

Pulling power in the Pilbara

The Pilbara with its dirt, dust and heat is the last place one might expect to see a Mercedes-Benz truck pulling a massive process module for a mine site, but if you do it's no mirage. Jamie Wade writes for *Australian Mining*.

Think of Mercedes-Benz and the image of a millionaire clutching the wheel of a luxury sports car as it effortlessly roars along a coastal road in the south of France springs to mind.

However, international heavy-lifting conglomerate Mammoet is on the move in Australia and its recent purchase of the first Mercedes Benz Actros SLTs with their unique pulling power – the first in the country – is quite literally a sign of bigger things to come.

With a resurgence in mining and an increasing trend towards the transportation of modular loads in the construction and development of major resource projects, it is no surprise that Mammoet is keen to be part of the action in WA.

As one of the world's largest heavy lifting and transport providers, the history of the company is as impressive and varied as the loads and projects it handles.

Mammoet made headlines in



"If you're moving in top gear, without touching the clutch, but pressing the throttle the truck will just accelerate away smoothly and engine revs remain static."

2001 when it recovered the sunken Russian nuclear submarine, the

Kursk, from the seabed by applying state-of-the-art techniques.

Ben Schulte, from Mammoet, chose the Mercedes Benz Actros SLTs for the vehicle's unique driveline or torque converters that minimise 'shock loading' or stress on the transmission generated by pulling massive loads of up to 250 tonnes.

The driveline protects the load with smooth, jerk-free power flow and closely-stepped transmission ratios.

With smoother power and less driveline shock loads, the vehicles also lower maintenance and repair costs on the trucks.

Other key benefits include automated manual transmission for easy operation; a hydro-dynamic turbo clutch for high starting traction and good slow-speed driving characteristics; and thermal over-loading protection from a dry friction clutch.

An integrated retarder means wear-free braking and efficiency from the mechanical transmission and drained turbo clutch lowers fuel consumption. There's also high-speed capability for empty trips.

Dan Parker of Diesel Motors Trucks, which supplied the Actros SLTs to Mammoet, told *Australian Mining* that the SLTs unique driveline prompted a new driving style.

"If you were moving in top gear without touching the clutch, but pressing the throttle, the truck will just accelerate away smoothly; the engine revs will remain static until you've reached that 1600 rpm and lock up."

The Mercedes PowerShift Transmission has several modes for a variety of driving conditions.

The Actros SLTs are in an 8x8 configuration. Behind the cab you'll find a hydraulic oil tank, a 900 L diesel tank, a rear cooling unit comprising a radiator for the turbo clutch and additional engine cooling, and a fuel/water separator.

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Fuel for thought

The right fuel storage facilities onsite can minimise fleet downtimes, **Jamie Wade** writes for *Australian Mining*.

Fuel is a precious resource and as fuel costs rise mine operators are paying increasing attention to not only how fuel is used, but how it's stored and dispensed.

Pilbara manager for Fuelfix, Nathan Chapman, said attitudes to fuel have changed significantly.

"The main difference I have seen in the industry is a real focus on the safety of the tanks and environmental friendliness of the facility," Chapman told *Australian Mining*.

"Long gone are the days of putting a single skin tank on the ground and letting product leak on to the ground.

"Tanks need to be self bunded, easily operated, have safety features to prevent injury to the user."

With mine operators demanding reliable fuel storage and dispensing equipment, fuel solution providers are responding with larger tanks and facilities, faster flow rates and management systems for track and trace accountability on how the fuel is used.

"With the size of the machinery companies have now mine operators



Tanks need to be self bunded.

want to deliver fuel faster which means minimising downtime for refuelling and determining which operator and machine is consuming what amount of fuel," he said.

Fuel storage solutions are making a real and measurable impact.

"To have on site a system that suits your needs is essential. Any downtime due to not being able to access

fuel is a costly loss that shouldn't happen," he said.

According to Chapman, mine operators need a safe reliable system that suits their requirements on site.

"A recent example was an open pit operation that didn't have any refuelling facilities in the pit.

"The machinery had to come out of the pit, refuel in the refuelling bays

with all the other machinery on site and mobilise back into the pit.

"Not only were they losing time coming in and out of the pit, they also had the wear and tear on the machinery that was costing them in downtime from repairs and maintenance.

"We tailored a solution that incorporated lubricant and diesel storage which eliminated those previous losses."

When investigating fuel storage solutions Chapman advised establishing requirements for fuel usage, the quantity of fuel used, vehicle types refuelling – and their tank capacity, and accessibility for refuelling trucks to top up the tanks.

