

mining intelligence quarterly

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QUARTERLY SNAPSHOT

The world of GBI has been an exciting place to be over the past three months. Looking forward, the excitement is set to continue.

The past quarter has been hugely rewarding resulting in new truck and loader clients in Australia, South Africa, Venezuela, Colombia and Tanzania.

Proudly, GBI is also establishing itself as an authority on mining equipment productivity. GBI has been included in a number of articles in the Australian Journal of Mining, Australian Bulk Handling Review, miningaustralia.com.au, miningnewspremium.net, Australia-China Mining Review and Manufacturer's Monthly. We have also been contacted by many relevant publications to provide comment on a range of issues.

Committed to ongoing communication and knowledge sharing with the industry, we

have also given presentations at a number of key industry conferences, which you can read about in this newsletter.



In line with GBI's plans to open a Latin American office in Santiago by 2010, two GBI representatives will be joining a Trade Queensland delegation in March 2009, headed by ex-Premier Peter Beattie, to Chile, Mexico, Colombia and Brazil. We look forward to sharing our insights from South America in the next issue of Mining Intelligence Quarterly.

We trust that you will find this edition of the Mining Intelligence Quarterly newsletter of interest. The GBI team wish you and your family a happy Christmas and a prosperous new year. We look forward to working with you in 2009.

SELECTING THE "RIGHT" TRUCKS FOR A MINE

By Dr Graham Lumley BE(Min)Hons, MBA, DBA, FAUSIMM(CP), MMICA, MAICD, RPEQ

Extract of paper presented at Best Practice in Mines, Haulage Conference, 27-28 November, 2008, Brisbane, Australia

For many mines the issue of matching truck capacity to loader capacity is problematic and, more often than not, results in a majority of trucks being either under-loaded or over-loaded. The goal of getting the majority of trucks +/- 5 per cent of the rated capacity just does not happen. Under-loaded trucks result in reduced dig rates while over-loaded trucks reduce speed and increase damage and the occurrence of sudden failure.

The total output from a truck (measured as rate multiplied by digging hours) is an important component in the overall productivity equation for a mine. Then digging hours and the different components of it can be broken out. The dig rate can be broken into load and cycle time. Each of these can be broken down further. The analysis may be as broad or as specific as required.

Compounding the problem is the variation in truck and loader performance. It is a simple fact that when a vehicle model is not suited to its use, performance can vary up to 81 per cent.

Benchmarking is a widely accepted business tool used to identify position and performance against previous performance and the rest of the world. The key to benchmarking trucks and loaders is to take the "glass half-full" attitude. What can I learn about areas for improvement? What are others achieving which I should be able to do? Many mines are shocked by first time benchmark results and justify it through "But my operation is different". These mines are consigned to mediocrity. The mines that say "What can I do to improve?" inevitably do improve through the intangible process of simply focusing on performance.

To learn more about selecting the right trucks for your mine please contact us.



SAVING MONEY THROUGH OPERATOR TRAINING

Experience from the field suggests there is a significant production penalty associated with inexperience and this has been studied in depth by GBI. Figure 1 shows the average dragline operator performance versus number of years experience (black curve) and the actual result from a dragline mine using GBI training expertise (green curve).

The average result (black) demonstrates three points: there is a period of reduced performance related to inexperience; peak performance does not occur on average until three years operating experience is reached; and performance after the first three years falls at around 0.75 per cent per year. The aim of GBI training is specifically targeted at this.

GBI training focuses on selecting the right people, training them properly and supporting them in the field. The result of GBI training demonstrates the key characteristics; higher peak, faster ramp-up and minimal drop in performance over time. The process for training operators properly can only be done with the knowledge of what is best practice. GBI has over 800 years of dragline data and 150 years of operational experience to determine what best practice is.

In 2007 the average number of swings completed by a designated dragline operator was 33,590. Applying an average ramp up in swings completed from 10 per cent in year one to 100 per cent in year eight the red curve on Figure 2 demonstrates the value in GBI training over other training methods. It approaches \$1.5 million per operator over the first 10 years of their operating career, saving mines millions of dollars.

GBI data and operational expertise allows "Best Practice" training to be delivered for draglines, trucks, shovels, backhoes, front end loaders and drills.

