Automated Scaling and Classifying for the Pork Industry:

Improving Speed, Accuracy, Yield and Profits

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Today's meat processors are geared to high-speed/high-throughput operation, while still tracking on product integrity, favorable yields and safety for both workers and consumers.

Typically, manual classifier lines for pork loins and other meat cuts have been profit-eating bottlenecks where it's impossible to accurately weigh and sort consistently by hand at line speeds. In a high-throughput operation, inefficiencies and inconsistent weights lead to unaccounted for product or "giveaway" and potentially thousands of dollars in lost revenue.

Additionally, there are ergonomic, safety and worker compensation issues linked to lifting, twisting, repetitive motion and exertion in moving loins weighing up to 24 pounds. The consequences are not only injury and time lost, but also inaccurate weights and inconsistent yields due to haste, fatigue and human error. And there's the additional potential for human contact and food contamination.

Fine-tuning the Classifier Line

Automated classifier lines and auto-scaling technology is being developed to break the bottleneck, add precision and boost the bottom line. Today's conveyors do much more than move product from Point A to Point B. Sorting conveyors that redirect products from a common path to multiple paths or containers are increasing line capacity, productivity, yields, traceability and – due to reduced human handling – improved food safety.

A solution of particular note is the "loin kicker**"** which automates classifier lines by deflecting, or kicking, selected cuts of meat to appropriate conveyors or bins according to weight. A dual-lane version can incorporate two scale conveyors with integrated load cells for weighing product in motion. The loins proceed to a series of stainless steel paddles on each line, pre-programmed to redirect product by any number of specific weight ranges. This way, the processor can precisely categorize product at speeds unattainable by hand. Reliable tracking capability by weight of loins is also a factor. The supplier can modify systems to handle other food or meat products such as hams, ribs, bellies, etc. as well.

Studies conducted on an automated weight classifier/kicker by a leading pork processor showed line capacity increase from 2,400 pieces per hour to 3,000 pieces per hour –

along with improved yield and profit due to more accurate product weight classification. The study also documented a four- to five-person reduction in manpower over a two-shift operation.

Protecting Sensitive Technologies

Today's sophisticated automated measuring tools focus on precision product handling, speed and user-friendly, network capabilities. Some combine vision grading applications, which catch quality defects, with weight data to bolster information for distributing product to a variety of processing or packaging locations.

High-tech electronics for automated scaling and classifier lines have to be built for harsh manufacturing environments. The meat industry goes by the adage of "keep it clean, keep it cold and keep it moving," so classifier lines and auto-scales have to withstand chemical washdown, temperature extremes and heavy production demands. Sturdy stainless steel construction is a sanitation given, and instrumentation such as load cells need to be sealed in specially designed and welded stainless housings. Anti-corrosion procedures such as chemical passivation are an additional advantage.

The Automation Payoff

Replacing existing manual sorting lines with innovative auto-scaling and classifying, which is faster, safer and ultimately less expensive, has shown results that include:

- Significant reduction in manpower
- Increased line capacity over volume achieved by manual labor
- Increased weighing precision/accuracy
- Increased yield from proper product mix
- Greatly reduced product "giveaway"
- Reliable tracking/traceability
- Convenient cleanability and sanitation
- Enhanced food safety by reducing human contact
- Rapid return on investment

Conclusion

Automation technology adds precision, accuracy and efficiency to weighing systems and meat classifying lines. Speed, labor-savings and safety considerations bring processing lines into the 21st century, making too-heavy product giveaway – and the profit erosion it causes – a thing of the past. With the economic realities of the present, a higher level of performance is key to processing success.