He said it was also worth considering track and trace accountability to determine future fuel needs and whether or not existing tanks can service those needs.

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Virtual trainers deliver real results

Jamie Wade speaks to Immersive Technology manager David Anderson on the future of virtual trainers in mining.



The surface mine vehicle simulators dynamically adjusts viewing perspective to offer a real world view from the cabin.

Driven by customer demand across the globe and backed by almost two decades of R&D, a new generation of mining equipment simulation technology is linking operator competency with operational performance. Immersive Technologies' Australian regional manager David Anderson talks exclusively to Jamie Wade for *Australian Mining*.

AM: How has simulation technology for mining equipment changed in the last 10 years?

DA: We believe our simulators have now matured to the point where they are seen as a valid and proven tool to address the full lifecycle of an operator. Whether it's screening or verifying operator competence before hiring, 'green' operator training, upskilling operators, or refreshing and assessing operators, the technology is now recognised globally as a tool that enhances operator safety and improves mine profitability.



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AM: What are the latest trends in developments in mining equipment simulators?

DA: Increased realism. Whether you're training an inexperienced or experienced operator, the simulator is an enabler, and for simulation to be an enabler to operator improvement, it first and foremost must be credible. You especially need to have an experienced operator feel that it is a realistic experience.

Our recently released PRO3 simulator for surface mining and UG360 simulator for underground mining utilise a range of new technologies to achieve this increased level of realism, including advanced new screen displays and highly accurate motion platforms.

The PRO3 also contains some cutting-edge technology which dynamically adjusts the viewing perspective of the operator to provide a real view of the world outside the cabin.

This really bridges the gap between the simulator and the real world allowing more realistic and in-depth training exercises, particularly for safety and hazard spotting.

AM: How are training simulators making a real and measurable impact on mines around the world?

DA: While our simulation technology has always been recognised as a tool to enhance operator training, the last four years is where operator improvements have really been quantified and linked to in-pit performance data.

We have successfully demonstrated this link to many mines around the world using a structured business improvement program.

This has gained the attention of management at our customer's sites who then begin to recognise the strategic use of simulation training to affect their overall site profitability.

As we like to say, 'Optimise the operators and you can optimise the operation.'

One of the benefits of Immersive Technologies' large customer base has been the development of a comparative database taken from simulator data around the world.

This allows us to compare a mine's operator performance to a global average for that type of mine, providing a 'health check' as to where that operation may need to focus additional training and attention.

This analysis service is available to all of our customers and will identify areas such as tyre wear, response to emergency scenarios, transmission abuses and brake abuses, where a site may rank towards the top, middle or the bottom of the global norm.



The simulators are fully portable.

AM: What are mines demanding in equipment simulation technology?

DA: Mines are seeking increasingly higher levels of support to ensure that their simulator will be integrated effectively onsite and generate a strong return on investment.

They also want to know how they can use simulation to drive operational optimisation on a mature site, not just when they're ramping up.

We took on-board the feedback from our mining customer base and developed a range of programs to help them utilise their simulators to maximum effect.

These include our 'Training Systems Integration' program and Trainer-Advantage, the latter has seen over 750 mining trainers to-date globally take part in the certification.

Mines are also recognising the value and importance of their simulator being recommended by the original equipment manufacturers (OEMs).

A mines purchase risk is significantly lowered when they know their simulator has been developed in conjunction with OEM input.

Immersive Technologies currently has exclusive alliances with Caterpillar, Hitachi, Komatsu, Liebherr and P&H MinePro, all of which provide Immersive access to their proprietary technical information which is necessary to accurately simulate their equipment.

AM: What's important to successfully integrate the technology into a mine site?

DA: Good question. I can't think of another company that has had as much experience in deploying training simulators to the mining industry in as many different environments as Immersive has.

That has provided a unique understanding of the most successful way to integrate and apply the simulator technology onsite.

What we have learnt is that if the early integration and ongoing application are not done well then the simulator is unlikely to deliver the results expected.

Our 'Training Systems Integration' program provides customers with detailed resources which steps them through a best practice approach

that will provide measurable results that can be linked back to in-pit data.

Once in place we continue to work closely with the mine to progressively increase their level of simulation sophistication and usage for improved results.

AM: What advice do you have for mine operators currently investigating mine equipment simulation technology for their operations?

DA: Choose a simulator supplier that has proven experience within the mining industry deploying high quality simulation solutions with a strong implementation plan. Ensure they can show evidence of measurable positive improvements to site safety and site profitability.

Finally, choose simulator technology that is formally supported and recommended by the original equipment manufacturer for the best results and peace of mind.

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