

Shedding **LIGHT** on minesite vehicles

From rental to maintenance and lighting, advances in minesite vehicles have increased safety, reduced downtime and maintenance costs and improved operational efficiencies. Australian Mining's WA correspondent Jamie Wade writes.

Whether it's moving material or personnel, attitudes to minesite vehicles and how they're operated and maintained have changed dramatically.

Service intervals for instance, says Flexforce Maintenance Solutions' Newman mechanical workshop manager Mark Austin, have reduced to lower kilometre intervals than manufacturer recommendations for warranty purposes.

"There is a clear and high emphasis today on safety and reliability," he said.

"Vehicle safety features have increased dramatically and there is now a formal procedure in place ensuring every vehicle that enters a minesite meets a strict standard and is correctly maintained. Vehicles are checked for minesite safety compliance at least every 12 months as well as random site inspections," Austin told *Australian Mining*.

"Safety features are not only for the driver/operator of the vehicle, but also in the event of breakdown to

ensure the driver, the vehicle and surrounding personnel continue to remain in a safe environment."

More creature comforts in vehicles have been another key change adds Europcar mining-commercial director for Western Australia Rod Zakostelsky.

"Gone are the days driving a vehicle on site with no radio, CD player or air-conditioning," he said.

Advances in ancillary technology such as lighting have also led to improvements in minesite vehicles, adds PJL Diesel manager Scott Montgomery.

"A fundamental change has been the rapid evolution and adoption of Light-Emitting Diode [LED] light technology," he said.

"Replacing halogen and HID [High Intensity Discharge] lighting, LED delivers greater output and light quality, reduced power consumption, improved durability and much longer life spans. LED represents a fundamental change in technology as evidenced by typical life spans

with halogen lasting about 200 hours, HID at 6000 hours and LED at 50,000 hours.

"Another key change between these light types is seen in the light colour they provide with LED providing a pure white light, eliminating the yellow tinges associated with halogen and to a lesser extent HID. This quality of LED light has practical advantages in terms of improved visibility and reduced operator fatigue.

Trends and innovations

Satellite tracking is perhaps the biggest technological advance in minesite vehicles leading to improvements in fleet tracking and maintenance.

"Remotely monitoring a vehicle fleet makes it easier to manage service intervals and monitor vehicle performance," said Zakostelsky.

"By automatically reporting engine hour and vehicle use, Global Positioning System [GPS] tracking not only improves productivity and efficiency, but also gives a clear picture of where and how that vehicle is being run.

"The key feature of GPS tracking is the knowledge of tracking any vehicle in an isolated area and responding to an emergency at an exact location. The result is increased productivity, better safety for the operator, security of the fleet and improved reporting and data collection."

Austin agrees and adds that safety has been the key driver to the adoption of satellite tracking systems to monitor vehicle use and performance.

"Technicians are also integrating components in



Custom worklight mounting systems such as this unit better handle the intense and sustained vibrations common on minesite vehicles. Image courtesy of PjL Diesel.

vehicles such as battery isolators and tagging systems to improve safety.

"LED lighting technology has dramatically extended light globe life thus reducing maintenance downtime," Austin told *Australian Mining*.

Montgomery agrees that LED technology has been a key development and is evolving to an expanding range of innovative options and applications.

"A particular new technology uses Pulse Width Modulation – an established technology used to control power to an electrical device – to 'overclock' the light's performance and increase output. This provides greater durability and longer lifespan," Montgomery told *Australian Mining*.

"Heat management has also significantly improved with a series of LEDs that flash at a duty cycle faster than the eye can detect.

Another development, adds Montgomery, is a custom work light mounting system to better handle the intense and sustained vibrations common on mobile minesite vehicles.

Haul truck and machinery identification systems for mine sites have been improved with number boards that have integrated LED with adaptive photo sensor lighting technology.

The embedded photo sensor automatically dims for night use to extend the life of the LEDs and will

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Specialised buses such as this 18 seat Isuzu NPS 4WD include a built-in Rollover Protection System. Image courtesy of Able Bus and Coach.

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brighten when in areas of strong light such as headlights and lighting towers. Magnetically activated numbers with memory can be easily changed by moving the magnet over the numbers.

LED number boards are said to provide more reliable and safer vehicle identification and can be operated 24/7.

New demands

With an increasing emphasis on safety and the bottom line it's no surprise that today's mine operators are demanding safer and more efficient mine site vehicles.

The focus in recent years, according to Zakostelsky, has been on specialised mining vehicles, which has resulted in a more versatile, safer and purpose-built vehicle.

"The introduction of higher standards of legislation and technology, along with the responsibilities of mining companies to provide a duty of care to their employees and protect their

assets, has resulted in a purpose-built, safer, smarter and more efficient mining vehicle," he said.

A major trend in minesite vehicles here is the emergence of specialised 4WD buses for greater safety, efficiency and passenger comfort.

Commuting to site in hot, miserable cramped buses unsuited to harsh and hazardous mine sites are becoming a thing of the past, according to Kevin De Bruin – owner-operator of Perth-based 4WD bus and coach manufacturer Able Bus & Coach.

"Our buses carry far more passengers than conventional people movers – our 18 seaters, for instance, are particularly popular. Greater seating capacity means fewer trips – less fuel and less wear and tear on vehicles and fewer drivers for operators using fleets of coasters or people movers.

"Having fewer vehicles on site also reduces the likelihood of accidents," De Bruin told *Australian Mining*.

