

The Future of Tech is Mining

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When many imagine a career in the mining industry they perhaps think of the more traditional perception of mining of hard hats, diggers, and days spent working in darkened tunnels. However, with the significant transformation mining has undergone in recent years, due to the rise of technology and the adaptation to societal and environmental changes, it is an industry with a bright future that can provide global career opportunities for senior-level talent.

The challenge in mining is that even though the demand for precious metals has never been greater, it needs to react to growing pressure from world leaders and wider society to become a more sustainable and environmentally friendly industry. Becoming a greener industry is vital to its survival and ability to attract exceptional talent, which is only made more significant by its potential to positively influence social and environmental developments. The future of tech rests on mining's ability to sustainably extract precious metals, which are crucial to powering EVs, data centres, electrification and more.



The International Energy Agency estimates that the demand for minerals for electric vehicles and battery storage will grow tenfold by 2040.

Still, the mining industry desperately needs to attract talent to fill the skills gap to innovate.

How can the mining industry attract the data scientists, software architects and machine learning engineers needed to innovate to reach net zero and keep up with demand? With Space X already moving to mining asteroids, the future lies in mining's ability to adapt and evolve. Will the mining industry rise to the challenge?



The Power of Fresh Talent in Mining



The mining and metals sector is facing a crucial juncture with a shortage of skilled workers and retirees leaving the industry in droves, making it challenging to replace them. For instance, **in May 2022, the US mining sector had 36,000 job vacancies, up from 27,000** the previous year.

US mining sector job vacancies

27,000 → **36,000**

Previous year May 2022

This talent shortage is coupled with the pressing need to achieve sustainability targets, such as reducing direct CO2 emissions to zero, as outlined in McKinsey's study "Creating the Zero-Carbon Mine." To further compound the problem, the sector needs help attracting new talent, as evidenced by a **46% drop in US mining engineering program enrolment between 2015 and 2020**, according to the Society for Mining, Metallurgy, and Exploration.



46% Drop

in US mining engineering program enrolment between 2015 and 2020



"The focus for talent attraction within mining is to establish the talent we can bring into the industry who can contribute to solving complex problems and improve overall efficiencies. The mining industry impacts all industry sectors across the globe and this talent is essential to create a more sustainable future, if we can work together to decarbonize the industry this will have a real-world impact across every other supply chain."

*Simon Gillibrand, Global Head of Natural Resources
CSG Talent*

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To tackle these challenges and secure a sustainable future, the mining industry must focus on bridging its skills gap with fresh talent from various sectors. By providing training and development programs, promoting technological advancement and environmental responsibility, and fostering a culture of continuous learning, the industry can attract and retain the talent with the necessary skill sets to drive change and meet its sustainability goals. Furthermore, by prioritising investment in human capital, the mining industry can ensure a bright future for the tech sector and secure its position as a crucial component of technological progress.

To speed up the development of carbon-reducing technologies, we believe that the solution lies in creating strategic pools of talent involving different technology providers and skill sets who can look at miners' requirements and work together to find the right answers.

Using Strategic Networks

The mining sector cannot overstate the importance of talent networks and learning from different industries. By bringing together industry stakeholders and technology suppliers through open and collaborative networks, mining organisations can expand their pool of solutions and gain access to innovative ideas from peers across the industry value chain. Furthermore, this strategic collaboration among like-minded talent will drive the joint development of technology and accelerate the transition to reduced and, ultimately, carbon-free solutions.

If mining organisations want to benefit from open networks, the sector must continue to foster a more open and inclusive working culture with a particular focus on gender diversity.

21% In 2019, a report showed that women took up only 21% of board positions.

As leaders are responsible for diversifying and fostering a more inclusive culture to drive innovation, the increased presence of women on boards will help to drive diversity talent strategies.

