IT mining
Системы Автоматизации Горных Предприятий

IT MINING UTILIZE RUGGON MT7000 AND VULCAN X IN WORLD'S BIGGEST OPEN PIT GOLD MINE

"After the end of life for the previous model of the on-board computers, we searched for a suitable replacement for quite some time and tried to develop our own solution, but in the end, it was more efficient and profitable to use RuggON devices."
- Denis Antonenko, Director of IT Mining

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Snapshot

With outdated hardware reducing the efficiency of mining operations and fleet management, IT Mining leveraged RuggON's MT7000 7" Mobile Data Terminal and VULCAN X 10.4" Vehicle Mount Computer as an in-vehicle solution to help reduce deployment times and installation costs for one of the world's largest gold mines. In addition to reducing system installation times by 35%, the solution has enabled the mine to more accurately monitor its assets in the field.

TAKE A GLANCE

Located in the mountains of Uzbekistan and opened in 1967, the Muruntau mine is among the largest open-pit gold mines in the world, covering an area of approximately 10.5 km2 and with a current mining depth of around 600 meters.

In addition to its drilling rigs and multiple excavators, the mining fleet at Muruntau includes a staggering number of mining trucks, and there are many automated systems in place for ore processing at the mine's plants. As such, displaying work tasks and the status of mining equipment in the quarry is critical for workers to maintain operations.

Central to their task management, the mine's fleet management system is required to render accurate 3D models that show the position of equipment in the pit. However, system maintenance had become unfeasible because much of their equipment was obsolete and impossible to update.

CHALLENGE

Despite the enormous size and capacity of the trucks and mining equipment, their cabin space is extremely limited. The large size of the gold mine's previous on-board computers made the installation process difficult and time-consuming, and this was further complicated by requiring separate cables to connect the display to the computer. As such, new in-vehicle displays would need to be rugged all-in-one systems that have a slim design and are easy to install.

The mine had trialed several replacement solutions, but poor CPU and GPS performance made them unsuitable for their needs. The most critical requirements included a reliable GPS/GLONASS/BEIDOU for asset positioning, RS-485 for bucket control and drill bit movement data collection, and CAN bus for connecting inclinometers for the tilt angle sensors.

WHY IT MINNING + RUGGON

As one of the first in Russia to implement and maintain automated control systems in open mining, IT Mining works with some of the largest mining enterprises in Russia and CIS countries. With extensive experience in high-precision navigation, industrial radio communications, and industrial on-board computers, they specialize in implementing the most efficient and cost-effective solution for mine automation in order to lower the cost of production while reducing non-productive costs and at the same time increasing productivity.

Given the scope of mine's fleet and infrastructure, updating their system needed to be both cost-effective and time-efficient. IT Mining chose to partner with RuggON for their proposed solution, as they needed compact, high-performance displays that could withstand the harshness of mining environments while providing a GPS/GLONASS module for improved positioning reliability.

SOLUTION

For the mine's excavators and drilling rigs, IT Mining recommended the MT7000 7" Mobile Data Terminal because of its sturdy design and intuitive interface for in-vehicle applications. For their dump trucks, the VULCAN X 10.4" Vehicle Mount Computer was selected.

Both units are designed for extreme durability in harsh working environments such as mines, with a wide operating temperature and multiple certifications for protection against vibration and shock. In addition to their rich I/O design, they support CAN bus 2.0B, SAE J1939, 5G, and Wi-Fi fast roaming. Smart power management with wide power input also makes the suitable for a wide range of industrial applications.

MT7000 Mobile Data Terminals and VULCAN X Vehicle Mount Computers were installed in all mining equipment, including heavy dump trucks, excavators, and drilling rigs. This enabled operators to display work tasks and retrieve information on the status of all mining equipment throughout the quarry.

The improved GPS/GLONASS modules were leveraged for asset positioning and fleet management, while RS-485 met the mine's requirements for bucket control and drill bit movement data collection, and the inclinometers for the tilt angle sensors were able to be connected via CAN bus.

BENEFITS

Adopting RuggON products in the solution enabled the mine's dispatch center to successfully reduce deployment times from 3 hours to only 1 hour. The compact design of the MT7000 and VULCAN X made installation simpler and allowed for more flexible placement of the units in their mining equipment.

Compared to their previous system, installation times were reduced by approximately 35% per unit, with setup times shortened from 12 hours to only 8 hours. Because fewer materials were required, the cost of installation was also reduced to around 10% of the cost of the on-board computer.

The improved processor performance also made it easier to expand the list of tasks that could be solved, while the GPS/GLONASS module improve positioning reliability, even in conditions with difficult terrain.

CONCLUSION

Drawing on their vast experience in mining operations, IT Mining adopted ReuggON's MT7000 Mobile Data Terminals and VULCAN X Vehicle Mount Computers as an efficient and cost-effective solution to effectively reduce production and non-productive costs while raising productivity. Ultimately, the solution has enabled operators to more easily and reliably display work tasks and retrieve information on mining equipment in the quarry.

IT Mining helped the mine overcome its problems by simplifying the installation process, providing more powerful processors, and improving their asset positioning and inventory control by upgrading their in-vehicle systems. Most notably, installation times were reduced by about 35% per computer, and the reduction in required installation materials also reduced installation costs. These benefits are attributable to the compact dimensions of RuggON's products and the performance of their GPS/GLONASS modules.

To learn more about how RuggON products can help you reduce the cost of in-vehicle system, contact your nearest sales representative or visit our website here: RUGGON