



Turning data into dollars 1
21 August 2009

In this discussion I intend to discuss how the vast amounts of data which are generated on mining equipment can be turned into productivity and profitability. This is what I call “bottom line” services.

There is a wealth of valuable mining data being produced around the world every day, however, mines were failing to benefit from it as they didn't have the ability to capture and meaningfully apply it. Through poor management of available data and the loss of personnel, the continuity of information acquired and knowledge applied to run mines efficiently is being broken. If not remedied, this will prove very costly in the long term.

Data by itself is just a mass of numbers - it needs to be analysed and assessed to extract value. However, mines must be wary of subjective analysis which is done for the benefit of another party rather than the mine itself. All too often the mining industry funds work by research groups and consultants which focuses on the process and how smart the process and people are. For knowledge to be valuable and to facilitate the innovation process it must be value-based, ie. it must provide bottom-line / profitability improvements for the mines. The key to this is the person pulling the levers or turning the steering wheel. This person has the ultimate control over what output is achieved. Therefore the mine must engage the operator / driver in the optimisation process. To do this they must have an intimate understanding of the information being provided through reporting of performance

The best way to explain this is through a case study. While most mining equipment has loggers generating data (and if your's don't then they should) the loggers on draglines produce the most comprehensive data. A dragline with production and maintenance loggers will have over 2,000,000,000 signals processed into nearly 20,000,000 pieces of data, stored in databases every year for post processing. (Is it any wonder that mines find themselves swamped by data?)

The dragline is real and the results are real. Most importantly, the lessons to be learnt can be applied to any operation and any piece of equipment.

This dragline historically operated at a production rate better than average. When the maintenance

Head Office
Brisbane Technology Park
Unit 2 / 53 Brandl St
Eight Mile Plains Q 4113
Australia
Ph: +61 7 3147 8300
Fax: +61 7 3147 8305
Email: gbi@gbimining.com
www.gbimining.com

South African Office
8 Corridor Crescent
Building B Ground Floor
Route N4 Business Park
Ben Fleur X11 Witbank 1035
South Africa
Ph: +27 13 6564114
Fax: +27 13 6564114
www.gbimining.com



logger was installed, a program of improving productivity and reducing damage was initiated. The demand for change came from a range of areas, including, the workforce, technology, economics, competition, etc. The Mine Manager assumed the role of “change agent” and sought the support of a range of internal and external people who he perceived could help him. Not unexpectedly, resistance to change came from individual and organisational sources. In overcoming the resistance to change, the site focused on education, communication, participation, facilitation, support, and negotiation.

A key part of this program was delving into the masses of data to provide specific and targeted reports to a range of people across the site. Remember the word “meaningful”. This is the key to operators and drivers understanding and changing their actions. Data must be presented in a meaningful way. Reports included benchmarking, monthly production reports, operator comparisons, individual operator reports, and bucket reports, all of which included comprehensive productivity and maintenance information. They included tables of data, line graphs, bar graphs, pie charts, and anything else the mine requested to help them understand what they were doing which impacted productivity or maintenance. Of critical importance was the fact that these reports were followed up with visits from dragline “experts” and trainers who helped all levels on the mine site interpret the reports and develop plans for “change”. In addition, all operators and supervisors attended off site courses which focused on team and individual understanding of the job they were doing.

We applied our knowledge on the optimal approach to maximise productivity. The data was used to determine which digging techniques increased damage both from a global and an individual basis. Effort was made to identify which operators needed help with productivity or maintenance or both. During the first 223 days of the program dig rate increased by 15% and boom stress decreased by 25%.

In conclusion, the data and the analysis of it were not the source of the improvements which were made. It was an integral part and improvements would not have been as significant without it. However, the real impact was the organisational culture which was created. The dragline was changed into a “learning group” with the following characteristics;

- A shared vision,
- Old ideas were discarded,

Head Office
Brisbane Technology Park
Unit 2 / 53 Brandl St
Eight Mile Plains Q 4113
Australia
Ph: +61 7 3147 8300
Fax: +61 7 3147 8305
Email: gbi@gbimining.com
www.gbimining.com

South African Office
8 Corridor Crescent
Building B Ground Floor
Route N4 Business Park
Ben Fleur X11 Witbank 1035
South Africa
Ph: +27 13 6564114
Fax: +27 13 6564114
www.gbimining.com



- The dragline operation was seen as a system of interrelationships,
- People actually communicated with each other, and
- Personal interest was less important than organisation interest.

Competitive Advantage for a mine or organisation comes from operating at a higher productivity and lower cost (from reduced maintenance) than others. It should be seen as originating from doing a whole range of actions better than your competition. On this definition, the dragline studied here has definitely assisted this mine in achieving competitive advantage. The use of data was not the source of competitive advantage but rather an enhancing feature of the process.

Head Office

Brisbane Technology Park
Unit 2 / 53 Brandl St
Eight Mile Plains Q 4113
Australia
Ph: +61 7 3147 8300
Fax: +61 7 3147 8305
Email: gbi@gbimining.com
www.gbimining.com

South African Office

8 Corridor Crescent
Building B Ground Floor
Route N4 Business Park
Ben Fleur X11 Witbank 1035
South Africa
Ph: +27 13 6564114
Fax: +27 13 6564114
www.gbimining.com