planning aligning schedules with lectures and participants, organizing facilities, managing materials, and supporting participants individually. Strong institutional partners like BMS and DSC made this possible.

I started with no background in geothermal energy. At first, the technical content was overwhelming. But through continuous learning, support from lecturers, and lively engagement with the material and people, I grew into the role – not just as an organizer, but as someone who now feels part of the geothermal field. This project showed me how powerful learning by doing can be. And how important it is to create space for people to grow into new areas, especially in such a crucial sector – Yousra El Bouhlali

Our Vision

GEOthermie4All has received very positive feedback from participants, lecturers, and stakeholders. The flexible, modular approach has proven successful, and there is demand for future iterations. A long-term structure, tentatively called the-

"ITE Academy" is now being discussed to continue and expand this approach at TU Clausthal and potentially beyond.

The project demonstrates that continuing education in energy doesn’t have to be rigid or exclusive. It can be open, practical, and human-centered – and it can make a real contribution to the success of the energy transition.

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SPE Tech Days 2025 Romania

By Brendan Sales and Asim Jarrah, TU Clausthal

Figure 1: Brendan Sales (middle) and Assim Jarrah (right) at the SPE Tech Days 2025.

SPE Tech Days is an annual European conference organized by the Society of Petroleum Engineers (SPE) to promote technical knowledge-sharing, professional development, and networking among students and industry professionals in the energy sector. Each edition gathers SPE student chapters and energy experts from across Europe to discuss emerging technologies, current industry challenges, and the future of the energy transition.

In 2025, SPE Tech Days was held from 13th to 15th May in Bucharest, Romania, hosted by the SPE Romanian Section. Two students from the University of Clausthal SPE Student Chapter had the opportunity to attend this inspiring event, which included technical presentations, panel discussions, an icebreaker session, and a career fair. The conference offered a unique platform for learning, collaboration, and engagement with leaders and peers in the field.

The event started with an icebreaker where all students and professionals introduced their respective SPE chapters. They mentioned a brief history of their chapter, their governing body members, the activities their chapter participates in as well as educational tools and connections they provide to members. After the chapter introductions, attendees proceeded to network and introduce themselves personally in a small gathering discussing where they are from, how their institute operates, how student life is at the institute and any prior background knowledge they had to share.

Figure 2: Brendan Sales introducing TU Clausthal student chapter

The second day kicked off with inspiring words from the keynote speaker and the SPE Romania president Alexandru Dragomir, where he shared some of his stories about his career and reassured students that the industry is still in need of fresh talent amongst this energy transition.

Afterwards, the session transitioned into the technical discussion where many professionals from various companies shared some insights about their work and gave technical presentations about certain aspects of

the industry that are improving or developing, a few of which are described in the following:

Geoscience-Subsurface Models for energy sources (Alexander Rath, OMV)

This presentation served to explain the importance of Geoscience and how it is tied to creating reliable subsurface models. One limiting factor of Subsurface models is data availability and integration. Depending on the purpose of the task, there is a deep interconnected web of technical details that need to be incorporated. This also involves the collaboration of multiple disciplines so that they can screen and point out data that seems reasonable. The data, whether it be from literature and outcrops, wells, cores, well logs or 3D seismic, always has an amount of uncertainty in the form of resolution or quality. This then stems into method uncertainties such as well correlation, seismic interpretation, porosity and permeability modeling and further complicates volumetrics, fluid saturations and production forecasts. What is needed is multiple models that, when fed data, describe a greater representation of what the true reservoir looks like. What geological models are there? Visualization, volumes, reservoir simulation, geomechanics, geothermal, and CCS/H2 storage. All these models serve to describe the presence of energy sources or regions where fluids can be stored. Remember that models are only abstractions and should not be confused with field data, but they should be designed in such a way that it helps represent certain characteristics for a given task to make decisions. Depending on the task at hand, multiple disciplines are still needed whether it be surface or subsurface to make the project succeed.

