



Services supply firms key to success in deep mining sector

Panel: Challenges Associated with Transferring New Technologies to the Mining Industry

Organized by the Centre for Excellence in Mining Innovation

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Panelists: **Adi Treasurywala**, ArrowCan Partners Inc.; **Wayne Ablitt**, President, Jannatec Technologies; **Zachary Mayer**, Manager, Mine Technical Services, Glencore's Kidd Operations; **Douglas Morrison**, President & CEO, Holistic Mining Practices, Centre for Excellence in Mining Innovation; **Sylvie Nadeau**, Professor, École de technologie supérieure.

Takeaways and recommendations

- ✓ Mining innovation creates new businesses, particularly in the services supply sector
- ✓ Technology development and adaptation key to mining extraction at greater depths
- ✓ Strong correlation between market price of metals and the level of innovation in mining sector
- ✓ Commercialization of technology in the mining sector is highly competitive
- ✓ The services supply sector drives innovation as these companies are most interested in selling new technologies
- ✓ Public-private collaboration can reduce time-to-market by half

The policy issue: Mining innovation becomes more challenging the deeper companies dig. For an industry that's been historically resistant to adopting new technologies, public-private collaboration has now become essential to the sector's survival. Organizations such as the business-led Ultra-Deep Mining Network (UDMN) are helping to develop technology-based solutions for resource extraction, and adopt information and communications technologies that enhance labour productivity, safety and mechanization. Services supply companies are particularly important in providing solutions to large mining companies but silos between academia and industry need to be effectively bridged.

The world of deep mining is like no other. The high cost and technological challenges associated with heat, ventilation, communications and safety increase as mining companies dig deeper to extract increasingly scarce resources. Compounded by depressed commodity prices, innovation has become critical to containing capital and operating costs while at the same time minimizing environmental impacts and improving safety conditions.

The options: "No one wants to be the first to do something new and there are very few off-the-shelf technologies available. We need to see the big picture but there are a lot of silos and bottlenecks," said Mayer, whose Glencore Kidd operations are three kilometres below the earth's surface.

"WiFi is new to underground mines (and) ventilation is expensive," he added. "If you can create a business case for something, mine operators are open to entertaining new ideas from suppliers or internally. **Companies need the right management team to create justification for new technologies and know how to implement them.**"

Morrison said services supply companies working in conjunction with multidisciplinary research teams are essential to ensure that technical innovations are effectively adopted and implemented in a timely fashion.

"It's unrealistic and unreasonable to ask researchers to do innovation. They should focus on research and identify the other pieces of the puzzle that have to be done by other people," said Morrison "We look to service supply companies to see what innovations they have that we'd like to move forward with. They often don't have all the technical pieces to solve our problems. That's what CEMI helps them do."

A close working relationship with academia and intermediary organizations like CEMI is critical for services supply companies that drive innovation by seeking out profitable niches for their products. Ablitt said Jannatec Technologies has been successful in controlling the market for communications systems for deep mining by conducting R&D and using patents "so I can have a monopolized product".

"With a monopoly, we can get a big share of a small market ... I own the Northern Ontario market controlling 85% of business. It's a niche market that I've been able to develop," said Ablitt. **"But you also need a marketing side to sell the product, as well as a distribution chain. If not, the product will sit on the shelf."**

Ablitt said the time required to develop Jannatec's wearable thermal technology for miners was cut from six years to less than three through matched funding and collaboration with CEMI, which manages the UDMN, a Business-led Network of Centres of Excellence.

Mining innovation holds unique challenges for academics participating in product R&D, said Nadeau, whose research at École de technologie supérieure spans the manufacturing, mining, nanotechnology and aeronautics industries. Solutions to the challenges facing the mining sector are complex requiring interdisciplinary teams that need to find a common vocabulary and a clear understanding of industry requirements. But when commodity prices drop, companies are less willing to devote time and energy for collaboration.

"You need to get access to tacit knowledge so the new knowledge you're building matches properly. If you don't, you are losing a lot of information," said Nadeau. **"You've got to have dynamic exchanges with the end users. If it's not what they wanted or expected, it won't be used and will stay in the university."**