

# **BINMASTER**

## **3D LEVEL SCANNER**



### *Improve Volume Accuracy with Multiple-Point Measurement and 3D Mapping*

From the “farm to the table” or in the case of ethanol “from the farm to the tank” – grain, animal feed and the food processing industries are seeking ways to improve inventory accuracy in their bins and silos. These industries have many things in common, such as dealing with problematic materials like granulars or powders, which tend to be very dusty and will bridge or build up on the sidewall. The BinMaster 3DLevelScanner detects uneven surfaces and provides a more accurate estimation of bin volume.



**Multiple-point measurement for improved accuracy:** The topography of material in bins can be irregular due to multiple filling or discharge sites, bridging, sidewall buildup, or “cone up” or “cone down” during filling and emptying cycles.

By measuring and mapping the material surface at multiple points and then using an algorithm to determine the average height from all of those points, the 3DLevelScanner calculates a volume estimate that is more accurate than single-point devices.

**Non-contact:** The 3DLevelScanner uses an acoustics-based technology, ensuring no equipment comes into contact with material, as does a radar-on-a-rope device. This eliminates the risk of equipment breaking off or becoming trapped in material and potentially causing damage to sweepers or conveyors in the bottom of the silo. Eliminating the risk of material contamination is essential for sanitary conditions in many food processing plants.

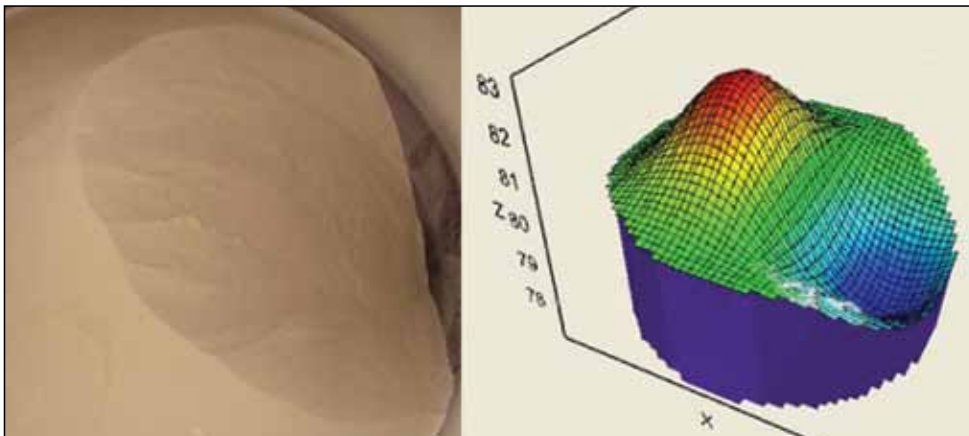
**Penetrates dust:** Grains, feed addi-

tives, and flour are examples of materials that generate excessive amounts of dust, which make it difficult or impossible for technologies such as radar or ultrasonic to provide accurate readings. The 3DLevelScanner uses a low frequency signal that penetrates dust and provides a highly accurate volume measurement in even extreme conditions.

**Detects bridging and sidewall buildup:** By taking multiple measurements within the bin and then mapping the topography in the bin, the computerized profile created by the 3DLevelScanner can show bridging as well as material build up on the sides of the silo. By detecting irregularities in the material surface, excessive build-up can be accounted for in volume calculations. With single point devices, a measurement may show the bin is almost empty, even when a significant amount of material remains in the bin.

**Excels at measuring powders:** Many materials used in food and animal feed production are powders that are prone to

*continued on page 2*



The image on the left shows the irregular material surface during the empty cycle; the image on the right is the visual representation created by the software.

#### **Inside this issue:**

Improve Volume Accuracy	1
Why 3DLevelScanner from BinMaster	2
Actual Applications at BinMaster Customers	3

continued from page 1

creating dust, bridging or building up on the sidewalls of the silo. The surface of powdery materials tends to be irregular, which makes the 3DLevelScanner and its multiple-point measurement and mapping capability ideal for the challenges associated with powders.

**Self cleaning:** The 3DLevelScanner automatically cleans itself, which reduces the frequency of preventive maintenance. Suspended dust tends to adhere to the surface of devices, requiring cleaning or maintenance at frequent intervals in order for the instrument to continue working. The 3DLevelScanner's acoustical pulses are proven to be very effective in preventing dust from adhering to the transducers.

**Alerts to the need for preventive maintenance:** By detecting sidewall

build-up early, silos can be cleaned and serviced before material hardens and becomes even tougher to clean out of the silo. Preventive maintenance can be performed early, when it is an easier and less expensive undertaking.

**Prevent silo collapse:** There have been instances around the world where excessive build up on one side of the silo has caused the silo to collapse. By detecting the build up of material early, excessive damage to the silo and surrounding structures can be avoided. Installing a 3DLevelScanner can lead to a reduction of insurance claims and costly, time-consuming rebuilding of structures.

*The outside of the unit is coated with dust. Inside the transducers are clean and fully operational.*



## Why 3DLevelScanner from BinMaster



**More than 50 Years Experience** – Since 1953, BinMaster and its parent company Garner Industries have built a reputation for treating customers right. We are financially strong and will be here to service your needs now and well into the future.