From Roughnecks to Robotics: The evolution of Drilling Engineering (Divya Nair, SLB)

The digital age and its integration into the drilling industry is gradually making itself more apparent. With advancements such as automated drilling rigs being able to improve the well design in a safe manner without having a physical crew to look after, it presents the question of what happens to the crew who perform the manual labor when they are effectively obsolete on smart rigs. Three conditions define a smart rig: it must be efficient, safe, and sustainable. With an automated system, the program acts as an advisor with a driller still in full control of all the automated systems that replace manual labor positions whereas an autonomous system acts independently of user input and reacts accordingly to reach the target. A case study done in the Middle East shows that an autonomous systems control program managed to get to the target depth ahead of schedule by around a full day and spent the least amount of time drilling compared to planned drilling time. With the benefit of autonomous rigs demonstrated, how will it affect the job security of those who roughnecks or of a similar position? The answer lies in changing company culture to add skillsets to its workforce. This includes skills such as domain knowledge, management of change, communication skills, and systems integration/programming. The biggest challenge is the adoption.

Well Integrity from Standards to New Horizons (Dr. Catalin Teodoriu)

Well Integrity is one of the most important factors that governs a geothermal project's success; however, the standards it uses are from the oil and gas industry. The geothermal industry currently lacks dedicated standards, and this becomes a problem when the standards it currently relies on are trying to solve high-pressure, high-temperature (HPHT) problems which have conditions that are rarely, if ever, encountered. The primary and secondary barriers serve a critical purpose: to ensure that no cross-flow, uncontrolled flow, or leaks occur in the event of an emergency. The primary barriers include casing, cement, formation, and wellhead (no production tubing in geothermal), while the secondary barriers are mostly non-existent, apart from casing and cement integrity. A risk assessment in regard to a tubing installed completion over a tubingless completion was conducted. Furthermore, six well configurations with an isolation plug were shown all with varying completions and volumes of cement behind casing. It was shown that a well with tubing installed is generally more predictable as to the cause of why a well fails rather than no tubing and that a well with stubbed casing and cement to surface on all strings provides the lowest risk. Both studies indicate that the casing cement formation bond is an exceptionally critical component to well integrity, especially since the mechanical properties of cement evolve with time. Believing in the mechanical properties of cement in the short-term leads to over- or underestimating the long-term performance, which is why it is important to conduct long-term testing of cement behavior and how they differ with chemical composition. This gives notice that old wells are simply not eligible to be converted to a geothermal well due to well integrity. The standards may change and be improved upon, but the old wells do not as there is limited knowledge of well material performance over time.

On the last day, the event started with a panel discussion with experts from various companies, where they discussed the constantly growing demand for energy and how to best use current technology for safer and more efficient results. Then students had a glimpse of what it is like to be covering the hot topics in the industry. After a lunch break, the students attended a

career fair where major companies allowed students and young professionals to ask about opportunities and describe company culture. The entire event closed out with a nice Gala dinner where attendees had a final gathering to finish up and say goodbye to the speakers and professionals, as well as the student chapter colleagues.

A special thanks to the SPE Romania section for inviting the students of TU Clausthal to SPE Tech Days 2025 as well as financing them for the duration of the event. Another sincere thanks to the German section of SPE for financing the logistics of travelling to Romania and enabling the students to attend. The support for expanding one's network, allowing others to be more active in their organization and attend valuable knowledge sessions is deeply appreciated.

SPE Petrobowl Regional Qualifiers

TU CLAUSTHAL TEAM SHARES THEIR EXPERIENCE - 10.4. – 12.4. 2025

BY EIKE BECKMANN, TU CLAUSTHAL

Figure 1: Petrobowl team from TU Clausthal; Eike Beckmann, Naswa Lunani, Liban Ahmed Gudhane, Malek Saleh, Fidel Lopez and Weam Haidar (from left to right))

The SPE Europe Petrobowl took place in Paris and was hosted by the IFP School SPE Student Chapter. The event was held at the Trinity Tower, located in La Défense. The event spanned three days: the first day was dedicated to the Petrobowl competition, on the second day, a student chapter exchange was held, and the third day was reserved for exploring Paris.

