

Autonomous dozers – How can they benefit mine operation?

E.Abbo¹, D. Poller²

1.VP Product & Strategy, Auto-mate, Osborne Park, WA 6017. Email:elad.abbo@auto-mate.net

2.CEO, Auto-mate, Osborne Park, WA 6017. Email:daniel.poller@auto-mate.net

Keywords: autonomous dozers, semi-autonomous dozers blade, Tele remote, self-driving,

Autonomous vehicle solutions are not futuristic technologies anymore. The autonomous technologies evolve rapidly nowadays in different arenas and domains, such as: defence, agriculture, on-road automotive and mining of course.

The utilization of remote control (RC) and tele remote (TO) dozer systems are well recognized in the mining industry and have been for a long time. The main objective of the RC and TO operation is to increase safety by positing the operator in line of sight (LOS) or behind line of sight (BLOS) respectively, and removing the human personnel from the line of danger.

The use of autonomous dozers in operational environments adds new challenges to the developers. The dozer activities require the development of bespoke autonomous functionalities for the blade and the ripper in addition to the requirement to "just" control the platform motion.

Working with the surface requires deep understanding of the complex dynamic forces that impact the dozer operational work. The artificial intelligence (AI) driver is required to identify the terrain surface layout, to detect positive and negative obstacles, and to plan and manage the platform and its tools accordingly in order to achieve the desired outcome.

The advantages and expected benefits of the autonomous dozer work are varied. In addition to not putting drivers at risk, the autonomous system enables precise surface work based on accurate sensors and adequately follows the path by using accurate navigation solutions. The 360 degree sensor cover also enables the AI driver to detect obstacles that are in the blind spots of a human driver and even to identify these objects in harsh environmental conditions.

As time progresses the hardware prices will become more accessible to most mining players and consequently, by converting existing dozer fleets, the autonomous dozers become a reality.