

# Simulators produce real gains for Phelps Dodge

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*For Immediate Release*

Significant maintenance cost savings achieved at North America's biggest copper mine are expected to be repeated at other sites using Advanced Equipment (AE) Simulator training technology developed in Australia. The savings realised at the giant Morenci mine in Arizona, USA, operated by Phelps Dodge Corporation, are a result of improved haul truck and rope shovel operator performance levels linked to simulator training.

Phelps Dodge, one of the world's major copper producers with eight mines in North and South America, has become the largest global user of AE Simulators with six units in operation at its openpit mines. All the units were supplied by Immersive Technologies, which has nearly 80 of its simulators being used in 16 countries by 45 of the world's leading mining, mine contracting and equipment supply companies.

Phelps Dodge mining technology group manager Jim Armbrust told a gathering of simulator users in Perth, Western Australia, significant reductions in unscheduled maintenance events at Morenci resulting from enhanced operator skill levels translated into significant annual savings.

The company compared operational data six months prior to Morenci's 340 haul truck drivers undergoing simulator training, and six months after, and recorded major reductions in "negative events" – including brake and transmission misuse – after simulator training. Phelps Dodge has also been able to use simulator training to address potential operator reactive issues in emergency procedures: principally responses to vehicle fires and brake failures.

Phelps Dodge commissioned its first Immersive Technologies AE Simulator at Morenci in April 2004 and has since introduced units at five other sites. The simulators had been used to train and retrain more than 1000 haul truck and shovel operators across group sites, including over 270 new operators in the past two years. At Morenci initial baseline assessment of truck and shovel operator skills and competencies – using the simulator – was followed up with advanced training and coaching focusing on safety and productivity performance. The AE Simulator technology not only realistically simulates various machine control and site conditions but, as illustrated at Morenci, allows full integration with common production tracking systems such as Dispatch to enhance reproduction of actual operating scenarios.

"The baseline testing allows us to individually coach exceptions from an optimum (performance level) derived from printed performance reports," Armbrust said. Operators were retested the same day, enabling trainers and trainees to discuss improvements and opportunities. Trainers then evaluated simulator testing trends to better focus second-phase retesting. "Follow-up simulator programs are designed specifically around the testing trends," Armbrust said. "Third-phase training focuses on productivity."

Armbrust said while simulator training could be focused on site-specific issues there were common savings benefits, principally reduced reactive maintenance, reduced tyre wear and costs, and increased productivity resulting in part from less training cycle impact on production. Phelps Dodge was realising reductions in haul truck brake, engine, drive train, hoist and bed/frame reactive maintenance, and similar reductions in shovel hoist, boom stick, bucket, crowd, swing and undercarriage reactive maintenance.

AE Simulators provided a tool for both quantified measurement of operator skill sets and continuous maintenance of those skill sets.

For new operators, simulator training reduced the amount of time required in the field, taught correct operating procedures and reinforced classroom instruction, and provided opportunities to practice emergency

response procedures that could otherwise not be performed, Armbrust said. He said in Perth “hazard free training for equipment and employees” was a stand-out aspect of the training. Earlier productivity gains were another.

“Compared with new operators that didn’t receive simulator training, we’ve experienced up to a 25% improvement in cycle times in as little as two months in operators who’ve been through accelerated training schedules with the simulator,” Armbrust said.

“They (the simulators) have helped us take our training to a higher level,” he said.

“We have made major improvements, not just in terms of eliminating some of the (safety and performance) variance we used to see at our operations – which originally was our primary main – but in reducing unplanned maintenance events and being able to reinforce operating practices and behaviour that keeps people safe and healthy, and keeps equipment working optimally.

“Now, things change: component prices, haul profiles, the areas being mined, and so on. So it can be hard to make comparisons. But when you break it down into reactive maintenance time and cost, and you look at degrees of improvement as I have done, it tells a good story.”

Armbrust said training mine equipment operators to standard key-performance-indicator metrics, with standardised reporting for group-wide global sharing of data, would be a key outcome of the company’s simulator-based training program. An element of the standardised approach, and sign of Phelps Dodge’s commitment to training at its sites, was having certified trainers on each shift.

In April the company became the first Immersive Technologies simulator user to commence the supplier’s TrainerAdvantage™ certification program, which provides three levels of simulator trainer instruction and competency recognition. The program is run by qualified Immersive Technologies personnel and is the first simulator trainer certification scheme developed for the mining industry.

## **About Immersive Technologies**

Established in 1993, Immersive Technologies is the leading global provider of operator training Simulators to the mining and earthmoving industries. With more than 80 AE Simulators deployed in 16 countries around the world, the company’s simulators are integral to the operations of many world-leading mining companies who use the technology to improve operational safety and efficiency while driving down maintenance costs.

Immersive Technologies’ strategic alliances with many leading original equipment manufacturers (OEMs) ensures its extensive range of AE Simulator Conversion Kits™ achieve a superior level of realism and accuracy through the use of exclusively licensed proprietary data and machine technical information from the OEM.

The company’s expanding customer support base includes offices in Australia, the USA and South Africa. For more information about Immersive Technologies, visit [www.ImmersiveTechnologies.com](http://www.ImmersiveTechnologies.com)