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Autonomous Haulage Systems: Gaining Perspective with Parker Bay's Database

Early development of autonomous-drive mining trucks (AHS) began in the 1990's but it wasn't until the mid-2000's that they entered full production service in large surface mines worldwide. After 15+ years in day-to-day operations, the safety, productivity, and cost-savings are well established. And any review of the mining trade press will lead to numerous citations by mine and manufacturer. But a more comprehensive understanding of just where these systems and trucks have been installed, and not installed, can provide a better perspective on their market impact and potential growth.

Parker Bay has been compiling such data on AHS for over 15 years based on direct input from the manufacturers as they delivered AHS-ready units, as well as our tracking units converted to autonomous drive whether by the OEMs or independent suppliers of the necessary hardware and software.

Our Database identifies the following parameters of the global AHS in operations worldwide. To begin, it's still a relatively small but rapidly growth market: 50 operations in just seven countries (excluding prototype or test units). Together these mines (and several contractors) operate over 1,200 trucks with fleets ranging from fewer than 10 to as many as 90 at a single site. And there are nearly 100 others on order.

It's interesting to note that while AHS requires a very substantial capital commitment and thus is largely confined to the largest mines, the trucks are not concentrated at the very top end of the payload range. Nearly 50% of the current population are in the 218-255 mt payload range while another 35% are in the 290-mt class. Together, AHS-compatible trucks in these size classes represent 11% of all units in these size ranges that were shipped over the past 15 years. In contrast, just 6% of the 308-363 mt units are used in AHS applications. To a large degree this derived from manufacturers selecting the size of trucks to target first. It is expected that the size range for AHS trucks will broaden over time.

The geographic concentration was dramatic in the early years of commercialization: between 2007 and 2013, more than 80% of these trucks were employed by Western Australia iron mines. They continue to represent the largest sector today, but dispersion worldwide has accelerated. Large fleets are now operating in Australian coal mines, and most recently a major gold mine. In Canada, AHS has found acceptance in oil sands, copper and coal. Three other countries have seen substantial and growing acceptance of AHS – Brazil, Chile and China. Conspicuous by their absence are mines the U.S., India, Indonesia and Russia with reasons specific to each country.

Over the next decade growth in AHS application is expected to accelerate as OEM-sourced AHS have been adapted to conversion/installation on existing truck fleets (units that were shipped AHS-compatible vs retrofitted units are distinguished in the Database as are manufacturer and model. But the latter is confidential to Database subscribers). Further, independent suppliers have developed AHS to work with several manufacturers' trucks.

The market for autonomous haulage systems is growing rapidly as their substantial productivity and cost-savings are well documented. As more systems and truck models are developed, the AHS segment will come to dominate other regions and minerals as they have done so in Western Australia.

Interested parties are encouraged to contact Parker Bay at info@parkerbaymining.com or by visiting Parker Bay's website www.parkerbaymining.com.