The mining workforce of the FUTURE

Mining companies must embrace innovation and partner with a trusted technology provider if they want to attract and retain the next generation of digitally literate talent, and protect their licence to operate, ABB’s Roze Wesby explains.

By Roze Wesby

Digital and automated technologies are transforming all facets of the mining industry, including the profile of its workforce. People have to be safe and protected first of all and for that to continue to happen progressively they have to be connected and enabled, and ideally upskilled rather than replaced.

Understandably, most people want to know: “Is my job at risk, or will it vanish?” The answer is that manual roles that put workers at risk, such as explosive charging, are the most likely to be replaced with robotic or remote solutions. Other workers, those that carry out checks on electrical safety and maintenance systems, for example, will see the way in which they work fundamentally transformed, from physical inspection to using remote tools to proactively predict and prevent system failures.

Workforce safety is vital, and if there is not yet an incentive, a carrot, at a national level in certain countries, there is certainly a stick. The Canadian government, for example, plans to issue financial penalties to operators that do not remove workers from the rock face during explosive charging. The onus is on technology providers to develop solutions such as robotics that enable miners to avoid such penalties and to protect workers.

In both open-pit and underground mines, greater connectivity equals greater safety. More and more workers are now connected to a central operations hub in real time using short interval geo-location tools managed by an algorithm or manually from an integrated remote operations centre (IROC).

Mining operators may track staff using geo-location devices in smart phones and wearables, enabling them to pinpoint their location in proximity to hazardous locations, processes or vehicles.
New digital skillsets and change management

Another common question: “Will digitalization and automation create new mining jobs that do not exist today?” In fact, this is already happening. Who would have thought, for instance, that data scientists with solutions architecture, coding and technology experience would one day be in demand at remote mine sites to carry out dashboarding, visualization and technology integration?

Some companies are choosing to create in-house digital teams, while others outsource to providers like ABB to take advantage of software and coding expertise, on top of the knowledge of mechanical systems, and platforms such as ABB Ability Genix Industrial Analytics and AI Suite, Operations Management System and Stockyard Management System.

In the future, mine operations managers, rather than focusing solely on throughput and process KPIs, will oversee the use of analytics tools and dashboarding that allow them to holistically consider the sites performance with consideration to safety and sustainability. This will require a new skill set to enable them to connect disparate systems, and make sense of, and augment, the algorithms being used. That role doesn’t exist right now.

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The technology transition must therefore be supported by the transformation of processes and people. How well a specific solution solves a use case must go hand in hand with how it fits within the overall operational business culture. Successful change management is key but is often overlooked.

Innovate, or lose competitive advantage

The digital transformation is often referred to in terms of futuristic technology, but in fact, if it is done well, it is more a commitment to continuous improvement and perpetual change.

One of the most notable trends to emerge during the Covid-19 pandemic, for example, has been the advent of remote commissioning. ABB recently partnered with a zinc mine in Kazakhstan to explore commissioning of water-cooling towers using ABB Ability Remote Insights and Microsoft HoloLens headsets, allowing their own team in Spain to collaborate with
their team in Kazakhstan in real time and access hands-free data on field assets.

Partnering with a technology provider at the earliest possible stage of a project is crucial to allow mining operators to define a coherent strategy and implement an effective solution architecture.

ABB Ability MineOptimize is an integrated, end-to-end methodology that leverages ABB’s technologies and those of its partners to deliver a holistic solution architecture that considers the entire value chain: the stack of hardware, software, integration platforms, cloud platforms, visualization and analytics tools, as well as the various operations: electrification, maintenance, processing and sustainability.

An example of this approach is ABB Ability Ventilation Optimizer, ABB’s Ventilation on Demand solution, where the mine ventilation system is directly linked to the geo-location of people and vehicles. Using fans only where and when they are needed can reduce overall energy consumption by up to half and maximize both safety and profitability.

**Licence to operate and recruitment**

By failing to embrace new technologies such as these, and integrate them successfully with existing processes and people, mining companies risk not hitting their KPIs and losing competitive advantage.

In addition to profitability and cost per tonne, failure to innovate can impact the licence to operate. If a miner is not taking quantifiable, documentable steps around HSE (health, safety and environment) and sustainability, it risks losing the backing of the board and investors and may not be permitted to work in certain jurisdictions.

ABB is working with mining companies to help them reduce their CO₂ footprint, which also reduces ABB’s Scope 3 emissions. By leveraging its position as both a mining vendor and customer, ABB – in addition to training its own workforce in the skills they need to work ethically and sustainably – can help operators transition to safer, more sustainable operations and protect their licence to operate.

One of the stories heard most often from c-level mining executives is that their company is not attractive to the next generation of talent. Here again, presenting a brand image and a successful track record of investing in sustainability is the key to recruiting the skillsets required for the digital transition, and ensuring that the mining workforce of the future is protected, connected, and enabled for success. **CMJ**

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