

BAIL HEIGHT MONITORING

- Non-contact distance measurement for dimensioning

Diamondhead solutions was contacted by a polymer manufacturing plant to begin studying an application to use a laser to measure bail height during the process.

Using a high resolution non-contact laser mounted above the discharge chute, bale height was being measured in real time. This was allowing the technicians on duty to make volume adjustments to the bale to try and eliminate bales coming out of the process with too much height.

The first question in any case study is to ask why this was necessary. Factories consuming the bales of plastic have a limited maximum size. If bales are produced larger than this maximum size, then they are rejected by the consumer and have to be shipped back to the plant for re processing to an accurate size. Obviously this results in a profit loss to an already very tight profit margin industry. Why not just undersize all of the bales? Well that is not a very efficient use of processing energy.

Initially, the laser measured very accurately. In all fairness, it was ended up being over accurate measuring down to ± 0.002 at a sample rate of 200 samples a second. The problem with this was getting all of the data into an older data acquisition system that could not register at that rate. This all was worked around using signal conditioning and photo switches. But did not end up as what we at Diamondhead Solutions refer to as a “best Option” alternative. The price per assembly of running the lasers and all of the electronics, while giving off a perfect analysis of what was running down the assembly line, was not within the client’s budget.

Diamondhead Solutions was tasked with finding a less “technologically advanced” method of obtaining process data and still be within the project requirements. What our study found was that non- contact measurement technology was not critically required to achieve the project goal. Once it was determined that contact with the processed material was possible, a mechanical contact device was designed that could be assembled and installed by the factory technicians and maintenance shop. Linear position sensors, cabling, connectors, digital indicators and panels where provided by Diamondhead Solutions for final installation by the client. Post installation calibration and support was also provided.

What we found in this case.

- Utilizing an experienced integrator can reduce personnel costs.
- “Best Solution” project goals can be achieved with teamwork between your integrators and on site technicians with shared knowledge of your existing process.
- Budget goals and project understanding with integrators create long term relationships.