



Type what you want to search

Search



10/24/2019



Vale will begin tests on autonomous operation of haul trucks in Carajás

Innovation has already been deployed at a unit in Minas Gerais, where 13 vehicles are operating successfully

The autonomous operation of haul trucks is set to start at Carajás mine in Pará. The autonomous truck project arrives at the world's largest open-pit iron ore mine following a successful deployment at Brucutu mine in Minas Gerais. Combined with a staff development and training plan, the innovation aims to increase the safety of operations, in addition to generating environmental benefits and a competitive edge. Equipment testing is planned to begin in November with two trucks.

Innovation has already been implemented at Brucutu mine, in Minas Gerais state, which this year began operating exclusively with autonomous haul trucks, amounting to 13 vehicles. Carajás mine will operate with autonomous and conventional trucks. Completion of the testing phase is planned to June 2020, when the autonomous vehicles begin to operate. The number of vehicles will increase year by year and, depending on the test results, it may reach 37 in 2024.

Two autonomous trucks are expected to start the testing phase in an isolated area of Carajás mine by the end of November. Training of the operators began in October. In addition, three autonomous drills started operating in the mine last year.

In an autonomous operation, trucks are controlled by computer systems, GPS, radar, and artificial intelligence, and monitored by operators in control rooms located miles away from the operations, providing more safety for the activity. When risks are detected, the equipment shuts down until the path is cleared. Sensors of the safety system can detect larger objects, such as large rocks and other trucks, as well as people near the roads.

Compared to the conventional transport model, productivity of the autonomous operation system is higher. Based on the technology market data, Vale expects to increase the useful life of equipment by 15%. Fuel consumption and maintenance costs are also estimated to be reduced by 10%, and the average speed for trucks will increase.

Autonomous operation also brings important environmental benefits. The reduced consumption of fuel by the machines results in lower volume of CO2 and particulate matter emissions and less waste, such as parts, tires and lubricants.

According to Antonio Padovezi, North Corridor Director, in addition to the safety factor, the use of autonomous equipment in Carajás will ensure greater sustainability for Brazilian mining. "It is another breakthrough with great economic, environmental, and social gains. It reduces employees exposure to risks, increases competitiveness, reduces emission of polluting gases and promotes professional training and development, following a natural trend experienced today in the market worldwide," comments Padovezi.

Training

Implementation of the autonomous operation is combined with a staff development plan, which includes creation of a training center in the city of Parauapebas by the supplying company. The plan is along the lines of Brucutu, where all conventional truck operators have been reassigned to other activities. Now, part of the team in Minas Gerais is managing and controlling the autonomous equipment while another part took on new automation-related tasks. Some employees have been reallocated to other areas.

Industry 4.0

Vale is deploying a digital transformation program for the Industry 4.0 era. It has allowed the company to increase productivity, operational efficiency, and safety, in addition to improving its financial performance and driving innovation. Technological innovations developed by the company include the Internet of Things, Artificial Intelligence, mobile applications, robotization, and autonomous equipment (such as trucks and drills). The program will also support the strategic pillars presented by Vale this year - improve the company's operational approach to safety and operational excellence as well as bring a positive impact to society, becoming a development facilitator for the areas in which it operates while promoting a safer and more sustainable industry.

* Photo: Ana Paula Lemos used to work as an operator inside the drill's cabin and now she monitors the equipment from the control room –
Credit: Vale

[More information](#)



Media Relations Office

imprensa@vale.com

[Click here](#) to see our contacts