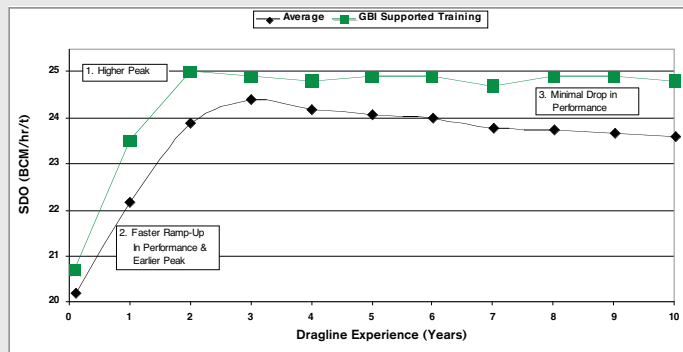


Figure 1: Dragline Performance versus Experience

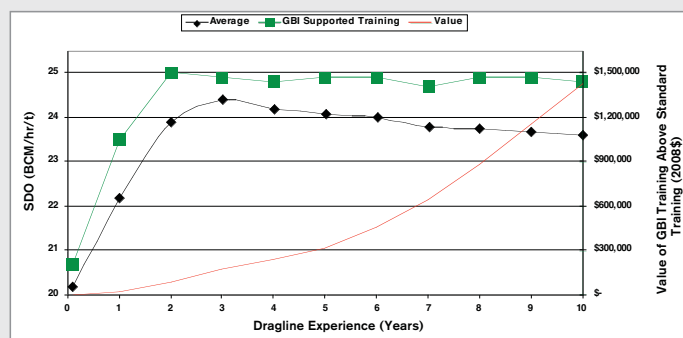


Figure 2: The Incremental Value of GBI Dragline Operator Training

MINING DUMP TRUCKS: 9 - 10 DECEMBER 2008 RYDGES SOUTH BANK BRISBANE

Benchmarking the productivity performance of mining dump trucks worldwide

Nick Griffith (Business Development Manager - Worldwide)

Abstract

If you knew that the best performing make and model in large mining trucks was 80 per cent higher than the worst performing make and model you would surely want to know why. If you were one of the majority of truck operating mines that do not achieve best practice you would also want to know why. Is it factors largely within your control or is it factors outside your control? Most mines have been happy to live in blissful ignorance and simply work their fleet numbers around available trucks or the circuit length. The evidence is clear - this industry is wasting a lot of money in suboptimal truck performance. Benchmarking can identify a mine's position and performance against itself and the rest of the world.



This paper will discuss what GBI's data is revealing about truck productivity and how the industry needs to respond.

Optimal matching of loaders and truck trays. Why it is so difficult and what can be done to do it better.

Dr Graham Lumley (Chief Executive Officer)

Abstract

The scenario of your truck being loaded in exactly three and a half passes is a perennial problem facing a large number of mines. Do you put the extra load in with the associated loss in productivity and increase in operational problems or do you send the truck away 80-90 per cent loaded? New mines have traditionally used one of two methods for determining the truck and/or loader capacity; they guess, or worse still, allow those with little or no experience to dictate. Some established mines add a third option; the performance of existing equipment, but this has been severely hamstrung by a lack of usable data.

This paper will discuss some of the factors (operational, dipper/bucket and tray) impacting the match of the loader to the tray and demonstrate why an optimal match is so hard to achieve. The scientific approach of using physical and computer scale models will be discussed and a case study presented.

For further information on these topics please contact Lea Andlovec at GBI on +61 7 3277 1555.



KNOWLEDGE INTENSIVE MINING - ADDING VALUE

If you knew there was a M8050 dragline that achieved 21 MBCM annually (17 per cent higher than the next best performer), wouldn't you want to know how? Well, such information is available and can be leveraged to improve the competitiveness of mining operations.

Graham Lumley started GBI in 1999 when he saw an opportunity to provide productivity data about how machinery operates in different environments. From its humble beginnings the business now counts many of Australia's major mining companies as clients as well as those in key markets overseas.

