

Partnering for dragline success

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For Immediate Release

DEVELOPMENT of world-first simulator training technology by Immersive Technologies and Anglo Coal Australia has been recognised at the third Annual Australian Mining Prospect Awards in Brisbane.

The two companies received the Innovative Mining Solution award for the Advanced Equipment Dragline Simulator now being used at Anglo Coal's Callide coal mine in Queensland.



The award recognised both the "real mining improvements" made with the technology at Callide, and the technical breakthroughs achieved to enable realistic simulation of complex machine dynamics and ground interaction previously seen as too difficult.

Callide mine manager Rod Burgess said the AE Dragline Simulator at the mine was the first simulator of its type to be successfully developed and introduced at a mining operation anywhere in the world.

"We have used simulators for training operators of mining equipment such as trucks and excavators, but the complexity of a dragline made developing a simulator much more challenging," he said.

"The simulator required complex dynamic models and the latest technology including new software architecture to support the high level of detail needed."

Burgess said the AE Dragline Simulator was a reliable and highly cost effective way of overcoming one of the industry's critical challenges – a severe shortage of trained and skilled dragline operators. He believes Callide can train a new dragline operator to 75% of the skill level of an average operator in half the time usually taken, using the AE Dragline Simulator.

This is expected to produce significant productivity, cost and safety gains at large coal mines.

"The simulator provides an opportunity for trainee operators to become familiar with the machine movements in a non-productive role which reduces losses and downtime, but also the level of anxiety for new operators," Burgess said.

"The simulator also has a role to play in refresher and emergency procedure training for experienced operators.

"One of the great benefits is that it delivers detailed reports on the key indicators of an operator's training performance to the trainer.

"This dragline simulator will be a valuable training tool for all of ACA's opencut mines, but we also believe that this technology will become a training tool used throughout the world."

Established in 1993, Immersive Technologies now has over 85 simulators being used by mine operators, contractors, equipment suppliers and training bodies in 17 countries worldwide.

After thorough consultation with ACA to develop base requirements for the AE Dragline Simulator, Immersive Technologies devised an intensive development plan based around exhaustive research of dragline operations, machine dynamics and the unique soil and machine interactions experienced with draglines.

The dragline provided greater challenges than did equipment such as trucks and shovels, where simulation of fixed point interaction was required. With draglines, the bucket, ropes and “jewellery” have complete freedom of movement and this necessitated complex dynamic modeling for realistic simulation.

An advanced mathematical model for hoist/drag ropes, enabling accurate simulation of the natural motion of high tensile steel ropes, and a “jewellery model” able to simulate various bucket positions, were complemented by a simulated drive system that could apply and receive correct bucket forces transferred through the drag and hoist ropes.

This means trainees can pick up vital instruction on operating errors such as dropping the bucket with too much force on the ground, hitting the bucket with the spreader bar while dragging, and stalling drag motors. Next, Immersive Technologies advanced its proprietary VirtualGround technology to allow real-time, high-fidelity replication of bucket/soil interaction. The soil model realistically simulates digging behaviour, including the correct flow of soil and application of digging forces.

Simulation fidelity was also enhanced with the addition of real-time shadows cast from the machine and rigging, increasing user depth perception.

Each of the elements was central to creating a true immersive experience for a trainee, and to increasing learning retention.

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 85 AE Simulators deployed in 17 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