



A DIVERSIFIED APPROACH TO ENGINEERING'S **INNOVATIVE FUTURE**

On April 9th, 1998, the Mining Innovation Rehabilitation and Applied Research Centre, (MIRARCO) opened its doors in Sudbury, Ontario. The organization was created and led by Peter Kaiser, P. Eng, as a means to explore solutions to the mining industry's challenges and as an environment to conduct applied research. MIRARCO, which operates as a unique not-for-profit hybrid, has transformed itself to include research pertaining to mining and innovation in five areas of expertise: Climate, Energy, Software, Rock Mechanics, and Safety. Operating globally, MIRARCO develops their people and innovates tools needed to plan and design the mines of the future, which conserve environmental integrity and produce sustainable communities.

The driving force behind MIRARCO's success and achievements is its dedicated workforce made up of experienced professionals and students at all levels of post-secondary education. Since the organization is solely owned by Laurentian University, it provides an environment where academia and industry collaborate, offering engineering students the opportunity to jumpstart their careers before they've even graduated. MIRARCO hires graduate students to conduct applied research, providing them with firsthand experience they wouldn't receive otherwise.

Our students face real challenges and situations to discover what it takes to be successful in their sector. MIRARCO offers a unique opportunity to the next generation of engineers. There is no textbook that can prepare them for the emotional and physical experience of plunging thousands of feet underground into the Earth to execute rock stress tests. There is also no textbook that can explain the excitement they'll feel when they see their research come to life before their eyes.

MIRARCO also promotes a diverse and inclusive workplace. As an equal opportunity employer, MIRARCO is proud to employ people of all cultures, ages, and backgrounds to



be a part of the team. MIRARCO has acquired a broader perspective on issues, a widened set of proposed solutions, and different approaches to innovation by being inclusive. They've embraced collaboration so that boundaries are pushed, and great results have been achieved. Because of this, our alumni can be found in some of the mining industries biggest companies, all over the world.

Our women especially, have led some of our most revolutionary research projects. Dr. Kim Trapani, P.Eng., researched and developed Solar Photovoltaic Technology (floating solar panels), which are currently being tested in Malta on the Mediterranean Sea. Through MIRARCO she found the support and tools to develop green technology that is set to transform the industry, improve mining companies bottom lines, and most importantly reduce harmful impacts on the environment. These floating panels will eventually be used on mine tailings, providing clean energy to mines on what was previously thought to be unusable space.

The emphasis placed on diversity is felt from the top down. The organization is led by Vic Pakalnis, a dedicated P. Eng., who is a champion for diversity by pushing for inclusivity. "You have to have different perspectives. If you only have one perspective, from one culture, it limits the kind of innovation you can do. Research innovation is best done in a crucible of a multicultural and multi-disciplinary kind of environment. I think that's our [MIRARCO's] strength."

Over the years MIRARCO's diverse research teams have helped the development of Virtual Reality (VR) Technology, the dynamic testing of mesh support, improved energy management and ventilation in mines, has aided the creation of Software Optimization Tools (SOT+), and improved the assessment methods of climate change vulnerability in Northern Parks. Although the breadth of research topics is broad, MIRARCO's ultimate goal has remained the same. To position Canada as a leader in safe, sustainable and productive mining

"Our research is focused on rock mechanics, but at the end of the day the consequences impact workplace safety," says Claudia Gonzalez, Ph.D. Geotechnical Engineering. She has been with MIRARCO for over three years and the organization has allowed her to work on projects that she is passionate about where she can mentor newcomers.

MIRARCO encourages all their engineers and staff to appreciate the crucial role they play in mining safety and sustainability. Their discoveries and decisions allow

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for a better future for the environment, communities and miners.

As MIRARCO celebrates its 20-year anniversary, it recognizes the impactful role their 118 graduate students have had on the organization. MIRARCO owes much of its continued success to its remarkable staff who come from all over the globe to study, work, and grow here. MIRARCO lives by this strong statement: "Diversity prompts innovation. Diversity spurs innovation. Diversity leads to innovation. However, you say it, diversity is good for innovation." ♻️