

## Case Study

# STORAGE FOR COCOA MEASURED

**APPLICATION:**

Cocoa beans and cocoa powder are stored in cocoa silos and warehouses. Sometimes beans are stored in their original sacks before they are processed. Eventually, beans are stored in huge silos, many of which hold more than 1,000 tons. For one BinMaster customer, cocoa powder storage and cocoa bean storage must be isolated from production to ensure good air circulation, cool temperatures, and regulated humidity. Beans are even sorted according to type.

**CHALLENGE 1:  
STORING PODS**

Cocoa bean storage silos tend to be large. Beans are prone to generating dust, making it difficult for sensors to measure the beans reliably and accurately. Cocoa beans tend to pile unevenly inside the silo, making accurate volume measurement difficult.

**CHALLENGE 2:  
SHELL STORAGE**

Shell byproduct is stored in silos before being shipped for use in other products, such as agricultural mulch or fertilizer. Shells have a coarse texture and, when combined with humidity and temperature, can build up or create irregular topography in the silo. Build-up can potentially damage the silo and diminish the quality of the product. Internal temperature rises over time causing beans to mold and clump. Detecting buildup as it occurs and knowing material volume is crucial to the end user.

**CHALLENGE 3:  
NIB STORAGE**

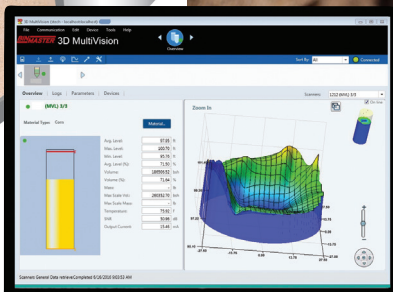
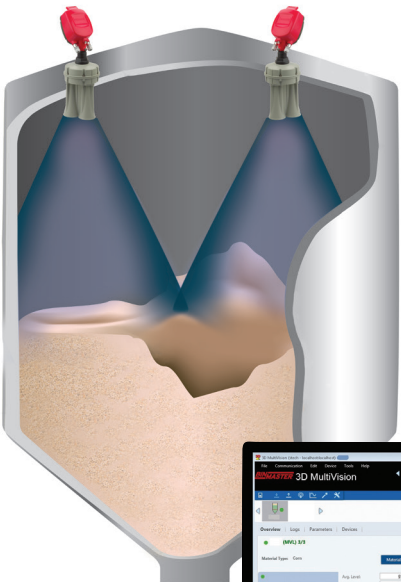
Cocoa nibs are stored in silos prior to entering the cocoa production process. As the nibs feed the entire cocoa production process, end users need to accurately monitor inventory levels to ensure a continuous supply and avoid unexpected interruptions in the production process and avoid losses in time and reduced profitability.




**CHALLENGE 4:  
COCOA POWDER STORAGE**

Cocoa powder is stored in silos prior to either being bagged or shipped in bulk. As cocoa powder is conveyed into a silo, it can be extremely dusty and pile unevenly. Powder is prone to bridging and buildup in cocoa storage units and cocoa powder storage containers.

**SOLUTION:**

Accurate inventory measurement is necessary to provide an adequate supply of beans for production. BinMaster's 3D Level Scanner multiple-point mapping technology overcomes these problems, enabling accurate assessment of the volume of the beans remaining in the silo at any time.



Industry	Bulk Material	Sensors	Software	Applications
 <p>Agriculture Farming Livestock</p>	Grain Flour Beans Fertilizer Seed Liquids  Bins, silos, tanks, piles, domes	Rotary level indicator Capacitance probe Vibrating rods Diaphragm switch Tilt switch Radar SmartBob 3D sensors Ultrasonic Flow detector	BinCloud BinView AgriView Binventory FeedView 3D Multivision	Prevent overflows Process control Inventory management Remote monitoring Monitor piles Flow detection Bin aeration Dust detection Aeration Ag Chemical Storage
 <p>Bioenergy</p>	Corn DDG Biomass Wood pellets Wood fiber Forest residue  Bins, silos, tanks, piles, domes	Rotary level indicator Capacitance probe Vibrating rods Diaphragm switch Tilt switch Radar SmartBob 3D level scanner Ultrasonic Flow detector	BinCloud BinView Binventory 3D Multivision ResinView	Prevent overflows and outages Process control Inventory management Remote monitoring Flow detection Slurry tank detection Measure DDGS
 <p>Cement</p>	Sand Gravel Clinker Rock Powder  Bins, clinker silos, tanks, piles, domes, chutes, crushers	Rotary level indicator Capacitance probe Vibrating rods Diaphragm switch Tilt switch Radar SmartBob 3D level scanner Ultrasonic sensor Flow detector Plugged chute detector Airbrator Diffuser air pad	BinCloud BinView Binventory 3D Multivision CementView	Prevent overflows and outages Process control Inventory management Remote monitoring Monitor piles and bunkers Inventory domes Plugged chutes Measure crusher levels ESPs or clinker silos Prevent conveyor overloads Silo aeration
 <p>Food processing</p>	Brewing Foodstuffs Solids Slurries So much more...  Silos, mixers, batching tanks, conveyors, pipelines	Rotary level indicator Capacitance probe Vibrating rods Diaphragm switch Tilt switch Radar SmartBob 3D level scanner Ultrasonic sensor Flow detector Airbrator Diffuser air pad	BinCloud BinView AgriView Binventory 3D Multivision	Prevent overflows Inventory management Remote monitoring and VMI Process control Sanitary level measurement Detect levels in mix or slurry tank Detect levels on conveyors Flow detection Silo aeration
 <p>Mining</p>	Lump coal Ores Aggregates Fine alumina powder  Silos, crushers, conveyors, domes	Rotary level indicator Capacitance probe Vibrating rods Diaphragm switch Tilt switch Radar SmartBob 3D level scanner Ultrasonic sensor Flow detector Airbrator Diffuser air pad	BinCloud BinView Binventory 3D Multivision CementView	Inventory management Monitor piles Prevent overfills or outages Detecting plugged chutes Measuring inventory in domes Level measure in crushers or bins Prevent overloading Process tanks Remote monitoring Silo aeration Dust detection
 <p>Plastics</p>	Resins Flakes Powders Granules Regrind  Silos, bins, containers, hoppers, tanks	Rotary level indicator Capacitance probe Vibrating rods Diaphragm switch Tilt switch Radar SmartBob 3D level scanner Ultrasonic sensor Flow detector Airbrator Diffuser air pad	BinCloud BinView ResinView Binventory 3D Multivision	Prevent silo overflow Eliminate outages Inventory management Remote monitoring Vendor managed inventory Flow detection Bin Aeration Dust Detection