Being open and gaining knowledge from wider networks also means actively managing change and innovation by embracing new technologies and broadening skill sets. By doing so, the mining sector can shape industry policies, share experiences and learnings with the broader community, and ultimately secure a sustainable and prosperous future for the mining industry.

Changing the Perception of the Mining Industry

The perception of the mining industry needs to change to ensure technical talent is motivated to join the industry for the first time either early on in their career, or at a senior, leadership level. Organisations need to work together to create an industry wide message on the modern mining sector, the opportunities available, the innovation and new technologies within reach and the scope of advancements to come in the future of mining.



“An industry wide message from all areas within mining across the globe would help tackle the traditional perceptions of the industry and encourage candidates on the market to view the mining industry as an innovative and exciting industry to be a part of. We are working with clients who have seen the benefits of attracting talent from other industries by showcasing the new era of mining.”

*Christina Theoklitou-Panagiotou, Head of OEMs, Processing and Technology
CSG Talent*

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Electrification Through Project Management

The gradual electrification of the mining industry is a complex process that requires a well-planned approach. The shift from traditional mining operations to electric mines involves multiple projects to achieve success. However, skilled project managers can break down the long-term roadmap into manageable and actionable projects, allowing mines to immediately reduce their carbon footprint with limited upfront investment.



“It’s only really in the last six months that clients within the mining industry have been a lot more open to attracting talent from allied industries. Seeking talent from other sectors, especially within electrification, tends to be the most popular route at present and supports the drive to create a more sustainable mining industry.”

*Christina Theoklitou-Panagiotou, Senior Consultant - Mining
CSG Talent*

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Data & Tech Drive Mining Progress

Implementing electrification to achieve net zero in the mining industry requires a data-driven approach. By conducting thorough assessments through comparative simulation studies, the industry can gain a deeper understanding of each individual mining operation and make informed project decisions. These assessments consider technology, economics, geography, regulations, and cultural differences.

By leveraging real data, the electrification systems can be fine-tuned and customised to fit the specific needs of each mining operation. This requires collaboration between stakeholders, including technology providers, investors, service providers, consultants, EPC/EPCMs, and OEMs. By involving all relevant parties, the industry can ensure the successful implementation of electrification and reach its sustainability goals.



Cross-industry Skills for Mining's Future

Achieving maximum performance and productivity in the mining industry requires a comprehensive approach. Reaching zero-emission mining is crucial to integrate electrification, automation, and digital systems seamlessly.

To do this, new talent in the industry must bring expertise in:

- ✓ Developing and innovating cutting-edge technologies, such as charging systems, trolleys, BESS, and driving standardisation.
- ✓ Designing optimised and balanced grids to meet new electrification requirements. Ensuring open communication standards for multivendor integration through one platform.
- ✓ Ensuring open communication standards for multivendor integration through one platform.
- ✓ Collecting and processing real-time data, and visualizing it effectively.
- ✓ With high-quality talent filling these skills gaps, the mining industry will edge closer to reaching net zero and further innovating for a green future.

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Insider Perspective

We interviewed Jess Maddren Group Manager at Origin Zero – Commercial and Industrial Energy Markets to understand her experience on the need for cross-industry skills. Jess has a strong relationship with CSG Talent as a client and candidate and comes from a background in technology at Schneider Electric. She excels at utilising tech to support business objectives while demonstrating collaborative leadership, effective project management, and research and process improvement expertise.



Jess Maddren

Group Manager - Origin Zero

“The demand for diverse talent has never been greater in our sector. My career has taken many twists and turns from being a geologist out in the field through to R&D, BD, strategy, O&G, M&A, marketing and technology. The importance of what we do can’t be underestimated, nor can the demand for talent from other industries. From mining precious metals through to renewable technology, unless we attract talent from other sectors we will fall behind.”

Jess Maddren is an accomplished, strategic, integrity-driven Senior Executive highly regarded for success in utilizing technology to support business objectives in the technology, mining, research, and oil and gas industries. She is recognized as a leader with over 20 years’ experience in the mining industry, collaborating with multiple business units and managing complex projects while delivering on time, under budget and above expectations.

