Precise Inventory Measurement
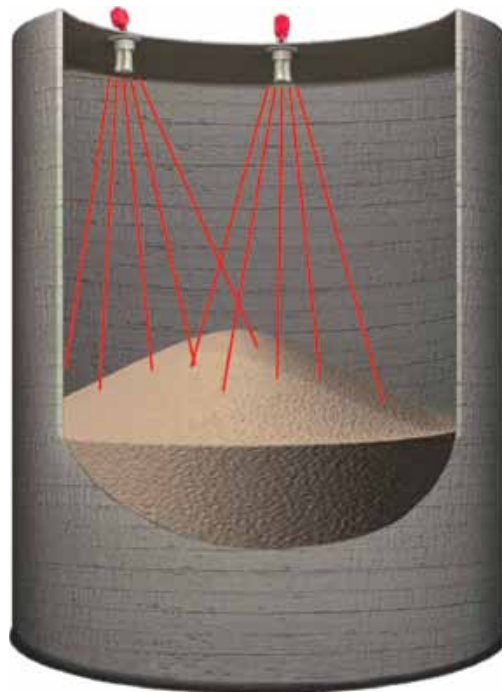
of

BIG BINS

BINMASTER®

MVL Multi-Scanner System

Grain Storage

Ethanol Processing

Cement Manufacturing

Power Plants

Storage Domes

# Big Bin Accuracy from BinMaster

The BinMaster MVL is a multiple-scanner system that uses non-contact, dust-penetrating technology that was specifically designed to provide improved volume accuracy for large bins. Until the introduction of the BinMaster MVL system, operations with very wide, large bins, tanks and silos were relying primarily on traditional process instruments, and even manual measurements. However, as the topography of material can vary greatly in large silos or silos with multiple-fill or discharge sites, the level measurement and resulting volume estimate for the silo could be highly inaccurate based upon where that one measurement was taken in the silo.

The BinMaster MVL was designed for those operations that demand more accuracy. Properly applied, the MVL system can provide accuracy volume of .5% to 3%. By using multiple scanners to measure and map the complete product surface, the BinMaster MVL can significantly increase inventory accuracy for the very large, wide silos increasingly used in industry today. The BinMaster MVL helps operations improve financial management, better manage storage capacity, and optimize their purchasing cycles and delivery logistics.

Multiple Scanners for More Measurement Points

Although a single 3DLevelScanner provides far superior measurement data to a single-point device, it is limited to the material that the scanner can detect within a 70° beam angle. Therefore, if the bin is wider than 45', the accuracy of a single 3DLevelScanner will diminish because it can't "see" the entire material surface.

The BinMaster MVL system synchronizes the data from one or more additional scanners to cover more material surface, which makes the volume estimate more accurate. The controller is programmed to combine the data from the scanners and map the measurement points that are depicted in a visual representation of the material surface.
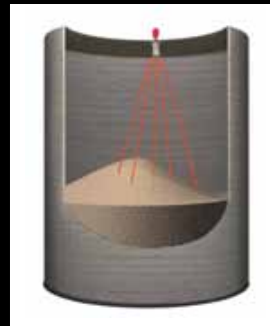
A single scanner measures in a 70° beam angle that does not cover the entire surface area.
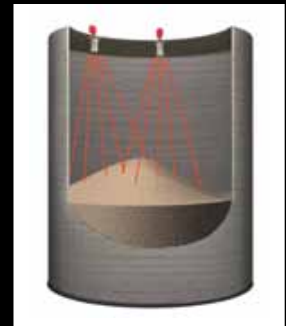
Adding an additional scanner in a wide bin provides more coverage of the material surface, ensuring greater accuracy!

MVL Makes the Workplace Safer

Big bins are not only wide, but also can be extremely tall with sloping roofs and a single ladder from the sidewall to the peak. A storage dome roof is difficult to access and dangerous to navigate. Climbing bins or domes to check levels is undesirable and a serious safety risk, but can be virtually eliminated with an MVL system. For volatile environments, the BinMaster MVL system is hazardous location approved and FM Listed for Classes I & II, Division 1, Groups C, D, E, F & G.

