

CASE STUDY

Resin Plastic Pellet Ultrasonic Level Measurement: A Seamless Solution

Industry

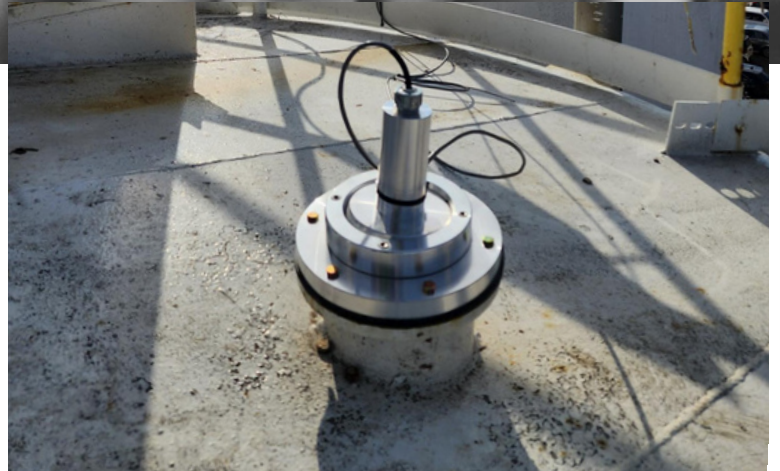
Plastics Manufacturing

Application

Plastic Pellet Silo Monitoring

Product

ABM Solids Ultrasonic Level Sensors and Cellular Gateways



PROBLEM

A plastic manufacturer faced inventory control challenges in 12 silos containing plastic pellets. Traditional methods, such as paddle switches and laser sensors, proved unreliable, leading to manual readings and operational inefficiencies.

SOLUTION

To address this, ABM recommended our advanced solids ultrasonic level sensors (ABM300-045ULC4-ALTEF), offering accurate measurements up to 60' (18 m). Rotational aimer flanges facilitated easy mounting inside the silos, directing sensors precisely to the product outlet for maximum material measurement. The 12 sensors are connected in daisy chain to 2 ABM Cellular Gateways, enabled real-time remote monitoring and control.

Seamless Implementation:

ABM engineers remotely supported the customer for setup, optimization, troubleshooting, and diagnostics, ensuring effortless initial commissioning. They proactively assessed echo profiles during filling and emptying conditions, allowing for timely issue identification and resolution.

False Echo Mitigation:

In addressing challenges like false echoes due to material build-up (Fig. 1), ABM applied specialized filters to lower the transmitted energy, successfully eliminating the issue (Fig. 2).

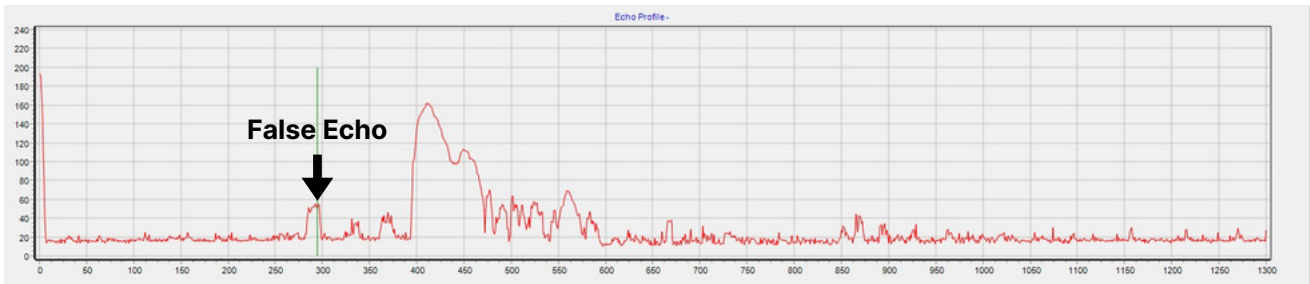


Figure 1: Echo profile displaying false echo at 27' (8 m) due to material build-up on the silo wall.

