

INTERNET-OF-THINGS

Reshaping agriculture operations

Using a phone to shut your garage, turn on lights, adjust a thermostat or even connect a car radio to play Spotify, you're engaged in Internet of Things (IoT). Businesses are quickly getting on board with IoT to save time, share data and enhance decisions. BinMaster creates systems based on IoT. BinMaster sensors gather data on bulk inventory, send data to a cloud-based application called BinCloud which can be accessed by multiple people for production, purchasing and planning purposes.



CLLOUD-BASED INVENTORY TRANSFORMS INDUSTRIES

By simply logging into a website or using an App, real-time data in front of staff who need it in order for them to make timely decisions regarding bin inventory management which is available anywhere, anytime. Today, cloud-based programs are compatible with a wide range of sensors and measurement technologies. Their versatility lends them to be used with bins, as well as tanks or silos of different shapes and sizes, storing all types of grain, ingredients or feed.

Combining cloud-based apps and advanced level sensor technology makes inventory and supply chain management easier. Information is portable and available anywhere there is internet access from a phone, tablet, or PC. Total transparency, fewer discrepancies and more information leads to better decision making by millers.

For example:

- > Better control - centralized digital control, minimal human intervention, faster and timelier outputs
- > Cost containment - less overtime, automation of daily tasks, fewer inefficiencies, no emergency or late delivery charges
- > Historical reporting
- > Improved monitoring - real-time reports of on-hand supply, forecast when feed will run out, data is continuously updated effortlessly
- > Optimize production processes - streamline communication between people and devices and get everyone on the same page
- > Process improvements - reduce material outages, production stoppages due to shortages, fewer batch processing errors
- > Security – data is stored securely and safely Simplicity - no servers, no IT department, programming updates done by host provider
- > Time savings
- > Vendor managed inventory - ingredient suppliers can be assigned login credentials and viewing rights, so they can monitor inventory in tandem with the mill

CLOUD PROGRAMS FOR FEED, MILLING

BinMaster's BinCloud® platform is an integrated cloud foundation for data monitoring of inventory contained in bins, tanks, and silos. It enables on-site and remote workers to work via the cloud from wherever they are. There are specialised SaaS offerings suited for grain storage operations, flour and feed mills.

BinView® is used in agriculture and food processing to monitor all types of solids, powders and liquids. It is used by grain storage facilities, feedmills, petfood processors, food and beverage plants. It can be used with all types of level sensor technologies including non-contact radar, 3D Level Scanner and laser level transmitters.

FeedView® is customised for livestock farmers. This comprehensive feed management solution combines wireless, battery-powered laser level sensors with a simple-to-use software. It automatically measures bin levels, projects feed needs using historical consumption rates, records the use of medicated feeds and lets farms place orders with the feedmill. Automated alerts ensure farms know when to schedule deliveries, preventing feed shortages and eliminating late delivery charges. Allowing the feedmill access to FeedView® allows the mill and the farms to better coordinate their production and delivery.

A THREE-STEP SYSTEM

Step 1: Type, Size

The type, size or number of bins If there is material in a bin, tank, or hopper there is a sensor to measure it. Begin designing your system by creating a list of the vessels, their dimensions, the type of material stored inside and any existing equipment installed or used on the bin like a temperature cable, ladder or sweep. This ensures the sensor can be matched to its job. Nuances, such as access to, or structures in, the vessel may also be contributing factors to sensor specification.

Also note if the bins are grouped in any way by location. Bins grouped together physically can be addressed with wiring configurations, such as daisy-chaining, which can save on wiring costs. Bins distanced and further from power can be good candidates for battery-operated sensors and wireless devices. An inventory management system can be used across multiple plants or corporately for hundreds of silos. Dryers, day bins, fuel and chemical tanks are also excellent candidates for level sensors and inventory monitoring. They can be easily added to the same system as bins.