A total of 14 teams participated in the Petrobowl competition on the first day. The contest was intense, requiring quick and accurate responses to a wide range of technical questions. Incorrect answers resulted in negative points, so teams had to be strategic with their buzz-ins.

Figure 2: TUC Team at semi-final round

The TU Clausthal (TUC) team secured 4th place out of 14—an impressive achievement, especially after a long hiatus from the competition. This success was made possible by the TUC team's strong collaboration. Special thanks go to Edna and all those who supported the team along the way.

On the second day, a SPE Student Chapter Exchange was held. This provided a valuable opportunity for chapters to connect, share experiences, and discuss relevant technical topics.

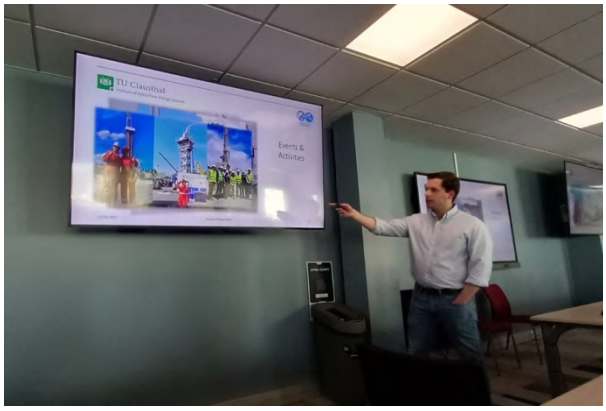

Figure 3: Eike Beckmann on behalf of Team TU Clausthal at the student chapter exchange presentations at IFP School

The TUC Student Chapter gave a keynote presentation highlighting their past events and initiatives. The

exchange also served as a platform to promote upcoming activities, such as the student paper contest.

On the final day, we had the opportunity to participate in guided tours organized by IFP school. As we had independently explored most of Paris' famous landmarks, including the Eiffel Tower, Arc de Triomphe, and Notre Dame Cathedral, we decided to enjoy a guided tour of the Louvre Museum. Learning the stories behind iconic artworks housed at the Louvre like the Mona Lisa was truly inspiring; serving as a reminder that even the most celebrated masterpieces are accessible to anyone daring enough to dream.

Figure 4: Team building for all at the historic Château de Bois-Préau

Petrobowl was both a competition and a valuable networking event, especially for us students soon to enter the workforce and become the leaders of tomorrow. The teams were made up of students from diverse backgrounds i.e., from engineers to geologists to even lawyers, highlighting how interdisciplinary our industry truly is. It made us appreciate courses in our curriculum like energy law and planning and budgeting, which may not seem like traditional technical subjects but are essential when working in diverse teams across departments to achieve business objectives.

A heartfelt thank you to GSSPE for making this incredible experience possible for Team TU Clausthal to represent Germany in the Petrobowl European Regional Qualifiers 2025.

The SPE Europe Energy Conference and Exhibition

By Eike Beckmann, Malek Saleh, Ahmed Alsherif, and Elizaveta Akchurina TU Clausthal; Christian Gläser TU Bergakademie Freiberg

Figure 1: TU Clausthal students with Dr. Rafael E. Hincapie, Edna Michelle Bisso Bi Mba, and Mohamed Eita (Hammo)

The SPE Europe Energy Conference and Exhibition «Innovating Together: Solutions, People, and Energy for a Responsible Transition» was held in Vienna, 10-12 June 2025. Four students from the Technical University of Clausthal, including Eike Beckmann, Malek Saleh, Ahmed Alsherif, and Elizaveta Akchurina, were sent with the broad support of the SPE German section.

On the first day of arrival, the students explored the beautiful Vienna and later met the members of the SPE German Section and former students of TU Clausthal a dinner.