Prior to 1999, only 5 per cent of BE1370W draglines achieved over 100 tonnes average payload. Since then GBI has provided mining companies with equipment productivity data making them more aware of what is achievable. Now, the figure is more like 51 per cent of these draglines achieving 100 tonne payloads.

Companies such as BHP Billiton, Rio Tinto, Anglo and Xstrata have embraced GBI's data, services and expertise to increase performance.

"Even for the big players in the industry, they still don't necessarily achieve best practice within their group. Best practice may be found with a contractor or a small

mine somewhere doing something that is completely innovative," said Dr Lumley.

"Every day a mine operates, information is gained. Around the world a vast amount of information is being accumulated at thousands of sites on a continual basis. This mostly resides with the people at

the mine and has a habit of walking out the door when people retire, leave or projects are completed.

"The continuity of information acquired and knowledge applied to run the mine efficiently is broken, data is archived or worse still, disposed of and the latent or potential knowledge lost each time this happens," he said.

"The saying, 'If you don't measure it you can't improve it' is commonly used, however, it is more than that. If you do not actively acquire it, absorb it and apply it, you cannot improve it," according to Dr Lumley.

Mines are data and information-rich therefore data and information overload is a common problem. Many managers are finding that their ability to make important decisions is being hindered by too much

information and too little knowledge.

The development of knowledge-intensive mining services has been accelerated by a number of factors. These include lack of labour, cost-effectiveness of outsourcing (particularly with global and flexible labour markets), development of broadband technologies and research and development networks.

The expansion of knowledge-intensive mining services has attracted the attention of many in the industry.

"However, there is a divide between people who see and understand the potential value in knowledge and those who have not fully comprehended its benefits (usually due to its intangible nature)," said Dr Lumley

"Knowledge is a dynamic and innovative growth industry which is essential for future prosperity of the mining sector."

Australians view themselves as being innovative and aspects of the Australian mining industry can be described this way. However, the European Innovation Survey (EIS) found Australia fell in the third quartile (below the average) of countries when measured by innovativeness.

It is Dr Lumley's belief (and supported by the EIS results) that Governments and some senior executives are stifling innovativeness through poorly directed policy and a lack of understanding of what it means to have a knowledge-rich economy or company. As a natural consequence, knowledge-intensive mining services may not be getting the attention they deserve.

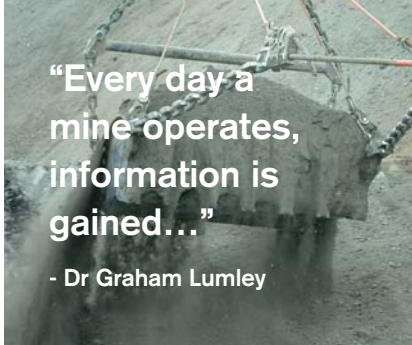
"As a country that has benefited greatly from the mining boom, it could be argued that Australia has not allocated enough resources to the development of knowledge-intensive mining services," said Dr Lumley.

Western European countries are not renowned for mining knowledge. However, many European countries fall in the top quartile for innovativeness and, as such, frequently have developments of interest here in Australia.

In addition to the large equipment companies from Germany which are showcasing innovation, there are technological advancements coming out of Europe such as the Vienna Test System (for operator selection and recruitment) and electrical advancements for draglines being trialled in Estonia and other European countries.


"The idea that only tangible outcomes add value must be changed," said Dr Lumley.

"Gaining a tangible improvement, whether due to an innovation in the machine or mining process, must be preceded by a number of steps designed to gain and build on the intangible knowledge."



"Every day a mine operates, information is gained..."

- Dr Graham Lumley



"Prior to 1999, only five per cent of BE1370W draglines achieved over 100 tonne payloads"

MINING EXPOS AND CONFERENCES

Mining Indaba: 1 – 12 February 2009 – International Convention Centre, Cape Town, South Africa. In attendance Nick Griffith (Business Development Manager) and Trevor Trott (Chief Operating Officer).

IQPC: Business Improvement Strategies in Mining & Processing 25 - 27 February 2009 – Mecure Hotel, Brisbane, Qld. In attendance Graham Lumley (CEO).

