View on Web

AR Tech - The New Disruptor in Mine Sampling

20th Oct,2022

Augmented Reality (AR) is quickly emerging as one of the must-have technologies for transforming the mining landscape. With the chorus turning louder on ESG commitments, the impact of mining on climate change and biodiversity is going under scrutiny. AR technology comes in handy to take the ESG challenge head-on and also to navigate the safety concerns tagged with mining. But beyond safety and environment protection, have we thought of AR's role in the mine value chain? What if I broach the idea of AR tech in **mine sampling**? The idea might sound quixotic to most readers. And it's unsurprising because this niche technology hasn't gained traction in the sampling process.



Why it's So Crucial to Organize Mine Sampling?

Many of the existing mines worldwide are maturing, resulting in the extraction of low-grade ores. McKinsey estimates that worldwide mining operations are 28 per cent less productive today than a decade back. Low-grade deposits are raising the cost of processing and hurting

the profitability of the mining industry. The first step to unlocking more value from mineral deposits is an accurate and scientific sampling of ore. Sampling is defined as the process in which a portion (sample of ore) is selected in such a way, that its composition will represent the average composition of the entire bulk of ore. In all phases of mineral exploration and mine development, proper sampling, sample preparation, and sample analysis will help determine where and how to mine mineral deposits. It is routine for the mining industry to collect samples to assist with decision-making, regardless of whether it is for exploration, resource estimation, grade control, or plant design and balance. A poorly designed sampling protocol can increase project risk by increasing variability. Moreover, when sampling is primarily manual, there is a chance of bias and inaccuracies. Technology can turn around the scene, making the mineral sampling process more scientific and efficient.



AR Tech Turns A Game-Changer for Mine Sampling in Odisha

Odisha is the first state where AR-based intervention in mineral sampling is implemented anywhere in the world. It's a testimony to how technology when used right can spell transformative outcomes on the ground. The tech intervention, which works in the offline mode too, has redefined the sampling process, ushering in transparency, fixing accountability on stakeholders and rooting out manipulation.

The AR-based sampling mobile application is implemented in the Integrated Mines and Minerals Management (i3MS) system to make the sampling collection process easier and more automatic by introducing randomization in the mining stack. The traditional sampling

process had some lacunae and the state government found it challenging to oversee the entire process.

The state turned to technology to revamp the ore sampling process. Two new modules- RADO (Random Allocation of Designated Officer) and RGSL (Random Generation of Sampling Locations) were added to i3MS. In the traditional or manual sampling process, the mine lessees could manipulate. But AR-based sampling has overcome it.

The RADO feature ensures that no junior mining officer gets assigned to the same mines as in the preceding month. The RGSL app is used by the officer to view the assigned sampling requests. The system randomizes the generation of collection points using AR technology. The system auto-generates five random points, one in the centre and the rest in each quadrant. The mining officer navigates to the sampling points and marks them for sample collection.

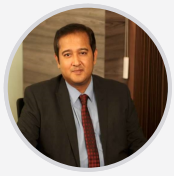
Benefits of AR-Based Sampling

AR-based mineral sampling has revolutionized the process, bringing in visible gains for all stakeholders.

- Government has more visibility of ore sampling with the AR-based Sampling Process
- Prevents manipulation in the determination of the grade of ore, thus checking royalty loss
- Boosts growth in royalty payments
- Royalty payment to the government has increased substantially after the implementation of the AR-based Sampling Process
- Reduces Turn-Around Time (TAT) of the mineral sampling process
- Licensee gets the right grade of mineral as requested
- Makes the entire sampling process less cumbersome and time-consuming.
- Lessee pays a royalty for the right grade of mineral.

The use of Augmented Reality (AR) could revolutionize the way miners sample their ore. AR-based sampling will speed up production, reduce downtime, and bring transparency to mining.

This blog was originally published in Priyadarshi Pany's **Medium account**, also available on his **LinkedIn account**.



AUTHOR:

Priyadarshi Pany

Managing Director & CEO

© Copyright CSM Technologies, Level-6, E/56, Infocity, Chandrasekharpur, Bhubaneswar, Odisha - 751024