

Application Brief:

SILO LEVEL MEASUREMENT TECHNOLOGIES

INDUSTRY: Plastic molding, food processing, and construction materials

APPLICATION: SILO LEVEL MEASUREMENT

SUMMARY: Industries such as plastic molding, food processing, and construction materials all rely on bulk materials. As these industries move ever closer to just in time (JIT) manufacturing, the ability to produce accurate, reliable, and repeatable level measurements is becoming increasingly important.

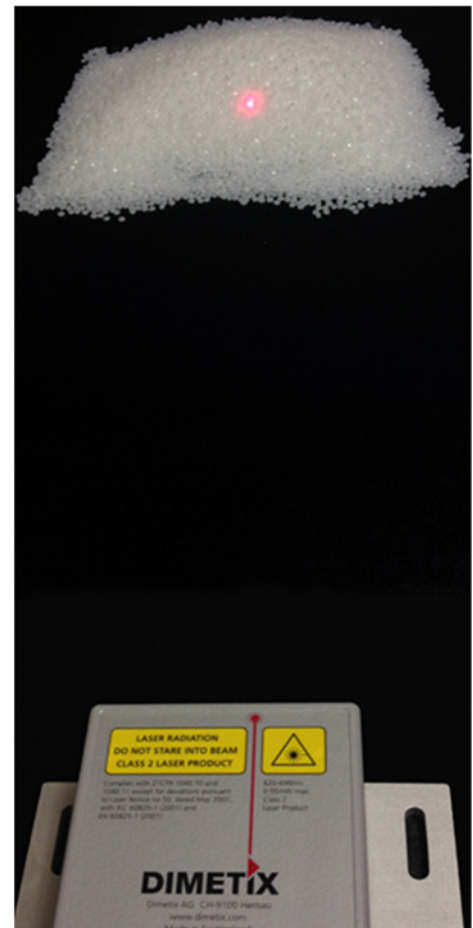
Overview

Challenge

Manufacturers utilizing bulk materials in bins, hoppers, or silos require accurate and reliable level detection to manage and in-process inventory and to minimize production delays. Industries such as plastic molding, food processing, and construction materials all rely on bulk materials. As these industries move ever closer to just in time (JIT) manufacturing, the ability to produce accurate, reliable, and repeatable level measurements is becoming increasingly important.

Solution

Laser distance sensors measure accurately at longer distances (≥ 30 meters) on a wide variety of materials, without making contact with the materials being measured. Reliabil-



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ity and repeatability of laser measurements are also independent of color and material — surfaces consisting of white plastic pellets are measured as accurately as those composed of dry or wet gravel. Even in the case of semitransparent plastic resin pellets, enough light is reflected back to the sensor to obtain accurate, reliable measurements.

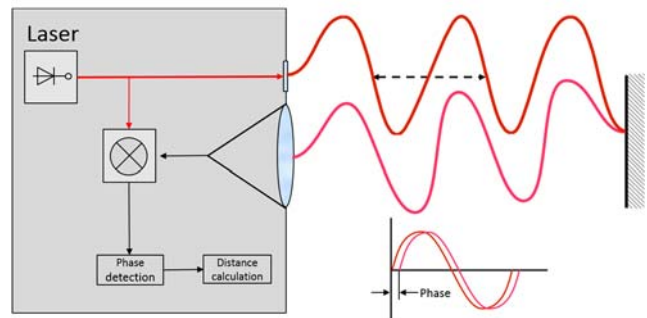
KEY APPLICATION NOTES:

- Noncontact measurement, which is beneficial in any number of industries.
- Can be fitted with an air purge and a protective enclosure to help address maintenance issues and account for dust, airborne particles and other environmental factors
- Point focused so diverse materials can all be measured in the same manner.
- Multiple sensor readings provide the ability to average sensor measurements to account for deformities and conformities in the bulk material surface.
- Networkable — possible to monitor all the structures in any given cluster and create a common, centralized system for monitoring an entire network of silos and clusters.



Technology

Dimetix laser distance sensors operate on a principle called phase shift. The laser signal is reflected directly back to the device. This technique provides high accuracy at a significantly lower cost than traditional laser triangulation methods and is generally more accurate than simple time of flight methods. Since the transmit and receive signals come back straight to the device, the laser can be mounted in tight spaces, making retrofits simpler. The device is also capable of measuring with 1.5 mm accuracy, even up to 500m. Distances over 65m usually require a special reflective plate affixed to the target.



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