Figure 2: SPE Europe Energy Conference Participants

The first day of the conference took place on Tuesday. On the introductory part of the conference, the topics of transition and the ways of its implementation were repeatedly raised. SPE President Olivier Houzé, touched upon the topic of the lack of specialists among the young generation in the petroleum sector. The organizers of the conference, with the support of many other specialists, joined the president and tried to interest and involve students by organizing two events on the first day and the following:

The first event was a team competition «You are the CEO», where students were divided into five teams, each of which consisted of students from different universities. Two projects were proposed, and based on various criteria, it was necessary to choose the preferred and most profitable project. As a result of this competition, the students learned how to work and communicate in a team with completely new people, how to be confident and what skills are needed to become good professionals. The second organized event was a meeting of students with company representatives in a one-on-one dialogue format, where students could ask any questions for various specialists.

Figure 3: SPE President Olivier Houzé, Malek Saleh, and German Section SPE Chairperson Edna Michelle Bisso Bi Mba (from left to right)

On the second day of the conference, PhD, Master and Bachelor students were presented their work. Malek Saleh, a Master's student at TU Clausthal, has achieved 1st place in the 2025 SPE Europe Student Paper Contest in the Master's category, which recognizes outstanding student research in petroleum and energy-related fields across Europe. Malek delivered a presentation titled: "Wettability of Caprocks at Geological Storage Conditions and their Interaction with Supercritical Carbon Dioxide." This work contributes valuable insights into subsurface storage processes, supporting the development of safe and effective carbon capture and storage (CCS) technologies. Malek will represent SPE Europe in the global finals of his category at the SPE Annual Technical Conference and Exhibition (ATCE), taking place in Houston, Texas, in October 2025.

Figure 4: Hydro-Geothermal System, a joint venture between OMV and Wien Energie

On the third day of the conference, the students visited the first deep geothermal project drilled in Aspern in Vienna by OMV Group with Wien Energie. Currently, three wells have been drilled, one of which is an exploration well, which also serves as a reserve well. Under the given development conditions (water temperature of around 100 ^{o}C, drilling at a depth of 3,000 meters, and conglomerate deposits) and the rate of development, the field generates up to 20 MW of heat annually, aiming to reach 200 MW in the future, thus heating up to 200,000 households in Vienna.

On the last day in Vienna, the students had the excellent opportunity to visit the Innovation & Technology Center (ITC) in Gänserndorf, as well as the Tech Center Lab (TCL) and OMV Austria Operations (Polymer Injection). The first part of the tour took place at the ITC, where the guests were given a brief history of OMV's foundation, their interests, and prospects related to potential projects. The focus was on the technology areas of geology and geophysics, drilling technology, production technology (artificial lift), smart oil recovery, materials and corrosion, and saltwater treatment. In the second part of the tour, guests went to the Matzen field, which is being developed with polymer flooding technology. They were shown modernized polymer mixing equipment created by SNF, which also develops and supplies polymer for the field. The final part of the Tech Center Lab tour began with the storage of rock samples and drill cuttings, among which there are more than 40,000 meters of samples from various international operations since 1930. The center conducts comprehensive research in a variety of areas, including fluid flow in porous media, HPHT PVT liquid phase behavior, analysis and characterization of hydrocarbon and aqueous media, corrosion studies, and much more. The guests had the opportunity to visit the laboratories and see the lab equipment that is used.

On this exciting note, the last day of the conference in Vienna has ended, but we hope that there are more new acquaintances and opportunities ahead.

We would like to first thank the SPE German Section, who made this trip a reality. Special thanks to OMV for the amazing organization of the events and the opportunity to visit the fields and technology centers, and to the conference sponsors and other company representatives for the opportunity to create new acquaintances and cooperation with the Technical University of Clausthal.

Youngtimer Garage 2025: Innovating the Underground – Future Energy for a Sustainable Earth

By Reinel Echavez Marquez, TU Clausthal

Figure 1: Youngtimer Garage 2025 – Group Photo

On May 8th, 2025, the Young Professionals Team of the SPE German Section successfully organized Youngtimer Garage 2025, a side event of the DGMK/ÖGEW Spring Conference held in Papenburg, Germany. The event, titled "Innovating the Underground: Future Energy for a Sustainable Earth," created a unique platform for students, young professionals, and industry leaders to come together and engage in a meaningful dialogue about the future of subsurface technologies in the context of the global energy transition.

