

The Evolution of Inventory Management

From wheel and tape, to drone solutions, Aggregate Mining companies have continued to develop innovative solutions for measuring inventory. Here's a look back at the evolution of stockpile measurement solutions.

Manual Measurement: Wheel and Tape

How it works:

This method is still used today in some organizations and requires an employee to walk around the pile with a wheel and tape measure, collecting the circumference of the base of the pile. The height of the pile is guesstimated or a rangefinder can be used to find the height. Then the volume is calculated. This process is not very accurate, and in addition it can be dangerous to walk on and around piles.



GPS Base and Rover

How it works:

A surveyor or employee walks around and on top of the piles recording GPS points. Those points are imported into software, and the volumes are calculated. While this process is more accurate than the wheel and tape, it is limited because of the small number of points that are taken to create the volumes. It is also more dangerous than other methods as it requires walking on the stockpiles.



Laser & Lidar Scanners

How it works:

Firmatek started out with the first kind of laser scanning and used reflector-less lasers to point and shoot piles, collecting one data point at a time. By setting up in multiple positions around the stockpiles and sites, we would collect thousands of points and piece it together to create a full data set. This data set would be put into software to calculate the volumes of the piles.

Introducing LiDAR to the industry to measure stockpiles brought even more accuracy, and the ability to truly visualize the site in 3D for the first time. LiDAR gave us the ability to show our clients the data in 3D and walk through their piles and questions with them. This was a huge advancement in accuracy, understanding, safety, and management of inventory.





Manned Aircraft Aerial Survey

How it works:

Another popular method of inventory measurement that Firmatek has never performed: the manned aircraft aerial survey. In this method, a plane flies over the site or sites to be measured taking pictures. The images are processed in photogrammetry software and tools are used to find the volumes. This technology and process was an improvement over the reflector-less lasers and other previous technology as it created a denser point cloud. However, it is not as accurate as LiDAR, and can be very expensive depending on the size and number of the areas being mapped.



Industry Drone Solutions

How it works:

Drones fly autonomously, capturing dense point clouds, and when used with Ground Control or RTK technology, they give accurate measurements. The ability to visualize your operation is improved by being able to see and compare ortho images and by being able to view your point cloud or data with RGB values. Drones are a cost effective way to get frequent and accurate inventory measurements, thus helping you manage your inventory better.

Click [here](#) to learn more about the Evolution of Inventory Measurement Tools.