Mine for Skills, Strike Gold

The future of the mining and metals industry requires new skill sets and knowledge that may need to be more readily available within the current talent pool. As a result, organisations must turn to adjacent industries or make acquisitions to acquire new skills. To attract and retain talent from other sectors, companies must build flexibility into their workforce models by shifting systems responsive to individual needs rather than the other way around. This requires companies to make significant changes to their talent and leadership architecture to operate in a new paradigm of work for the industries.

“Big data was born out of mining so for mathematicians what greater challenge is there for them? Our role as leaders is to create psychological safety for our teams that are diverse. Obviously have leaders that are commercially savvy but it’s this diverse thought that will create new opportunities for all of us.”

Jess Maddren - Group Manager

Origin Zero

In addition to attracting talent, companies must develop internal pathways for upskilling or reskilling existing employees. This means moving beyond traditional technical certifications and incorporating lifelong learning as a core part of the organisation’s culture. Companies can create upskilling opportunities through individual-focused training programs, investing in apprenticeship schemes, large-scale digital initiatives, mentoring and reverse-mentoring schemes.

Transferrable skillsets in demand from allied industries

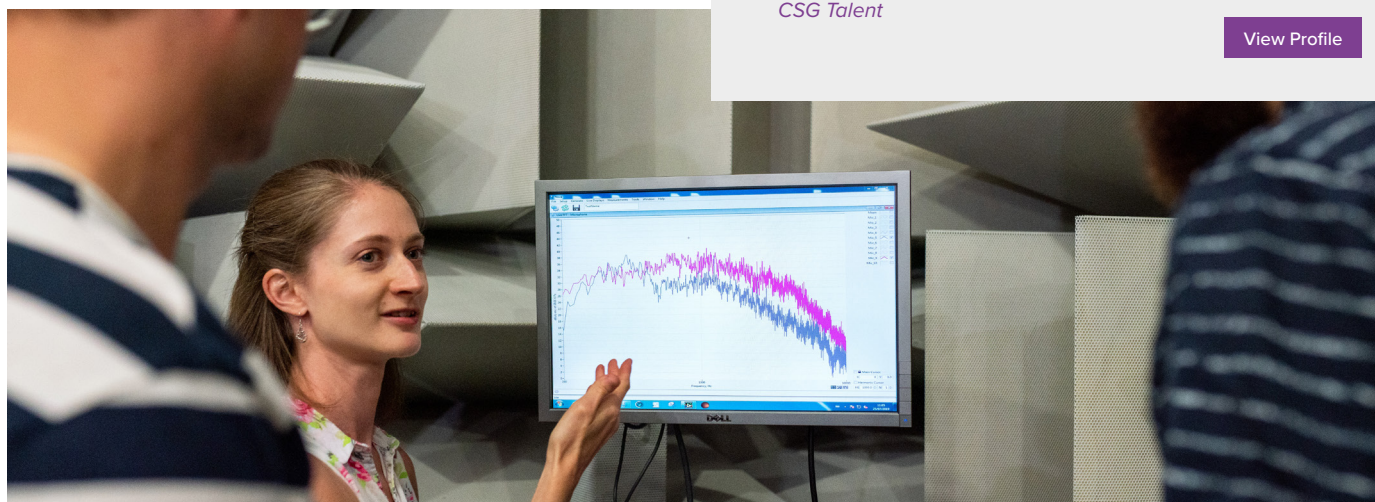
Another key focus across the mining industry is to create more sustainable processes and reducing the carbon footprint of mining overall. To enable the industry to utilise new technologies and advancements, there is a demand for new talent with technical capabilities. These skillsets can be transferred from a number of industries such as engineering, construction, heavy industries, electrification, automation, automotive, software development and mobile equipment. This talent is key to decarbonisation across all industries, with mining playing a key part at the start of this process.



