



# 5 TRENDS FOR SILO

## Inventory Management Systems

Silo inventory systems require many considerations. Dust, data, sensors, wire (or not), cloud accessibility all mix into the decision on your automative inventory system for silos. BinMaster has been configuring systems with the latest state-of-the-art sensors and software for decades. Rely on the experts and read on so see five of the considerations we use to recommend a silo system.





## **Five Trends Driving Inventory Monitoring in Silos**

Fast-paced work environments are driving the need for accurate, real-time data. Sensor manufacturers and software developers have been rigorously working to create new and innovative solutions.

Is your operation seeking ways to more efficiently monitor inventory? Check out these popular trends.

### **Sensors that work in dust**

It was not that many years ago that the roofs of silos were a graveyard of level sensors. Plant managers were anxious to be more efficient and proactive when managing inventory. Many tried new products, but to no avail. The most common complaints were inaccurate readings, the sensors did not work reliably over time, and they required far too much maintenance. Operations were frustrated by trust issues.

Their frustrations did not fall on deaf ears. Sensor manufacturers looked to modern technologies and product improvements that could overcome challenges typical in silos storing powders and solids. The sensor had to work continuously in a dusty environment and in sticky materials. While traditional weight-and-cable-based sensors would work reliably, plants were also demanding a non-contact sensor that would measure continuously.

Two technologies emerged over the last decade that could finally meet these demands. One is an acoustics-based sensor that uses sound waves to measure multiple points on the material surface in the silo. The other completely revolutionized non-contact radar, using the 80 GHz frequency band to overcome the shortcomings of its predecessors.

### **Doing away with expensive wiring**

Running long spans of wire outdoors is often unfeasible and impractical. The cost of installing hundreds if not thousands of feet of wire and the poles to support it cannot be easily justified. In many cases, wiring has prevented an operation from becoming “a connected plant.” This causes personnel to be disconnected from their inventory.

Wireless devices were the missing link between sensors and the software that could provide workers with the data to do their jobs better. The advent and proliferation of wireless technology is changing the landscape at industrial plants.

Wireless bridges and gateways have become dependable in getting data from point A to point B. They are now more robust and durable for outdoor environments, making them suitable for use in harsh weather conditions. At the same time, the price of these devices has come down significantly making a connected plant affordable. They also reduce installation costs to just a fraction of the cost of hard wiring.

### **Accessing inventory on a phone**

If there is one thing that almost every employee at any plant has in common, it's a cell phone. Now 86 percent of adults in Canada are reported to have a cell phone. The cell phone is the device relied on for almost everything personal and professional. On top of that, 91 percent of Canadians are reported to use the internet. Those who do, expect it to make their life easier.

Software applications are user-friendly and are optimized for viewing on mobile devices. Any phone that has internet access can become a powerful business management tool. Personnel can now access their silo inventory data from their phone whether they are at the plant or offsite.

Software as a Service (SaaS) subscriptions now proliferate most industrial businesses. They are used for everything from Enterprise Resource Planning (ERP) to human resource management, to a company's website, and many more functions. At industrial plants, SaaS is used to manage inventory and optimize the purchasing function.

### **Displaying data locally**

Industries such as mining, cement, and agriculture have plants that cover acres of terrain and multiple locations that can be miles from one another. Even in more industrialized environments such as food processing, plastics, and chemical plants, silos are often spread out across the plant or clustered in remote groups. Plant personnel need to know how much material is in each silo, which silos have remaining capacity, and which to pull from next.

Accessing silo levels in real-time is a real time saver. Eliminating climbing silos to check levels helps to make CCOHS compliance easier. Falls are among the most common hazards in the workplace and can be avoided using a small and simple device.

Digital panel meters have come a long way in design features and are very affordable. LED technology makes them easy to read even in bright sunlight and dust. Plants install digital panel meters to make level data available for every silo. They are used at loadouts by drivers and by personnel managing scheduling and production alike.

### **Simplifying sensor replacement**

A common theme among manufactures is a shortage of qualified staff to get maintenance work done. With unemployment in Canada hovering around 5.5 percent, it is hard to recruit full-time staff. This has resulted in outsourcing work to third-party vendors and licensed electricians to keep operations running smoothly.

Industrial plants are tough on level sensors. Many are characterized by dusty, dirty, or harsh environments. This dictates that equipment is maintained on a regular basis and occasionally replaced altogether. But when you couple a lack of staff and a rigorous preventive maintenance schedule, you need a solution to make the task go quickly with less qualified staff.

Adding a Quick Disconnect—or QD for short—has become a real time saver. These inexpensive accessories can take the tedious task of hard wiring sensors and turn it into a literal plug-in operation. No licensed electrician needed! Staff spend less time installing, replacing, or maintaining a sensor. QD connectors can be purchased separately for retrofit, or some manufacturers will ship new sensors with the QD option already installed.

Have an inventory problem you need solved? Be sure to reach out to a trusted partner. You are the future of inventory monitoring!

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