The session kicked off with a warm welcome and opening remarks by moderator Reinel Echavez, setting the tone for an interactive and forward-looking discussion. The technical segment featured two compelling presentations: Hiwa Abdullah (DEEP KBB) explored "Plug and Abandonment of Salt Caverns: Processes and Cases", while Pit Arnold (Harbour Energy) shared insights on "Transition Times: The Evolving Role of Petroleum Engineers in Energy and AI". Their talks sparked thought-provoking questions and laid the foundation for the panel discussion that followed.

The panel featured two experienced voices in the energy sector, Hans Rehbock (Harbour Energy) and Peter Schermer (Neptune Energy), who offered their perspectives on key challenges and opportunities facing the industry. Topics included the importance of gender diversity in technical teams, the evolving roles of both young and senior professionals, and the necessity for interdisciplinary innovation to unlock the potential of the underground for sustainable energy solutions. The open format encouraged audience participation and emphasized the need for collaborative approaches across generations and sectors.

Beyond the technical content, the event served as a community-building opportunity, strengthening connections between students, early-career professionals, and senior experts. It reflected the Young Professionals Team's ongoing commitment to fostering inclusive spaces where fresh ideas, diverse experiences, and innovative thinking can flourish.

The SPE German Section expresses its sincere appreciation to all speakers, panelists, and attendees for their contributions and enthusiasm. Youngtimer Garage 2025 was a testament to the value of dialogue and mentorship in shaping the next generation of energy professionals. We look forward to building on this momentum and continuing to support young talent through future events and initiatives.

Echo Racing on its way to the World Championship in Singapore

By Karla Salomon, Team Echo Racing

Figure 1: Echo Racing at the award ceremony for the Northwest Champion-ship in Neumunster in March 2025. © Echo Racing

The STEM Racing Team Echo Racing from Bad Oldesloe in Schleswig-Holstein has qualified for the World Championship taking place in Singapore in September.

STEM Racing, formerly known as Formula 1 in Schools, is an interdisciplinary educational project in which students design a miniature Formula 1 car that races on a 20-metre track powered by a CO_2 cartridge.

In addition to technical development, the competition also includes the organisation and marketing of the project, the creation of professional portfolios, the construction of a team display and the presentation to a jury.

In 2023, the team took part in the competition in Schleswig-Holstein for the first time, finishing fourth in the overall standings and also winning the award for best newcomer.

In the following 2024 season, the team took first place in the regional championship and was awarded special prizes for design and technical portfolio. They also won the knockout race. At the German championship in Cologne, they took seventh place.

Encouraged by these successes, the team entered the 2025 season with great ambition and renewed motivation. At the Northwest Regional Championship in March 2025, they completely won over the jury: Echo Racing won seven out of eight possible special prizes and once again secured the title of regional champion. This was their ticket to the 2025 German Championship in Neuburg an der Do-nau.

During the intervening months, the team worked tirelessly on a new racing car, developing the two associated portfolios in the areas of technology and business, setting up and designing their new team display, and preparing the oral presentation for the German Championships.

On 17 May, the 2025 German STEM Racing Championship took place at the Audi Driving Experience Centre in Neuburg, where Echo Racing finished third and won the special prize for the best team display. This secured Echo Racing a ticket to the 2025 World Championship in Singapore – an outstanding success for Jan, Kai, Karla and Paul.

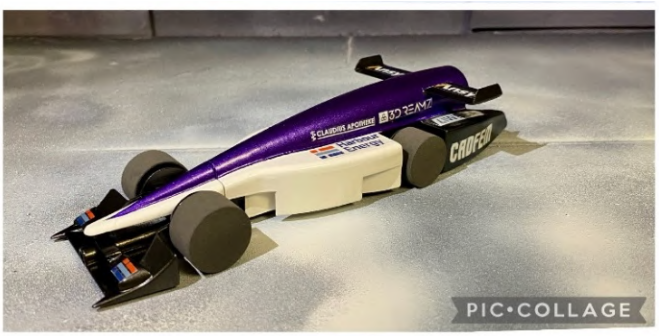

Figure 2. Echo Racing's competition vehicle from the 2025 season.

