



Nov 22, 2018

PROBLEM FAIR

Discussing Mining Innovation Roadblocks

On September 28th, 2018 MIRARCO Mining Innovation hosted a unique afternoon that brought together members of the mining ecosystem to shed light on challenges regarding productivity, safety, energy, digital mining and the mining brand. Here is a breakdown of the challenges and roadblocks for each topic.

The afternoon was moderated by Damien Duff . A panel of industry experts: Samantha Espley: General Manager Mine + Mineral Technical Excellence Centre at Vale Base Metals; Dick DeStefano: Executive Director at SAMSSA; Michael O'Shaughnessy: Director, Logistics Strategy and Planning at Teck Resources Limited; and Angela Hamlyn Chief Executive Officer at Canadian Institute of Mining, Metallurgy and Petroleum provided key points and initiated the afternoon's conversations.

Productivity

- ◇ Old processes and equipment that cannot be optimized.
- ◇ New ultra-modern processes that need specialized workers/lengthy training to operate.
- ◇ Depth and geographical area of a mine (seismically active regions.)
- ◇ Data isn't gathered in real time and delays decision making. Too much data gathered without a plan on how to use it to improve productivity.
- ◇ Low influx of new workers reduces the capacity at which a mine can operate.
- ◇ Shift scheduling/workplace culture causes exhaustion, reduced number of working hours, lack of motivation, etc.
- ◇ Critical safety measures are thorough and can slow down productivity.
- ◇ Mining industry does not share best practices among companies which makes benchmarking harder. Mining also doesn't look to other industries for enhanced productivity models.
- ◇ Mining's cyclical nature impacts productivity during busts or down times.
- ◇ Current workforce lacks the skills or are unwilling to adopt new productivity enhancing technologies.

*Established in 1998
MIRARCO Mining
Innovation has been
developing solutions for
the mining industry and its
challenges. Through our
unique position as a hybrid
organization, combining
academic and professional
dynamics, we help
advance innovative and
applied research for a
safe, sustainable and
productive mining.*





Samantha Espley, Michael O'Shaughnessy and Angela Hamlyn.

Safety

- ◇ Observed increase in mental health challenges in workers.
- ◇ Working environments have become dangerous (deeper mines, ventilation concerns, bigger equipment).
- ◇ Complex regulations and inconsistent implementation processes (lack of critical controls).
- ◇ Lack of emphasis on occupational health, lack of resources for workers to adopt healthy lifestyles (diet, physical activity, work/life balance.)
- ◇ Legalization of marijuana.
- ◇ The economy has workers feeling pressured to ramp up productivity and take short cuts.

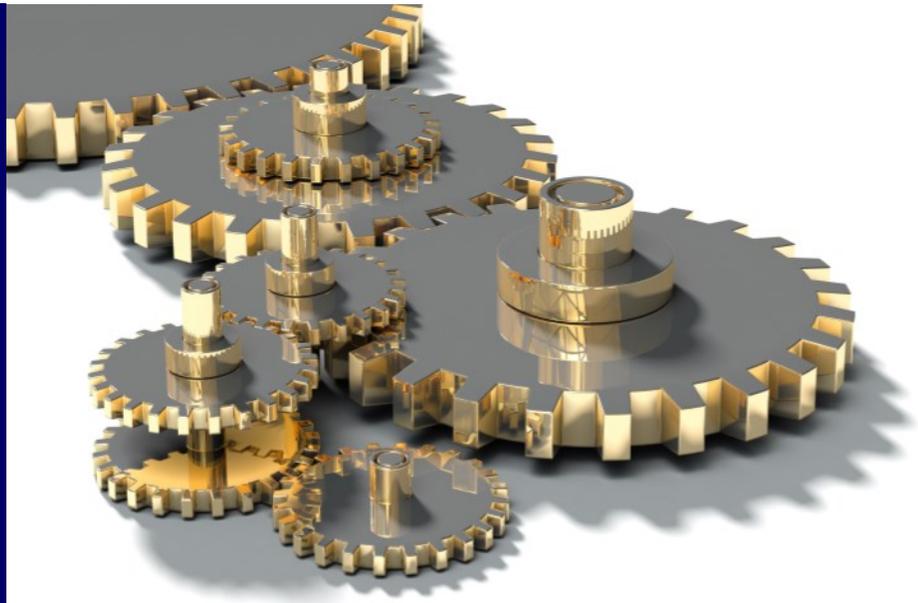
Digital Mining

- ◇ Older workforce isn't skilled/ equipped to implement/use new technology.
- ◇ Workforce is reticent to adopting new technology since they view it as a threat to job security. (Automation.)
- ◇ Start up costs can be very steep and hard to justify when other parts of the company could use the money for short-term benefits.
- ◇ Lack of information sharing/ no knowledge of what is already researched and invested in therefore creates duplication and waste of capital.
- ◇ Risk of security breaches and leak of information/data.
- ◇ Tough choice whether to establish an in house team for analysis or to outsource to a third party.
- ◇ Low influx of new workers with technological skills joining the mining industry.



Mining Brand

- ◇ Lack of mining literacy creates lack of awareness about how indispensable mining is to society.
- ◇ Lack of urgency and ways draw in a new generation of workers to the mining industry.
- ◇ Fragmented mining education system that doesn't communicate with the industry about what skills are currently/will be needed.
- ◇ Current environment doesn't foster collaboration that could provide cross value in the mining chain and companies do not share best practices.
- ◇ Lack of clarity on company's corporate social responsibility initiatives and on how they are reducing their environmental footprint (greenhouse gas emissions.)



Energy

- ◇ Geographical and logistical challenges. Many mine sites are in remote areas with limited infrastructure or resources for development.
- ◇ Ethical questions regarding the retrofitting of certain types of mines and if it makes sense. (Ex: adding electric vehicles in coal mines.)
- ◇ Overhauling energy systems is an inconvenience to mining operations and production.
- ◇ High start up costs for new energy systems/sources.
- ◇ No one size fits all energy mix/challenges. Difficult finding the right balance.

Next Steps

Only through collaboration and taking regular inventory of the industry's challenges can we discover effective solutions to roadblocks. Members of the mining ecosystem must work together to find innovative ways to tackle problems related to productivity safety, digital mining, energy and the mining brand.

To contribute to this conversation contact us at
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