ALCOA OPTS FOR KOMATSU IN MAJOR MINE UPGRADE

One of Alcoa's recently delivered fleet of 12 Komatsu 730E dump trucks, purchased with the aim of achieving a "step change" in lower haulage and operating costs.

Western Australian-based Alcoa World Alumina Australia has recently completed a $40 million equipment purchase package, incorporating a fleet of 12 Komatsu 730E dump trucks, four WA900-3 loaders, along with other Komatsu loaders, graders, articulated dump trucks, dozers and skidsteers.

In addition, it has implemented the world's first application of the AcuMine HaulCheck driver guidance system to ensure larger trucks can safely work on restricted-width haul roads.

The package, financed through Komatsu Australia Corporate Finance, is part of an equipment replacement program at Alcoa's Willowdale and Huntly mines southwest of Perth.

According to Steve Pyburne, Alcoa's mining engineering manager, in moving to mine operations based on the 190 tonne capacity 730Es, the company is aiming to achieve a "step change" in lowering its mining costs.

"Our previous trucks at the two mines were Komatsu HD785s (90 tonnes) and HD985s (105 tonnes). By moving to the larger trucks, we are looking to reduce our haulage, labour and maintenance costs," said Steve.

Of the twelve 730Es, four have replaced seven HD985s at Willowdale and eight have replaced 17 HD785s at Huntly.

"At the same time, we have re-arranged our mining operations at our largest, Huntly mine, reducing our haul road distances significantly, moving our crushing plants and extending conveyors, as part of a $100 million upgrade project," he said.

"One of our biggest challenges in this project was whether we would be able to go for the bigger trucks," said Steve.

"We have a network of haul roads through the jarrah forest, which is managed for multiple land uses including conservation and water catchment. That means we are always aiming to minimise our impacts on the environment, and we did not want to increase our haul road clearing widths."

For this reason, a major challenge for Alcoa was to move to substantially larger trucks while still using approximately the same width haul roads.

Its solution to was to adopt the AcuMine HaulCheck driver guidance system, for which Komatsu Australia holds distribution rights.

AcuMine's HaulCheck system, developed at the University of Sydney's Centre for Autonomous Systems, uses an on-board monitoring system to create a "virtual corridor" within the haul road by measuring the relative distance from PVC markers placed along the side of the road.

If the truck strays too close to either side of the haul road, the driver is alerted by means of a multi-level series of visual and auditory alarms. In addition, operators of other trucks are alerted to the potential hazard.

The monitoring device, fitted to the left-hand side of the truck, uses a scanning laser sensor to measure the distance from the PVC markers, which are placed preset distances apart along the left-hand side of a haul road.

If the truck veers out of the "virtual corridor", the driver is alerted. In addition, the system logs all alerts so that drivers in at-risk situations can be notified and managed.

The system also incorporates a GPS allowing the location of any problem areas to be easily identified.

"The AcuMine HaulCheck system provides very accurate

guidance to our drivers that they are within the safe haul lanes. Even though we have increased the truck footprint, we are still able to work within the 20-22 m haul road widths that we had with the smaller trucks," said Steve.

"It also makes an excellent fatigue management tool, alerting drivers and mine management to any fatigue-related issues. This system was delivered and installed in early February, and has been working very well for us.

"Komatsu Australia has committed to guarantee the availability of the HaulCheck system, and we are still working jointly with Komatsu on further improving it."

Prime loading units for the 730Es are two Komatsu PC1600 excavators at Willowdale and two other excavators at Huntly, with four WA900-3s - also delivered over the past 18 months - used as back up loading tools. One of the WA900s is at Willowdale and the other three are at Huntly.

With a three of the WA900s delivered before Alcoa's decision to opt for 730Es, these had to be converted to high-lift configuration to handle the larger trucks, although the final WA900 was delivered as a high-lift unit.

According to Steve, there were a number of factors behind Alcoa's decision to base its new haul fleet around Komatsu.

"Before making our decision, we extensively checked the marketplace, looking at the technical capabilities of the various trucks available, and the sizes available. We carried out detailed analyses of each make and model on the marketplace.

"The Komatsu trucks offered us the lowest whole-of-life costs, taking into account all factors, including owning and operating costs," he said.

"We also required trucks that are suitable for our varied mining conditions here.

"We are not just an open-pit operation; we have many small pods of ore around the mine situated in the jarrah forest, so our haul trucks need to be suited for long hauls, and our loading equipment needs to be suited to frequent relocation around the mine."

For these ore bodies, Alcoa uses its WA900s as its loading tools - hence the need to have compatible truck/loader combinations.

In addition to the truck/WA900 purchase, Alcoa has bought two WA500 loaders and two HM400-1 artic trucks fitted with ejector bodies as part of a trial of a new method of removing overburden material from on top of the ore body.

"Our existing overburden operation involves the use of twin-engine scrapers, but we are carrying out a trial using the WA500s and ejector-body HM400s in an effort to remove some of this material more efficiently and safely," said Steve.

Other equipment delivered by Komatsu Australia under this package includes two GD825A-3 graders for haul road and pit floor maintenance, the first time these graders have been used by Alcoa.

"They were delivered about six months ago, and to date are performing well," said Steve.

In addition, Alcoa's refining operations have taken delivery of a WA600-3, a PC300-7 excavator and four Komatsu skidsteers, two SK714s, an SK820 and an SK1020.

"We are continuously upgrading our operations, but this move to the 730E trucks represents a major step-change for us," said Steve. "We are always looking to better alternatives, in an effort to reduce our costs and improve safety."

Alcoa is using Komatsu's AcuMine HaulCheck system to allow it to run larger trucks in the same-width haulroads.