Sustainable
Bulk Material Management

Frugal businesses, environmental advocates, and operations leaders are embracing bulk material management solutions to drive sustainability and safeguard resources for future generations. Integrating radar level sensors and software enables precise tracking and optimization of bulk material utilization across industries. A concrete producer with 12 batching facilities spanning Oregon and Idaho, grappled with monitoring materials sourced from various quarries and stockpiled in over 40 silos and tanks. Implementing radar sensors and leveraging BinCloud software provided real-time visibility into inventory levels and consumption patterns. Enhanced inventory accuracy resulted in saving over 5,000 tons of bulk materials yearly, with some plants reducing material waste by 15%.

Plugin
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KEYWORDS
grain bins, concrete silos, bulk measurement, food industry

OBJECTIVE
Learn to combine sensor and software technology to automate level measurement.

CONSIDER
Manual bulk measurement is risky, material overflow costly, and labor short.

ONLINE
https://www.binmaster.com/products/continuous-level/3d-level-scanner.html

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Sustainability & Bulk Material Monitoring

Penny-pinchers, environment champions, and people managers focus on sustainability to ensure future generations can meet and exceed goals. It starts with bulk material management.

"We always talk about the benefits of safety, and the return on investment by automating bulk material measurements," said Mike Mossage, BinMaster Regional VP. "But we're seeing new benefits with sustainability. There's less waste, less energy consumption, and even a higher utilization of current storage because of greater visibility."

Mossage described a concrete company in the Northwest US which operates 12 batch plants serving customers in about a 300 square mile radius across Oregon and Idaho. Recent installation of sensor technology helps to meet their aggressive sustainability goals.

"Tracking all that material is tricky," he said. "The company sources sand and aggregate from various pits and quarries in the area, then stores it in more than 40 silos and tanks across the region. They needed to pull all those measurements into one report."

The integration of radar level sensors and bulk material software enabled the company to optimize storage capacity and minimize waste effectively.

Once the company installed radar sensors atop silos and tanks, bulk material measurement flowed to their BinCloud software. "We pointed to some of the reports found in that software," Mossage said. "I think people see the graphical representation of silo levels, and don't always look into history and trendlines we built into it."

 After only three months, the company dug deeper and pulled historical BinCloud reports with forecasting. By collaboratively sharing and discussing data, bulk material inventory sustainability goals improved:

Material waste reduction: Improved inventory accuracy resulted in more than 5,000 tons of bulk materials being saved annually. Some plants saw a 15% decrease in material waste.

Energy savings: Understanding where and how much material was available in a collaborative, continuous software framework, operators maximized every truckload, and reduced travel strategically. Utilizing material consumption forecasting found in CementView, the company strategized plant-to-plant coordination to create a 10% reduction in energy consumption reducing annually 2,500 metric tons of CO_2 emissions.

Infrastructure: The company saved about $500,000 in capital expenditures for a year, not spent to build new vessels
Numbers are based on composite case study drawing upon various real-world examples of research findings to create one comprehensive narrative

Sustainability **optimizes resource usage** to meet present needs without hurting future generations' ability to meet **sustainability, environmental, human-centric**, and economic goals.
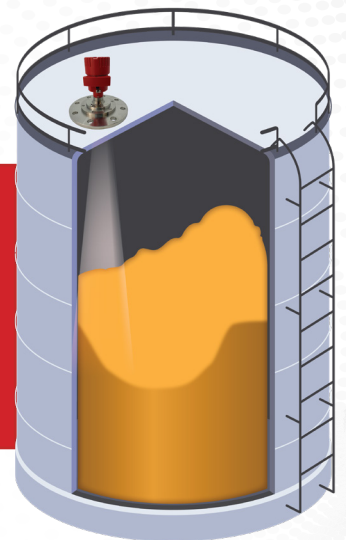
How sensors boosts sustainability

Precision operations – Bulk level sensors installed in an ag operation, for example, collect data on fertilizer, seeds, grains, and liquid tanks to help farmers optimize resource usage like water, fertilizer and pesticides to reduce waste and environmental impact.

Data-driven decision making – By collecting and analyzing data from level sensors, managers can make informed decisions about bulk material management practices, resource allocation, and overall operations. Optimization leads to minimizing inputs, reducing waste, and maximizing productivity.

Optimized inventory management: Measuring the levels of bulk materials in storage bins or silos, sensors prevent overstocking, reduces material wastage, and minimizes the need for additional transportation to replenish supplies, thereby lowering carbon emissions associated with transportation.

Reduced material waste: Continuous, precise measurements ensure that the right amount of materials is used for each project phase.

Efficient resource allocation: With continuous silo and tank level data managers can make informed decisions about resource allocation. They can adjust material orders based on actual consumption, avoiding unnecessary purchases and reducing the environmental impact associated with the extraction, processing, and transportation of materials.

Energy efficiency: Automating material handling and batching ensures precise material measurements to optimize energy usage in machinery and equipment, leading to overall energy efficiency improvements and reduced carbon footprint.

Minimized construction delays: Accurate monitoring of material helps prevent stockouts and delays in manufacturing and construction projects. Smooth project workflows, reduce delays and associated environmental impacts, such as extended construction timelines leading to increased energy consumption and emissions.

Improved safety: Sensors atop silos measure material. This eliminates long walks, tall ladder climbs, heavy access doors, and awkward tape measures. Machines measure. People decide.
Data-driven decision making: Trendlines on bulk material software helps identify trends, optimize processes, and make data-driven decisions to enhance sustainability.