

Consultants provide expertise, skills and experience to the industry

by William Gleason, Editor



Demand for consultants for mining is high with many veterans retiring from the industry. Photo credit: Shutterstock.

Demand for minerals, those deemed critical and otherwise, is driving high demand. However, the growth and momentum that the global mining industry is currently enjoying is threatened by the lack of qualified professionals joining the industry at a time when many of its seasoned veterans are leaving the industry.

Walter Copan, vice president for Research and Technology Transfer at Colorado School of Mines testified in June before the U.S. House Committee on Natural Resources about the changing workforce and the rapid retirements in the industry. This so-called Gray Tsunami threatens to leave a massive void of talent just as the industry is working to put new resources into production to meet the needs for a global energy transition.

“This industry has lost its luster with regard to being attractive to the next generation of leaders at all levels in the sector and the lack of interest in the geosciences more broadly,”

Copan said. “It is doubly concerning because as we look at the reliance of this world on the materials that are sourced from the Earth’s crust, the entire mining sector is key to the energy transition.”

The U.S. Senate Committee on Energy and Natural Resources recently voted to advance the Mining Schools Act that would establish a grant program for mining schools to receive funds in order to recruit students and carry out studies, research projects or demonstration projects related to the production of minerals (page 8). The move provides some hope for the universities that still offer mining and metallurgical processing degrees in the United States but does little to stop the wave of professionals who are retiring from the industry.

It is estimated that nearly half of the mining workforce in the United States is anticipated to retire by 2029, that’s about 221,000 people with years of experience leaving the industry.

To fill the knowledge gap many companies and universities are looking for solutions to attract talent to the industry both as students and professionals. For some companies that means getting creative in finding ways to keep talented engineers involved so that their knowledge does not leave when they do. For many companies, one of the answers is to turn to consultants and to partnerships.

Broadly speaking, consultants in the mining industry provide specialized expertise and services to mining companies, government agencies and other stakeholders involved in mining operations. As a consultant, the toolbox has to be varied. One day a consultant might be bogged down with paperwork and the next they might be waking up at 3 a.m. to make a two and a half hour trek to an operation.

“What consultancy brings is the opportunity to work with a variety of projects,” Patrick Gorman, principal civil engineer at AECOM said. “You get to work with a variety of clients and variety of locations versus one project or with one company during your career.”

Consultants to the mining industry must have a spectrum of skills and experience. And consulting firms need to have a range of people with the skills needed to assist clients. Consultants are called upon for geological and geotechnical analysis, feasibility studies, environmental assessments, help with navigation through the complex permitting process in the United States and elsewhere. Consultants are also called upon for mine planning and design, safety and risk management, mineral resource estimation and a number of other tasks.

For consulting firms such as SRK Consulting, Civil & Environmental Consultants, AECOM and many others, finding talent to meet the workforce challenges that the mining industry is facing is the same, and sometimes more difficult.

Tyla Hay is a human resources professional with SRK based in Vancouver, Canada. She said finding the right people for the job is challenging.

“I think the demand for qualified people

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has remained strong for quite some time now, but the talent pool has been limited globally,” Hay said. “In particular, some of the more specialty roles have been more difficult to fill. For example, tailings engineers are very much in demand and difficult to find.”

In addition to finding people with the right technical skills, Hay said immigration status can be a challenge. Mining is a global industry and many large mining companies work in multiple countries.

“Immigration puts pressure on us because we have different experiences in the U.S. and Canada, but we’ve both had immigration challenges in trying to bring in new talent and I think it’s very clear that we’re going to rely on immigration to bring in talent, especially skilled talent,” said Hay.

While many mining companies have gotten creative with efforts to attract students, with students currently enrolled in mining, mineral processing, geotechnical or geosciences programs, consulting firms often do not have the luxury of hiring junior engineers; instead, they are often looking for professionals with 10 to 20 years of experience in the field.

“When we are looking to fill a role at a consulting company we are looking for someone who has a good bandwidth of experience, so it’s tougher for the young student that’s graduating to go right into consulting initially. Typically, the firms that we help find consultants, mining consultants require close

to 10 years of experience,” said Jolene Lenz, senior talent advisor. Her company, Brooks and Nelson helps find talent for the mining industry, including consulting companies. That level of experience is valuable to consulting firms and to their clients.

Take, for example, Gorman: As a consultant with AECOM, he brings a wealth of experience to a project at Freeport-McMoRan’s Morenci Mine where he has been consulting on the project for more than 20 years.