**Thousands of Satisfied Customers** – For more than half a century, BinMaster has been supplying companies of all types and sizes with a wide variety of bin level solutions. Our skilled sales staff fits you with what you need to address your challenges and meet your budget.

**75,000 Square Foot Operation** – Not just a sales office! BinMaster operates an ISO certified, state-of-the-art manufacturing plant in Lincoln, Nebraska, USA and is 100-employees strong. BinMaster manufactures level controls and has in-house CNC machining for custom-built components.

**Engineering and Technical Expertise** – BinMaster employs five full-time engineers and has a highly experienced in-house technical support staff, plus a nationwide support network of fully-trained distributors. We address every inquiry on the same business day!

# Actual Applications at BinMaster Customers

*BinMaster has installed the 3DLevelScanner in many diverse applications such as cement, aggregates, mining, power plants, plastics manufacturers and chemical processing facilities. Here are just a few examples of how BinMaster helped customer solve their challenges in the grain, feed, food processing and biofuels industries.*

**Description:** Small corn waste storage tank for food processing operation.  
**Material:** Broken corn, fines and dust  
**Bin Details:** 28' tall x 18' diameter corrugated steel silo with large hopper bottom  
**Models:** S and M  
**Challenge:** Provide accurate level



volume measurement in an extremely dusty environment and account for large sidewall buildup.

**Description:** Tall, narrow soybean processing silo.  
**Material:** Soybeans  
**Bin Details:** 55' tall x 12' diameter steel silo with cone bottom  
**Model:** S  
**Challenge:** Provide level measure-



ment in extremely dusty environment where all other level measurement technologies have failed.

**Description:** Food processing operation with material prone to dust and sidewall buildup.  
**Material:** Rice  
**Bin Details:** 100' tall x 27' diameter carbon steel silo with cone bottom  
**Model:** MV  
**Challenge:** Provide highly accurate



volume measurements and stability as bin was emptied almost completely before refilling. Desired more precise headroom than a single-point device.

**Description:** Tall, wide concrete soy meal processing silo for milling operation.  
**Material:** Soybean meal  
**Bin Details:** 108' tall x 60' diameter concrete silo with flat bottom  
**Model:** MV  
**Challenge:** Provide accurate volume



measurement in a large diameter silo with uneven fill characteristics and high levels of dust.

**Description:** Tall, wide concrete corn storage silo for ethanol production.  
**Material:** Corn  
**Bin Details:** 150' tall x 75' diameter concrete silo with flat bottom  
**Model:** MV  
**Challenge:** Increase volume measure-



ment accuracy versus existing single point technologies. Eliminate breaking sensing cable problems associated with guided wave radar system.

**Description:** Mid-sized waste holding silo for post animal processing operation.  
**Material:** Waste animal tissue  
**Bin Details:** 38' tall x 19' diameter steel silo with permaglass coating, flat bottom  
**Model:** MV  
**Challenge:** Increase volume mea-



surement accuracy versus hand measurements in silo with very uneven fill characteristics and buildup/bridging.

**Description:** Manufacturer of livestock feed with very wide bin, wider than it is tall.  
**Material:** Shell corn  
**Bin Details:** 60' tall x 105' diameter galvanized steel bin with cone top and center fill  
**Model:** MV  
**Challenge:** The customer had no level



controls and was looking to manage inventory. Wanted more accuracy than a single point device as the bin has multiple pull-out locations.



Established in 1953, Garner Industries is home to the BinMaster® level control business. Additionally, our state-of-the-art ISO 9001:2000 certified facility in Lincoln, Nebraska USA offers jobshop and precision tooling services for a wide variety of industries including automotive, refining, electronics, aerospace, and telecommunications ... to name but a few. Visit [www.garnerindustries.com](http://www.garnerindustries.com) to find out about our full suite of services.



© 2010 BinMaster. Do not reproduce without permission.

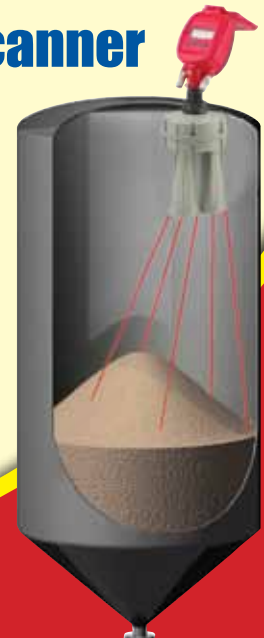
**"From simple point level controls to advanced computer-based inventory management, I call BinMaster."**



## New 3DLevelScanner

PLUS!

- SmartBob2
- Rotaries
- Diaphragm Switches
- Vibrating Rods
- Capacitance Probes
- Tilt Switches
- Ultrasonics
- Radar
- Dust & Flow Detection
- Aeration



**BINMASTER LEVEL CONTROLS**

800-278-4241 or [info@binmaster.com](mailto:info@binmaster.com)

©2010 BinMaster, 7201 N 98th St., Lincoln, Nebraska 68507 USA