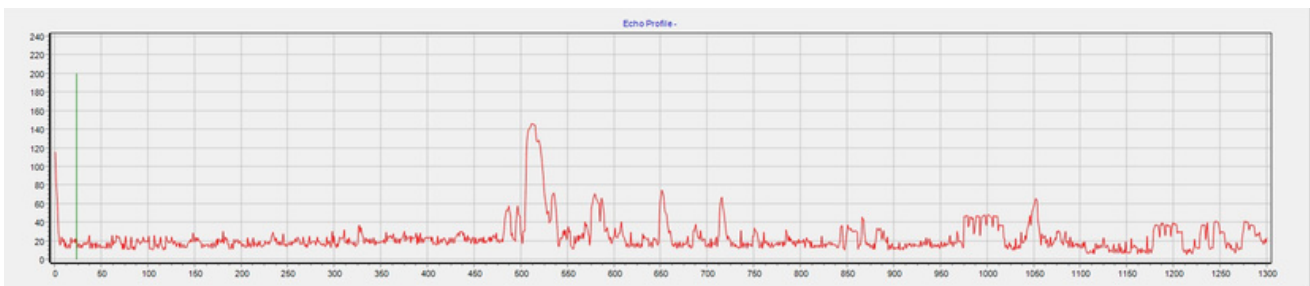


Figure 2: Echo profile revealing false echo elimination through the applied filter.

Overfilling Response:

Observing irregularities in the distance measurement graph, ABM engineers confirmed a submerged sensor from overfilling using the echo profile. As the material level dropped, the sensor resumed tracking (Fig. 3). ABM promptly informed the customer to alert their suppliers.

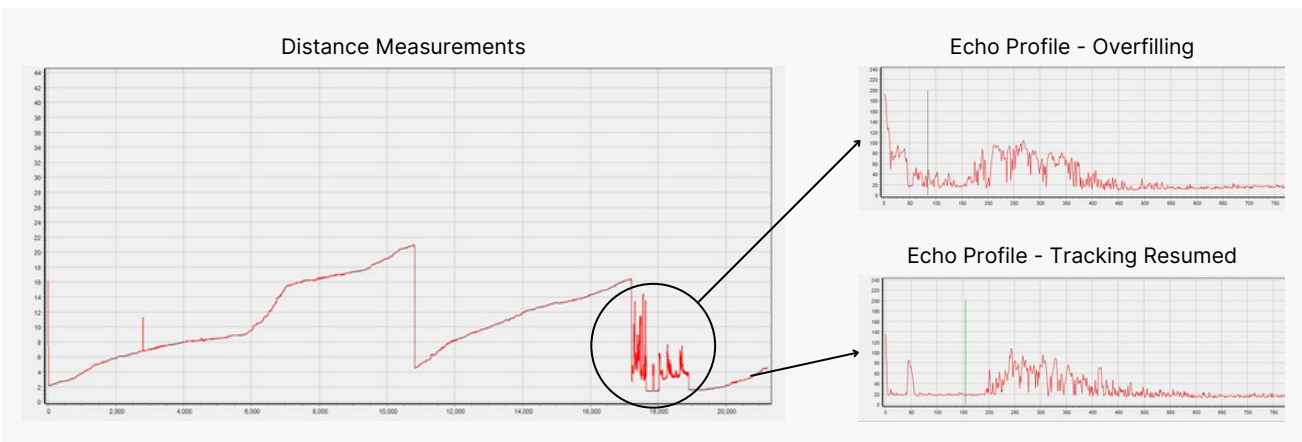


Figure 3: Overfilling and resumed tracking on distance graph and echo profiles.

Reliable Design:

ABM's ultrasonic sensors have a smart design, automatically adjusting the transmit energy and receiver sensitivity to capture a single echo from the target. This design rejects subsequent echoes from multiple reflections, ensuring reliable measurements.



RESULTS

The customer has real-time inventory data of all 12 silos on ABM's web-based customer portal (Fig. 4). From this project, they are now experiencing enhanced operational efficiency and peace of mind with remote sensor care.



Figure 4: Tank collections view on ABM web-based portal showing inventory status of 12 silos.

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