Since then, the team has been working hard to prepare for the international final. Finding sponsors is an important part of this: the team needs to raise around €40,000 to develop the new racing car, a portable team display, cover the participation fees, and travel costs. This is only possible with the help of sponsors and donations.

Racing hereby kindly requests your support in realizing its dream. If you are interested in supporting our extraordinary project, please contact us at:

echo.racing@tms-badoldesloe.de

Every contribution counts, and Echo Racing is grateful for any assistance that brings it one step closer to the World Championship.

Donation receipts can be issued upon request.

Geothermal News

By Valentin Goldberg, BWG Geochemische Beratung GmbH

Success in Geothermal Drilling in Lower Saxony

First production tests of the research well in the framework of the DemoCELL project showed promising results. In Ahnsbeck, located in the greater Celle area, the presence of a highly productive geothermal reservoir between 2,400 and 2,500 m was indicated.

The DemoCELL project, is a joint research project between the University of Göttingen and Baker Hughes, funded by the German Federal Ministry for Economic Affairs and Energy (BMWE). The project aims to assess the geothermal potential of the North German Basin, particularly in the Celle region of Lower Saxony.

To address this, the project conducted a deep exploration drilling campaign at the BETA test rig of Baker Hughes. The well targeted the Rhätian Sandstone formation, known for its geothermal properties in other parts of Germany. Over 100 meters of core sections were successfully extracted, despite challenges posed by unstable overlying rock layers.

Initial analyses of the core samples indicate favorable porosity and permeability characteristics, with an average permeability of around 832 millidarcy, suggesting the Rhätian Sandstone's suitability for geothermal use. Hydraulic testing of the well produced over 1,000 cubic meters of thermal water at temperatures exceeding 100°C, confirming the presence of an active and usable geothermal reservoir.

The results from the core analyses and hydraulic tests will form the basis for evaluating the site's potential for geothermal energy extraction. The project partners are also investigating and evaluating other sites in the Greater Celle area. Ultimately, they aim to develop a concept for a demonstration project for medium-depth geothermal energy, contributing to a sustainable heat supply for the region.

Source:

Bundesministerium für Wirtschaft und Energie – Explorationskampagne für Geothermie mit Bohrung in Niedersachsen, published 04.04.2025.

Bundesministerium für Wirtschaft und Energie – Erfolg bei Geothermiebohrung in Niedersachsen: Große Mengen heißes Thermalwasser gefördert, published 10.06.2025.

Bundesverband Geothermie - DemoCELL - Forschungsvorhaben

Launch of the exploration of Berlin's subsurface

Berlin has initiated a large-scale exploration project to assess the potential for deep geothermal energy as part of its strategy to become climate-neutral by 2045. The campaign recently started in June 2025 with pilot seismic surveys in the districts of Lichtenberg and Marzahn-Hellersdorf. Using Vibro-Trucks, seismic waves are sent into the ground and their reflections from geological layers are recorded with geophones. These initial measurements are intended to fine-tune the methodology for a citywide 3D seismic survey and fill important data gaps, particularly in eastern Berlin.

The insights gained will guide the planning of up to twelve boreholes throughout the city. These drillings aim to evaluate subsurface conditions in detail and determine the presence and quality of geothermal reservoirs. To enable this effort, Berlin has secured a five-year mining license covering 550 square kilometers, allowing for coordinated and focused exploration.

The project is a central element of Berlin's "Roadmap Tiefe Geothermie," which outlines a phased approach toward integrating geothermal energy into the city's heat supply. If successful, the initiative could provide a stable, long-term, and climate-friendly energy source to significantly reduce fossil fuel use in Berlin's heating sector.

Source:

Bundesverband Geothermie – Exploration des Berliner Untergrunds startet , published 01.07.2025.

RBB - "Rüttel-Trucks" starten Voruntersuchungen für Geothermie in Berlin, published 30.06.2035

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