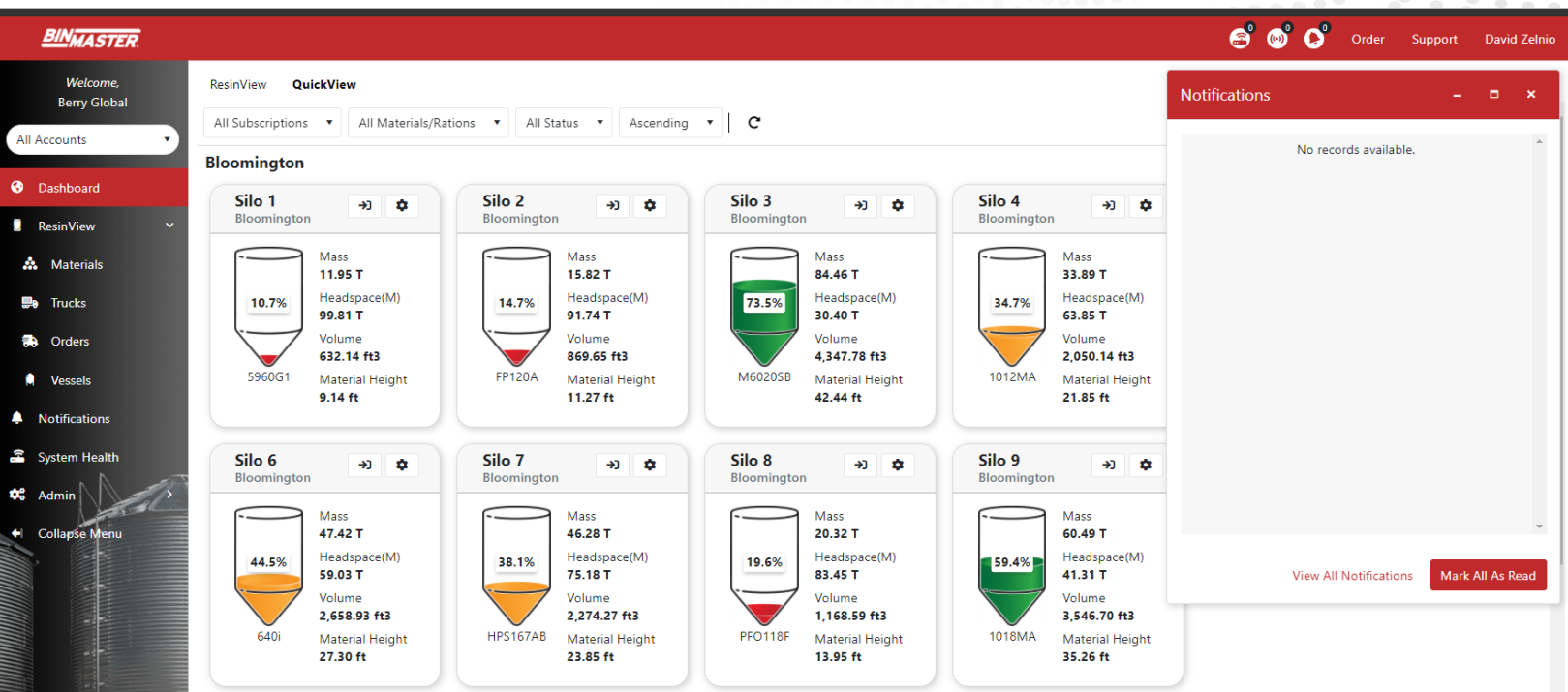
Step 2: Frequency of measurement updates







Consider if you want measurements updated constantly or if readings at intervals throughout the day will suffice. Continuous level sensors do as their name implies; they update continuously and in real time. Readings taken at pre-set time intervals or on-demand may also work for your plant. Technologies such as radar update in just seconds while wireless laser is best for intervals every hour or three or four times a day to conserve battery life. Some can be programmed at set intervals, such as marking the beginning or end of a shift, and can take a measurement on demand with the push of a button.

Step 3: Where to view the data

From a communications standpoint, determine where staff need to access the data. Solutions can be designed to offer visibility from a control room, office, remote location - such as corporate headquarters - or from home. These systems have the option to log in to view inventory anywhere you have an internet connection. Another common device to provide convenience in the plant is a control console or digital panel meter. These can be installed for walk-up or drive-up access, indoors or outdoors.

For example, a driver delivering grain should check the bin level before they start filling it. They can confirm the entire load will fit into the bin and prevent the risk of overfilling. These push-button devices are easy to use and can be used for viewonly access to data on the plant floor. An automated inventory system using level sensors and software is highly affordable. They offer simplicity and speed, while allowing mill personnel to be safe and more effective in their jobs.



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