ABB Level Measurement
Laser level transmitters for plastic pellets in non-woven materials production

ABB’s Laser Level Transmitter, LLT100, is the solution for plastic pellet silos in the production of non-woven materials.

Measurement made easy

Introduction
In recent years, laser level measurement has gained popularity in industrial applications. Laser level measurement offers the advantages of accurate, simple measurements without contact with the measured material. Even materials with low dielectric constant can be easily measured with laser transmitters. Laser level measurement is now a mature technology used in many fields of industry and science. Laser level measurement offers many advantages over beam spread technologies, such as:

- Non-contact technology improving reliability. So, plastic pellets will not stick to the device and break moving parts requiring repetitive maintenance as is the case for contact technologies
- Strong laser beam reflection from plastics, in contrast to radar wave
- Can work with low dielectric constant materials such as plastic pellets
- Typical environment is not dusty, so no issue for laser beam
- Narrow beam and small divergence allowing to aim directly at the bottom of a conical vessel
- Can be installed very close to the wall and is unaffected by internal structures or vessel shape

Challenge
In this application, a major customer from Russia needed to measure the level of plastic pellets in the storage silos.

The customer stores plastic pellets that are used to produce non-woven materials in silos where level measurement was required. The level measurement in these silos was needed to prevent overfilling when loading the pellets, as well as inventory management.

The customer contacted ABB to find a solution for this application. ABB has the best level transmitters to accurately measure plastics pellets with laser level transmitters.

ABB Solution
Level measurement has been used for years in the plastic industry, stressed by the need for increased automation and live inventory reporting.

Laser beams are narrow (<0.3° divergence) and create a small spot on the surface, typically less than 30cm even at long ranges.
A typical installation on a storage silo is illustrated in picture 02. ABB laser level LLT100 is mounted on a spool piece using a swivel flange to ensure precise aiming at the bottom of the silo. For increased protection, a dust tube was also used. For plastic applications, it is important to use a metal mounting plate or flange and to make sure it is properly grounded to the silo to help dissipate static buildup.

Another important advantage of using ABB laser level LLT100 lasers in such applications is that silos are usually identical as illustrated below (picture 01). So, contrary to other technologies, laser levels only need to be configured for the first silo. This configuration can then be used for all remaining silos which makes installation and commissioning easier, faster, and less costly.

Conclusion

This was the customer’s first experience in using an ABB laser level transmitter. They were very satisfied about the performance of the laser used on the first plastic pellet silo, so they decided to buy six (6) more units for the same application.

Plastic manufacturing and processing is one of the most promising markets for laser level transmitters, with numerous opportunities worldwide. Narrow and tall storage silos used in this industry are very challenging for spread technology such as Radar and Ultrasonic but is a perfect environment for lasers due to their narrow beams and ability to measure completely to the bottom of the silo. Laser transmitters have enjoyed great success in the plastic industry with thousands of installations in the last decade.