

# Maximising

# haul road profitability

Achieving extended tyre life, plus general longer-term mechanical availability on off-highway trucks and allied earthmoving machinery is strongly influenced by haul road construction, grading and maintenance techniques. Areas where leading specialist, ALS Haulroads and allied ALS Group companies are helping to drive down the cost per tonne for a range of Blue Chip clients.

**M**AIN HAULAGE ROUTES WITHIN A TYPICAL OPENCAST LAYOUT TEND TO be fairly permanent structures, steadily evolving over time as the mining footprint changes, added to which are the variable demands that more temporary in-pit access roads present, since these keep changing with the production programme and bench layout. Essentially, there are three key factors that determine optimum haul road condition, namely material quality, design, and maintenance, which all contribute to lowering rolling resistance (defined as the pressure exerted on the tyres by a road's riding surface). "It's equally important to note that haul roads begin at the loading face and end at the dump, and maintaining good floor conditions in all these areas will definitely lower tyre wear and improve >



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# CATERPILLAR



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This power management strategy starts with base power in gears 1 and 2, and increases by 7.5 kW when the unit is shifted into 3rd gear. The horsepower increases another 7.5 kW when the unit is shifted into 4th gear and maintains maximum horsepower through to 8th gear.

"Compared to the 140H's Cat 3306 engine, the 140K's C7 power plant provides a torque increase of 8% to 10% depending on the application," explains Barloworld Equipment Cat sales professional, Piet Smith. "Additionally, customised torque curves increase peak torque for improved lugging performance and responsiveness. The torque rise on the Cat 140K is around 47% in contrast to 33% on the previous generation H-Series."

Standard on all K-Series models, the variable horsepower (VHP) feature increases machine productivity by matching power to ground speeds. In the lower gears where the machine is traction-limited, engine horsepower is automatically reduced, lowering fuel consumption and minimising tyre slippage.

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"For any plant intensive company, equipment durability and availability is the deciding factor, and when it comes to graders, Caterpillar remains the definitive benchmark for performance," Malan continues.

ALS Haulroads' experience has also shown that their Cat graders achieve excellent resale values. Coupled with very acceptable maintenance costs over their lifespan, he says that this makes for a good overall return on investment.

Adds Malan: "Optimal machine selection and customer satisfaction is the backbone of our business and our ongoing capital equipment investment programme supports our proven capability to supply tailor-made haul road and in-pit solutions for any mining operation"

fuel burn costs," explains Kosie Malan, managing director of ALS Haulroads. "To achieve this, both permanent and temporary roads need ongoing grading and dust suppression."

Typically, some 60 to 70% of a mine's haul roads are permanent. "Interestingly, though, our experience has shown that neglecting to keep temporary roadways in good condition is a key contributing factor that influences overall and accelerated tyre wear and haulage productivity. On one site, for example, we carried out a pilot study on a waste dump accessed via an existing temporary road. We constructed a new, well graded road next to it. The new one showed around a 26% increase in productivity, with this result achieved under safer working conditions."

Working as a contractor and predominately focusing on the Mpumalanga and North West mining regions, ALS Haulroads is a member of the ALS Group of Companies, the latter supplying earthmoving equipment and project management solutions in the mining and construction sectors. These companies include ALS Plant Hire and ALS Roads, which work together to provide flexible and integrated solutions.

Tying in with the mining programme, ALS Haulroads operates 24/7, 365 days a year, working alongside the mine's engineering and production teams to tailor optimum haul road and in-pit service solutions.



The Cat 140K's variable horsepower (VHP) feature increases machine productivity by matching power to ground speeds.

"Consider this: once a permanent haul road deteriorates – assuming it was well constructed in the first instance – it can have a major impact on production during the time it takes to repair it again to an acceptable condition," points out Malan.

The overriding emphasis on mine site health and safety, together with smooth roadways, are the optimum goals, as is the need for ongoing environmental management.

"On 24/7 operations in the Mpumalanga coal region, for example, lack of ongoing dust suppression at night can severely reduce visibility," says Malan. "Left uncontrolled, suspended dust appears like a thick mist, which worsens in the winter months."

## 100% CAT GRADER FLEET

From a mechanisation perspective, ALS Haulroads deploys a 100% Cat grader fleet, together with allied machines that include Cat 824C wheeled dozers, plus water bowzers with a capacity from 18 000 up to 36 000 litres.

This grader machine composition comprises ultra large Cat 16G and 16H units, as well as 140H's. This fleet was recently expanded with the acquisition of two new generation Cat 140K models, supplied and supported by southern African Caterpillar dealer, Barloworld Equipment.

The size of the grader required depends primarily on the width of the haul road, but will also be influenced by the road's construction, and the mine's ongoing maintenance programme. A neglected road will require more intensive remedial action, and a larger grader to cut and grade final levels.

For ALS Haulroads, key features that stand out on the Cat 140K include more power coupled with lower fuel consumption, plus improved ergonomics and all round in-cab visibility. A high percentage of the components are also interchangeable with its existing 140 H-Series graders.

The 140K is driven by Cat's proven C7 ACERT engine, with its 7.2 litre displacement, which combined with an improved power management strategy and an advanced monitoring capability, significantly increases performance whilst keeping working costs to a minimum.



Kosie Malan, managing director of ALS Haulroads (left) and brother, Pierre Malan, together with one of two new Cat 140K models recently added to the company's dedicated Cat grader fleet.