

Improving Communication and Closing the Information Loop – Two Fundamentals of Successful Mining Technology Implementations

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ABSTRACT

Technology is the key to enhanced improvement beyond traditional methods. While it is used in many applications, it is in the improvement and extension of communications and the production and analysis of information for decision-making where technology can have major benefits. The mining industry uses many different technologies in the pursuit of improved profitability. For the purposes of this abstract, the technologies in mining being considered are fleet management systems (FMS) and high-precision machine guidance systems (HPGPS).

Improved communications can be achieved with the use of sophisticated tools such as FMS and HPGPS. Their use enables the mine site to rapidly communicate more information to and from the machines and personnel in the field. By using a HPGPS or FMS, information is presented unambiguously, reducing the effect of traditional barriers to communication such as emotions and filters.

These systems empower users to make better decisions and facilitate changes in the structure of an organisation's communications network. They provide the opportunity for the various teams on a mine site to share information with increased ease in a mutually understandable format. The aim of changing the communication mechanisms on mine sites is to increase the mutual understanding within and between areas such as mining engineering, surveying, management, production, geology and accounting. Increased mutual understanding from improved communications results in better utilisation of the available resources and ultimately increases profitability.

The author's presentation attempts to explain the changes in the communication structure and methods inherent in the implementation of a FMS and HPGPS. It also details some of the changes in, and additions to, mining processes required to ensure that value is extracted from the technology. Some example scenarios with results are presented and discussed.

With regard to both improving communication and decision-making, achieving real gains requires cultural change across the site to embrace and realise the benefits of any new technology. This is part of the change management challenge and is a critical aspect of the success of any implementation.

Standalone HPGPS units have been shown to add value to a site's operations as have FMS without HPGPS. A common implementation of these technologies is the integration of them both, and,

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interestingly, not always from the same supplier.

Following implementation, many technologies go through a honeymoon period of use and evaluation. This period is often followed by one of decreased use, disillusionment with the technology and, occasionally, outwardly negative sentiment. The lengths of and between these periods vary according to the site. One of the main reasons for this degradation is actual (or perceived) failure to properly realise the value in the systems outlined in the brochure and the business case. The cause of these failures can be manifold but usually includes inadequate modification of the existing related mining processes and inadequate integration of the fleet management and machine guidance processes with these processes.

Frequently, the value is available with the information from the technology there and ready to use – what's lacking is the connection back to the related mining processes that initially provide information to the technology. A practical approach has been developed to ensure proper value is being realised from the information produced by the FMS and HPGPS. 'Closing the information loop' is a process (that is automated where practicable) of associating the output data from each of the mining processes as input for the next, right back to the start of the mining process for the next iteration. This includes automation of data management and information interpretation processes in areas including mine planning, scheduling, drilling, load and haul, dispatching, geology, survey and reporting. The author's presentation describes the 'closing the information loop' approach and the benefits that it can have to increasing profitability and proving the business case for the technology.

The presentation also briefly outlines some examples of the savings made in both hard- and soft-rock mining operations through the quick and reliable communication enabled by HPGPS and the gains in fleet productivity using FMS.