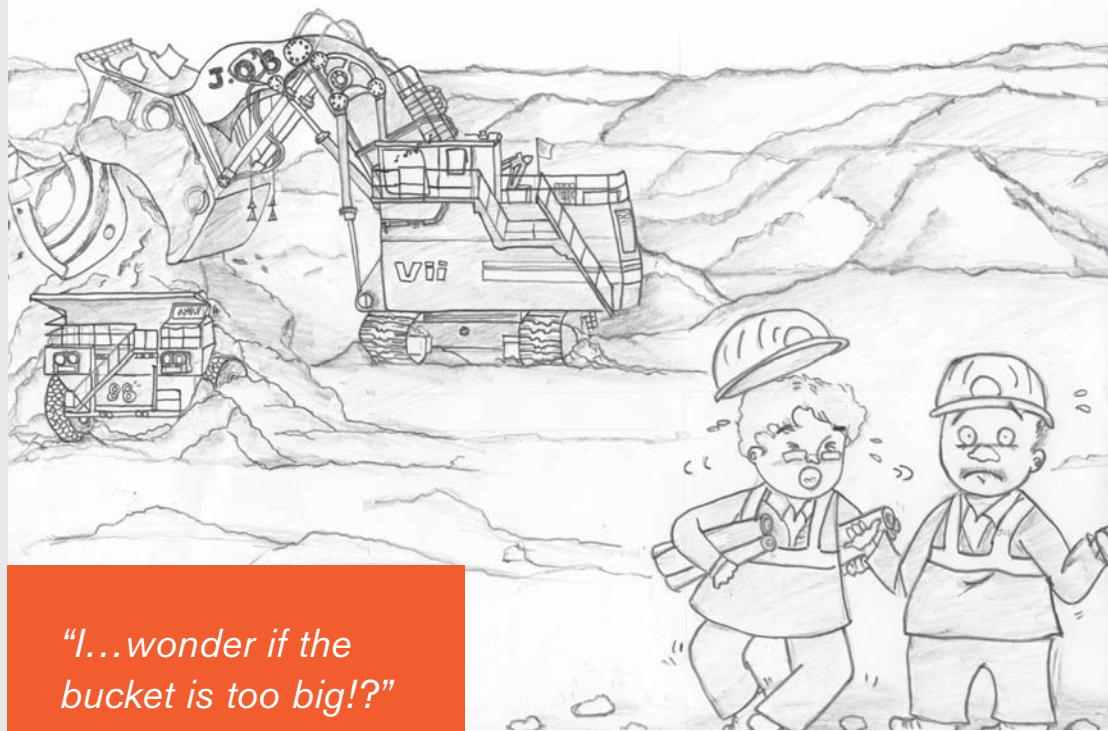
MineMax: Innovative Solutions to alleviate cost pressures and operational reliability in open pit operations, held 26-27 February 2009 – Novotel Langley, Perth, WA.

Cross-sectional Trade Mission: led by Peter Beattie, Trade and Investment Commissioner for the Americas – 9-20 March 2009, Latin America. In attendance Nick Griffith (Business Development Manager) and Trevor Trott (Chief Operating Officer).

Asia Mining Congress 2009: 23-27 March 2009, Raffles City Convention Centre, Singapore.

Austmine 2009, Conference and Exhibition, Australian Mining Technology - Global Mining Innovation, 30 - 31 March 2009, Adelaide Convention Centre.

The GBI team is looking forward to attending these events. For more information please contact GBI on 07 +61 7 3277 1555.



"I...wonder if the bucket is too big!?"

GIVING BACK

GBI has a policy of giving at least 10 per cent of profits to those less fortunate. During the past 12 months we have given donations to;

- The Salvation Army Self-Denial Appeal;
- Australian Lutheran World Service (Cambodia Operations);
- Shave for a Cure;
- The 24 Hour Walk Against Cancer;
- Movember;
- Tear Australia;
- The Salvation Army Overseas Child Sponsorship (South Africa and Kenya);
- Kabete Children's Home (Kenya);
- The Jane McGrath Foundation; and
- The Salvation Army Labassa Corps Girls Home (Fiji).

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GBI guarantee the confidentiality of all data received.

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FOR MORE INFORMATION

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