

Radar Sensors for Measurement and Collection

Case Study - Minas Gerais Mine, Brazil



- ✓ Uninterrupted operation in all weather, lighting and environmental conditions
- ✓ Zero maintenance or cleaning with a five-year service interval
- ✓ Reliable detection, high-resolution imaging, 360° scanning capability
- ✓ Proven to withstand extreme temperatures, vibrations, impact, dust, debris and water

The Challenge

Improving the Efficiency of Mining Operations

Minas Gerais Mine

With some of the largest mines in the world, machine operation and 3D-stockpile monitoring in Brazil's mining sector must be performed efficiently and effectively.

Lynx Process is a company focused on Technology for Optimization and Simulation for Industrial Processes, including mining. The aim of their project was to increase efficiency on sites and therefore boost productivity for their clients.

Lynx Process required an effective 3D-stockpile monitoring system and anti-collision detection for mining machinery, which would not be affected by the harsh conditions of the mine.

Before installing Navtech Radar sensors, the company had used radar technology which only had a 50° scanning ability. This meant they were required to

install multiple sensors to detect the range needed, which became costly and impractical. As their machines were operating 24/7, they needed a sensor which could be quickly adapted and integrated into their own systems.

For other measurement tasks, Lynx Process entertained the use of traditional laser and light technology. However, this was unsuitable due to unacceptable performance degradation of lasers in the dusty atmosphere.



The objective of Navtech Radar's sensors was to improve the efficiency of mining production and reduce disruption to the process. Collisions were minimised as the sensor's long-range detection identified threats before they occurred.



The sensors ability to work automatically, uninterruptedly, 365 days a year improve the excavating process. By being able to recalculate the volume that has been reclaimed, the excavator can be positioned appropriately to optimise the capacity for the next excavation.



The anti-collision system is used for reliable industrial automation of vehicles and machinery. With fewer disruptions and more efficient excavation, the sensors improve the profitability of the mining operation.

The Solution

Industrial Automation Sensing

A robust sensor that provides on-going measurement and anti-collision capabilities for harsh environments.

Lynx Process chose to install the Navtech Radar sensors as an alternative to their previous short-range equipment. The Navtech sensor was ideal as they could be installed quickly onto existing infrastructure with their own processing software. This meant minimal disruption and therefore minimal expenditure costs in the installation process.

The 360° scanning ability meant that a smaller amount of sensors were required to achieve the same coverage. This prompted a lower cost of ownership and again, reduced disruption during the installation process.

Unlike most other technologies, the Navtech sensors are unaffected by the environmental conditions of mines, such as dust, dirt and sand in the atmosphere. Performance is also not hindered by any extreme vibrations or heat, which is often a problem with laser technology.

The patented architecture enables all these benefits to be delivered at a commercial price point whilst still delivering leading edge performance. With configurable rotation rates of 1-4hz and range resolutions down to 17.5cm, the data delivered is suitable for a very wide range of applications.



360° Detection

Cost-effective

Unlike previously trialled radar technology, Navtech's sensors cover 360° so fewer sensors are required to do the same job.



Easily Integrated

Multiple sensors

Are easily integrated with existing technology like camera systems, and configured to perform with third-party software.



Extreme Weather

Reliable detection

The sensors are unaffected by extreme weather and light conditions and work flawlessly all year round.



About our Sensors

The compact design of the sensors allows easy integration with existing mining machinery and infrastructure.

The robust sensor automatically detects the presence of debris, workers or other machinery in the mines. This reduces the chance of collisions and accidents.

The sensors can be programmed to monitor and measure the profile of the stockpile prior to each pass of an excavation bucket and immediately after the material has been collected.

This means the volume that has been reclaimed can be recalculated, and the reclaimer's position can be adjusted

accordingly in order to optimise the capacity for the next excavation. Operation costs will henceforth be minimised, and productivity will increase.

Navtech has been delivering high performance sensors for industrial environments since 1999. The Navtech sensor technology is unique in its ability to provide high resolution 360° data from a compact and rugged unit, that requires minimal maintenance and very high reliability. Our intelligent, innovative radar technology provides reliable detection and monitoring for a wide range of applications, driving towards a future of full industrial automation and optimum productivity.

Benefits

- ✓ **All weather operation**
Uninterrupted operation in all weather, lighting and environmental conditions.
- ✓ **Fully automated operation**
Reliable detection, high-resolution imaging, 360° scanning capability.
- ✓ **Robust Design**
Proven to withstand extreme temperatures, vibrations, impact, dust, debris and water.
- ✓ **Low maintenance**
Zero maintenance or cleaning with a five-year service interval.
- ✓ **Easy Installation**
Sensor mounts directly to a mounting plate for simple installation and servicing.

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