"The other key safety ad-



Vehicle rental provides resource industries with a faster and cheaper alternative to purchasing vehicles for project requirements, particularly when vehicles are on backlog orders. Image courtesy of Europcar.

vantage of specialised 4WD buses is that they have a greater presence; they're more visible to drivers of larger vehicles such as haul trucks."

Austin agrees that the emphasis on safety has lifted standards for and increased the reliability of vehicles.

"As the industry expands, mine site vehicles are required to travel large distances to isolated sites. Downtime from mechanical failure is not acceptable.

"It's critical to have highly detailed preventative main-

tenance procedures and service intervals allowing faults to be rectified before they develop or cause downtime," Austin said.

To understand what's required from mobile equipment lighting on minesites Montgomery advises that operational Key Performance Indicators (KPIs) be considered and adopted.

"Lighting equipment needs to deliver improvements on at least three fronts: workplace safety; reduced downtime; and oper-

ational efficiency; it's these broader priorities that are pushed down the line and influence equipment selection criteria."

Challenges

The biggest challenges with minesite vehicles, according to Austin are the isolated distances they travel and the availability of parts in remote areas.

"This requires technicians to be thorough and accurate in the diagnosis of not only existing faults, but preventative maintenance," he said.

Although lighting equipment performance has improved exponentially over the past decade, adds Montgomery, so have the options and the performance standards required by minesites.

"What follows from this scenario is a classic mix of opportunity and challenge. The opportunity is to extract improvements in safety and operational performance by leveraging lighting technology. The challenge is doing this effectively," Montgomery said.

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Commercial Vehicles

Family first HOUSING

A Perth-based builder is calling for more family-friendly housing in remote WA mining communities. Jamie Wade writes.

Domenic Sabatino, director of Westkey Modular Housing, believes there should be an emphasis on building more houses and extending suburbs in towns like Karratha and the North West of WA rather than mining accommodation camps built in the town.

“Although FIFO [fly-in fly-out] workers are handsomely rewarded, they do pay a price in terms of lost time with their families and friends, lifestyle and general stresses associated with FIFO including failed relationships, and loneliness,” Sabatino told *Australian Mining*.

“This can largely be avoided if an option exists where the FIFO worker can return home to a family every night, instead of a donga. This will not only save relationships and help kids to grow up with both parents, but will also save companies FIFO costs in the long run.”

However, industry group leaders such as Chamber of Minerals and Energy of Western Australia (CME) Chief Executive Reg Howard-Smith say it is important to prepare for the reality that FIFO would continue to increase as construction of resources projects ramped up.

“Industry is very supportive of viable, liveable communities and focuses on improving the regions in which they operate. However, construction work is short-term and expecting all workers to take up permanent resident in regional towns is unrealistic,” Howard-Smith said.

Demands and challenges

The extraordinarily high demand for mining companies to provide accommodation, says Sabatino, has made

performance improvement and cost savings key challenges in the industry.

“Construction companies are also contending with a shortage of skilled workers,” he said.

“Improving safety and reducing the environmental impact will also be ongoing goals for the mining industry.

“Another challenge faced by mining companies is that there are currently not enough manufacturers in Australia to meet mining accommodation demand in coming years, as camps are so big. This challenge allows providers, such as ourselves, to become more specialised and more selective in terms of choosing clients.”

Higher standards

Despite intense demand for accommodation, says Sabatino, the overall conditions and standards in mine site construction have drastically improved in recent years.

“This is evident in the overall higher safety standards required of all mining construction contractors and the need for safer mining camps that are durable and can withstand severe weather conditions,” he said.



“Although FIFO workers are handsomely rewarded, they do pay a price,” Sabatino says.

“For example, portable buildings in mining camps are required to carry a minimum cyclone rating of Region D, Category 2 for single and two-storey structures. There is also a focus on better working conditions in general.

“Another change can be seen in the fact that mining camps start to resemble mini-resorts with an emphasis on improved lifestyle with extras like gym facilities, better fittings and more spacious accommodation to name a few added features.”

The main focus in mine site construction, says Sabatino, is on improved safety with a standard requirement for all aspects of buildings

and camps to meet Australian Buildings Codes.

“In recent years there has also been a renewed focus on insulation via double-glazed windows and the use of specialised quality insulation for improved energy efficiency – a cost effective measure for reducing greenhouse gas emissions,” he said.

“The result is remarkable thermal and sound insulation while providing a cool, quiet and pleasant environment for the occupants.

“Close attention is being paid to only installing industrial equipment and appliances with high energy efficiency ratings including air conditioners, washing machines, refrigerators,

transformers and computers,” Sabatino said.

“Another feature seen more often on mine sites in recent years is disabled access including wheelchair-accessible offices and ablution facilities.”

Mining companies are also demanding more of construction contractors, adds Sabatino.

“Generally, contractors are required to meet all appropriate mine site safety ratings and regulations including standard cyclone ratings on all buildings and general adherence to all building codes,” he said.

“Contractors should further hold all the appropriate licences, cards – for example White Card in Construction and certificates needed to safely operate on a mining construction site.

“Mining companies also demand the use of superior products from all of their contractors. Projects must be of a high quality including good workmanship, a fair price and completion should always be on time and in budget.”

Westkey specialises in the design, manufacture and supply of portable buildings, mining camps, modular accommodation, kit homes and transportable houses.



Many FIFO camps, such as FMG's Christmas Creek, are virtual villages in the desert.