The BinMaster MVL eliminates the need to climb ladders to check levels.

Most big bins have a single ladder from the sidewall to the peak for bin access.

Improve Financial & Inventory Management

Improving inventory accuracy can optimize logistics of deliveries and shipments.

The financial implications of materials management are significant in today's economy. Inventory is money and the pressure is on operations to increase inventory turns, purchase efficiently and replenish optimally. A few percentage points of inventory can represent tens of thousands of dollars, which in today's economy can mean the difference between profit and loss. The BinMaster MVL system allows financial, plant and purchasing management to base their decisions on very accurate inventory data. The reports generated from the MVL multi-scanner system can be used to better enhance profitability and understand inventory shrink in an operation.

Unique Visualization Feature

The controller in the MVL system combines the data from multiple scanners and sends it to the 3D Vision software that creates a single visual representation of the contents of the bin showing the topography of the material. This enables users to note cone up and cone down configurations, or identify where there may be sidewall buildup or bridging that can lead to maintenance problems. For multiple-fill or multiple-discharge vessels, the visualization can help define the next fill and empty points.

The visualization feature depicts the variable topography of bin contents.

MVL System Applications

This MVL system can measure virtually any bulk solid material, and is designed to provide accurate volume measurements critical for inventory control in many types of industrial applications such as:

- Grain silos including 105s or million bushel bins
- Large covered grain storage facilities
- Ethanol facilities with large bins of corn or DDGS
- Bins or bunkers of coal, flyash or limestone at power plants
- Large clinker, cement or limestone silos at cement manufacturing plants
- Wide soybean silos used in biodiesel production
- Animal feed stored in large silos, bunkers or warehouses
- Bins storing fertilizer or sand
- Mining operations with silos or stockpiles of limestone or ores
- Large domes of bulk raw sugar
- Ports with large storage silos and domes
- Covered domes or bins storing salt

BinMaster will provide an assessment of your bin and the application and determine if an MVL system is appropriate to meet your inventory accuracy needs.

Better Data for Better Decision Making

The BinMaster MVL system integrates the data from multiple 3DLevelScanners to accurately estimate the volume of material in the bin. As it uses data from multiple measurement points, it is much more accurate than any single point measurement device. The MVL system comes equipped with 3D Vision software that supplies 24/7 real-time access to bin data including:

- Vessel name, ID and material
- Volume as a percentage, in bushels, or cubic feet or meters
- Maximum, minimum and average levels or distances to product
- Weight in US tons, pounds or metric tons
- Real-time 3D images and historic 3D image movies
- Historical logs of bin measurements

For operations that have multiple 3DLevelScanner systems – whether they are MVL, MV, M or S-type scanners – BinMaster also offers 3D Multi-Vision software that allows the user to view multiple bins at an operation by opening a single window.

Components of an MVL System

The core components of an MVL multi-scanner system include two or four model MVL 3DLevelScanners, a controller that aggregates the data from the two scanners, and the 3D Vision software that is loaded on one or more PCs.

In an MVL-2 installation, two scanners are mounted on the top of the vessel in locations optimized to most effectively cover the entire surface area of the material being measured. Generally, one scanner is mounted near the center and one eight to ten feet from the outer perimeter.

The 3DLevelScanners are connected via a daisy chain using an RS-485 protocol. The scanners take multiple measurements of the material surface using dust-penetrating, acoustic-based technology. A controller combines the data from the two scanners and generates a single merged visual representation of the topography of the material and displays the image on a PC loaded with the 3D Vision software. It can also send a synchronized 4–20 mA output to a PLC or DCS.

BINMASTER®

MVL

Multi-Scanner System

PC(s) with 3D Vision Software

LAN/WAN/VPN

4-20 mA

RS-485 Network

RS-485

Ethernet

PLC

Represents overall volume of the contents of the entire silo

Multi-Scanner Controller