“Talent within these areas have the skills and experience needed to drive mining innovation forward, irrelevant of their industry background. To enhance the impact their role can play in this process, those new to the industry can learn more about mining while working in the role. This can be done through mentor programs where they can expand their knowledge on the industry as a whole, something we are seeing more of.”

*Christina Theoklitou-Panagiotou, Senior Consultant - Mining
CSG Talent*

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How do mining organisations attract technical talent from the fierce competition of companies like Tesla, NASA, SpaceX for example? Mining organisations need to change the perception of the industry, consider their culture, brand and benefits packages to allow them to stand out and attract this new area of talent.

The Mining industry needs talent who can apply their knowledge and skills from other industries to create more efficient and greener processes within mining. This technical talent can have a huge impact on not

only the future of mining, but across industries all over the globe. We are speaking to senior level candidates who are entering the mining industry for the first time, bringing with them a wealth of technical and digital skills which will allow them to implement significant changes in mining efficiencies. This is a big focus for candidates, and many are motivated by the impact and contributions they can have to this global mission, having a role in mining decarbonisation and real-world impact.



“Attracting senior level talent from other industries doesn’t need to be a challenge for hiring managers within mining organisations. We have seen the success of this approach when we moved a VP Supply Chain from the automotive industry to a Tier-1 mining business who has had a drastic impact on their global supply chain. We have also worked with a Tier-1 mining company who are looking to decarbonize their whole business, this has involved moving individuals from space, near-space, aerospace and defence industries into leading technical roles and Project Management roles to develop innovative technologies across automation, communication, hydrogen mobile equipment, soundwave separation and water use reduction.”

Simon Gillibrand, Global Head of Natural Resources

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Expanding the Mining Talent Pool

- Allied Industries
- Transferable Skills
- Geography



Imagine the journey of an employee from a different industry with research and consultancy experience who can progress into a more specialised role, such as a data analyst or project manager, helping the organisation achieve its net-zero carbon emissions goals. This scenario demonstrates the importance of investing in the internal talent pipeline and the future skills needed to achieve net zero carbon emissions in mining. Investing in a sustainable future for mining by upskilling and recruiting talent and fostering a culture of innovation will power the mining industry to fuel technological advancements and shape a digital world.



“Talent is out there, but if you are still looking for the person that has done the same job with another logo for 20 years - you will lose the competition game”

Jess Maddren - Group Manager at Origin Zero

Close the skills gap in mining with CSG Talent

As experts in executive search and mining recruitment, we deliver talented professionals for your niche mining jobs, adapting our approach to talent attraction to suit your business needs and talent challenges.

Our expert global mining recruitment team operate within exploration, battery metals, mining technology, mining operations, mining construction and OEMs. We work with organisations from small startups to huge global corporations and tailor our approach to work in partnership with our clients in the best way to get results for their business. We support our clients to attract new technical capabilities from allied industries with transferable skill sets.

To find out more about our mining talent services and success stories, or if you're keen to discuss current or future hiring needs or challenges in attracting talent, connect with one of our mining talent experts today.



Get in Touch



Simon Gillibrand

Simon has over 15 years' experience in executive search and research and is responsible for CSG Talent's Global Natural Resources team working across 7 global offices. The team, specialising within the Mining, Minerals & Metals industries, have placed senior level mining professionals within leading organisations in over 50 countries.

If you are looking to grow your company, explore progressive career moves, or you'd simply like to know how the hiring market is shaping up at the moment, please contact him on:

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**Christina
Theoklitou-Panagiotou**

Christina has been working at CSG Talent since 2018 and now leads the Mining Technology team specialising in OEMs, Technology and Mineral Processing. Christina focuses on wide variety of roles across a range of levels from metallurgists and multi-discipline engineers to product managers, sales managers, and country managers through to Vice President and C-Suite positions globally.

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