Definition

In manufacturing facilities which utilize automatic weighing systems, the tracking and managing of the Work in Process (WIP) and container tare weights cannot only reduce loss, but inform and improve the process itself.

Problem / Pain Point

The ability to properly measure the amount of material throughout its process often depends on accuracy at the weigh scale systems. In automatic weighing system, the tare weight of the container must be factored into the equation. Also, material loss must be identified, managed, tracked, and reported in real-time to control/host systems in order to minimize their impact and adapt accordingly.

- Tare weight needs to be factored into calculations
- Material loss must be identified, managed, tracked, and reported in real-time
- Process must adapt accordingly

How can we apply an enabling technology to assist us in providing an accurate tare weight of the container as well as managing material loss?

Product List:
1. PLC Controller
2. Operator Light Stack
3. UHF Stationary Reader
4. UHF Antennas
5. UHF Transponder
6. Host Computer with Relational Database (optional)
Tool Identification

Solution

An RFID tag affixed to each container can hold the tare weight value in the RFID memory. This tare weight can be read as the load is being weighed and fed into the calculation for producing an accurate material weight. The resultant material weight can consequently be written back to the RFID tag, allowing for subsequent processes to read it and track material loss. RFID system integration with PC (or networked PLC) host systems can be leveraged to provide notification to operators and management when material loss exceeds defined limits. Along with these notifications, the process may also be automatically adapted in accordance with business rules.

In a real-world example involving a tobacco tracking: Containers containing work-in-process tobacco are weighed at multiple stations throughout the process. An IP65-rated EPCgen2 UHF tag affixed to the container contains the tare weight. The tare weight is read and used by the controlling PLC to accurately calculate the material weight. The material weight is written back onto the RFID tag, so that at subsequent weigh stations, material loss can be ascertained.

Benefits

- Reliable verification of container tare weights
- Accurate material weighing
- Material loss tracking and management
- Process flexibility and adaptation possibilities
- Straightforward, feature-rich integration to control systems

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