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GROUND BREAKING INNOVATIONS –MAKING AUSTRALIA'S MINES GREEN

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State of the art processes developed by a Queensland mining intelligence company are helping the Australian resource industry reduce its carbon footprint.

Brisbane based Ground Breaking Innovations (GBI) guarantees savings using minesite data to improve the productivity of equipment.

CEO Graham Lumley said GBI had developed systems which can be applied to any mine to identify energy savings.

"The Carbon Ratio is based on carbon cost per tonne of output. While the cost of carbon permits is not finalised, the cost in terms of carbon input into the atmosphere is known. GBI's belief is that mines can guarantee savings by improving the energy-efficiency of the mining process," Mr Lumley said.

An example of this is the selection of a more efficient bucket for a dragline. A mine chose a high performance dragline bucket which was specifically designed to fill in a shorter distance. The bucket achieved a 12% reduction in filling energy (proportional to fill distance) which reduced annual carbon output/cost for this one aspect of the mine by about 430 tonnes (using US EPA figures of 950g/kWh for coal fired electricity). In addition the bucket carried 3% more payload on average. The carbon ratio is improved by 17% in this energy-hungry area of the mine.

"Importantly, the innovations employed to reduce carbon cost in this way also save the mining industry millions of dollars each year in reduced operating costs in addition to the reduction in the carbon cost." In the previous example, the productivity increase was 6% which is worth in excess of \$1M per annum to the mine.

"The question mine managers now need to address is should they plan on paying for carbon pollution permits or should they plan to reduce their carbon footprint (and associated costs) per tonne of output and receive the substantial additional benefits."

Mr Lumley said the key to going green was improving the efficiency of operators.

"While many equipment operators are very good, there are few who don't have the potential to work more efficiently," Mr Lumley said.

"This is not just an issue of unnecessary future cost of carbon but also it is also unnecessary loss of mine profit for shareholders now. Many companies are currently reporting increased mining costs and there is no doubt that some of the inputs have become more expensive. GBI has the knowledge to assist mines to do something about it."

Mr Lumley said the process for improving mining/energy efficiency was quite simple and involved data, information, knowledge and innovation.

The improvements come from a focus on productivity. When a mine focuses on productivity improvements happen sometimes for completely intangible reasons. Mr Lumley believes that it is because every level of the mine is applying the innovation cycle. Innovation is not necessarily about inventing something new – it is about doing something different, hopefully better. "If you look at every level of the mining process from the strategic decision-making of the CEO through to what a loader operator is doing on a cycle by cycle basis you can see the impact of the innovation cycle. The operator has the largest impact. Look at the operator who has a productivity focus. When a single cycle goes wrong and say half a load is

achieved, (data collected through thought processes), that operator notes what went wrong (turns the mental data into information and processes that into knowledge) then modifies their actions to ensure it is not repeated (innovation). This happens over and over and over again. It is no more than a simplified version of Deming's process quality approach or current "Lean" production methods."

"Small improvements in efficiency can result in significant gains that lift the bottom line. Our benchmarking, reporting, training, auditing and consulting services are allowing mines to extract equipment performance data to improve on site efficiency which save real dollars and carbon output," Mr Lumley said.

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