“That experience helps me to know my client as well as they know themselves, or even better,” said Gorman. “I’ve been there and I have seen the work that has been done. I’ve seen production ramp up or tightened up again. I understand the project and my client.”

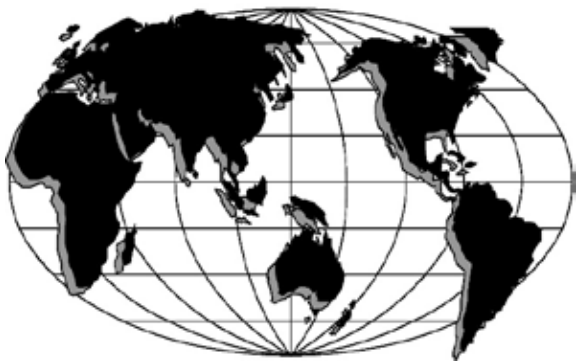
With that level of experience and historical knowledge of the project Gorman can also help train new engineers to the project.

“A lot of times I’m working with engineers with zero to five years, straight out of school experience level so they are kind of relying upon me or people like me to teach them,” he said.

“The growing skills deficit in mining is a concern for consultants as much as for the industry itself,” said Terry Braun, managing practice leader with SRK Consulting.

“Traditional methods of knowledge transfer from senior professionals to new graduates, such as mentoring and on-the-job training, while effective, are not immediate solutions

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to address the accelerating skills gap.” Braun indicated that the urgency of the problem requires novel approaches. “We recognize the need to quickly preserve the wealth of knowledge held by our experienced professionals, so we’re embracing innovative technologies to encode their expertise and make it accessible to the next generation.”

One such innovation is srkCHAT, a confidential AI-based text tool in the pilot

stage at SRK with 250 users engaged currently and is the first step toward making the hard-won knowledge of seasoned veteran consultants available for newer team members. The team behind srkCHAT is working to create verified, validated, and battle-tested datasets of known-good expert knowledge and established practice which will be used to fine-tune geoscience and geoenvironmental language models.

SRK provided consultant services for the the Jerritt Canyon tailings storage facility in Nevada. Photo courtesy of SRK.

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“Technology is changing so swiftly that we’re not working on developing tech ourselves. We’re focused on what we’re best at: expertise. And if we can build that into the technology, we’ve got a way to bridge the skills gap while new experts are developed.”

Mike Olsen, SRK’s chief technology officer, added that “our primary focus will be to create a knowledge repository that represents the accumulated intellectual property of our seasoned professionals. Our plan is to crowd-source within SRK to develop validated explanations of technical concepts at various levels of technical familiarity, as well as crafting questions and verified answers. This process will result in the creation of an SRK expertise library that we can use to fine-tune language models and then develop applications based on those models.”

Applications for this encoded expertise could include training platforms, solution acceleration, and leveraged solution delivery allowing a diminishing number of experts to meet the expanding needs of the industry.

Quantitative risk assessment

In addition to helping clients find solutions to improve processes and efficiencies, Braun said consultants have played an important role in the global challenge of designing, operating and closing of tailings storage facilities around the world.

In response to tailing dam failures in Brazil and Canada in 2019 a number of actions were taken including the formation of the Global Industry Standard on Tailings Management (GISTM), published in 2020 with the aim of preventing future failures by providing operators with specific measures and approaches throughout the mine life cycle. In 2021, the International Council on Mining and Metals (ICMM) published the *Tailings Management: Good Practice Guide*, which was intended to support safe and responsible management of tailings across the global mining industry. Also in 2021, the Mining Association of Canada updated its TSM Tailings Management Protocol.

“Because most mining operations are regional they will have a corporate governance requirement to produce a risk assessment about their facility but where the industry is going is to get a more consistent definition of risk assessment that can be applied across all operations,” Braun said. “SRK and other firms now collaborate with industry to improve the consistency and representativeness of risk assessments within a clients portfolio.”

To help achieve this goal, SRK Consulting (Canada) Inc. merged with Oboni Riskope Associates Inc. (Riskope), a Vancouver-based company specializing in quantitative risk assessment that uses its optimum risk estimates (ORE) methodology to support companies in their tactical and strategic planning.

By better understanding the risk landscape surrounding a project, companies are able to make decisions that preserve value, enhance continuity and protect nearby communities.

Though Riskope serves a broad range of industries, Cesar Oboni estimates that 75 percent of the consultancy’s engagements are currently focused on the mining industry, where risks relating to tailings dams and pit slopes are of special concern. ■

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