



Communication in the Modern Mine



When asked to pen a commentary for the *Journal*, I felt it important to address the needs and forms of communication in the modern mine. Such communication, *in principle*, includes the topics of digitalization and personnel communication – both are vital for *mine operational efficiency* and for *mine health and safety purposes*. I will connect the two topics rather than comment individually. Two virtual conferences, namely Digitalization in Mining and the International Mine Health and Safety conference, were held recently. Selected papers from both conferences will be published in the *Journal* in due course.

Digitalization is all about data and how the data is collected, analysed, and used in decision-making. Traditionally in the past, we have relied on data that is collected manually (by a person with an instrument and a notebook) and which is then entered into some form of spreadsheet, for the compilation of reports. In the case of ventilation, geological, sampling, and geotechnical data, these reports are circulated to the requisite levels in the organization. This is a time-consuming exercise. Good reports may flow quickly, while poor reports tend to reside on desks for a long time.

Other data is used for month-end consolidation and reporting. The result is that information upon which decisions are made is usually out-of-date and historical. This includes critical information related to health and safety.

Similarly, *verbal communication* between personnel is an equally critical component for effective health and safety. However, this is generally limited in terms of language and the communication medium, thereby leading to communication problems, *e.g.* between individual mine personnel, including senior staff. *Printed communications* are equally important for health and safety. In these instances, items such as notices, instructions, and precautionary texts needed to convey information or data are required to address the issues of multilingualism and multimedia communication systems. This also requires the ability to read and write.

Digitalization offers us solutions to these concerns with the opportunity for real-time data collection and transmission through installed monitoring systems and instant transmission to control centres and data analytics. This includes environmental monitoring, survey measurement, production data, fleet management, and geological information.

In the case of geological information, most mining companies have implemented the TARP system, which relies on operators elevating problem situations to higher levels for assistance with solutions. In the case of hazardous geological conditions being encountered, it may take several days to reach resolution. In a digital world, however, the situation can be photographed, digitalized, and transmitted instantly to the point where the right decision can be made. The solution is rapidly communicated back to the operator for action.

Most newer operations have fibre optic systems installed well into the mine, and these need to be fully utilized to enhance communication and real-time control.

Data analytics in the control centre allows decisions to be made in real time and on the fly, through competent people appropriately skilled to make these decisions.

The power of artificial intelligence takes the manual drudgery out of data collection and analysis, making time available for people to reach value-adding decisions and be more in control.

Embracing the world of digitalisation will bring about step changes both in terms of more effective communication and vastly improved mine and health and safety in our journey towards zero harm.

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