

Executive's Guide to Innovation in Food Processing

SECRETS TO A MORE EFFICIENT PROCESSING PLANT



INTRODUCTION

Changes to food safety regulations, technological advances, and changes to the supply chain have created opportunities—and threats—in food and beverage processing. Keeping up with innovations is the best way to stay ahead of regulations as well as competitors. By taking advantage of automation and other innovations in food processing, you can reduce waste, improve speed, maintain compliance and, ultimately, improve efficiency. In this guide, we'll show you how.

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Streamlining Production

Contrary to popular belief, automation does not necessarily mean eliminating jobs performed by people. Instead, it eliminates the jobs that are repetitive and dangerous, and frees workers to perform safer, but more complex jobs that are not suitable for machines. In food processing, reducing manual labor through automation means eliminating time-consuming, monotonous, often dangerous tasks, like the following:

- ▶ Removing the need for hand-adds: Micro ingredients are often added by hand. This not only takes time and introduces error, but can also be risky for employees. A micro ingredient system measures and adds micro ingredients automatically.
- ▶ Removing manual recording: Ingredient systems operated through levers or other manual processes often require manual record-keeping as well. Automating this process improves accuracy and removes this step.
- ▶ Removing manual tracking: An automated ingredient system combined with a programmatic tracking system eliminates the need for manual batch tracking through the process.
- ▶ Removing individual bag filling: Utilizing bulk bags in an ingredient system reduces the need for transporting, opening, and pouring smaller bags.
- ▶ Removing extra trips: Conveyance between processes in your ingredient system eliminates extra trips and the incidents that occur during each trip.

Reducing Production Time

Decreasing total production time is one of the biggest advantages of automation technology. An automated ingredient system designed for your ingredients and products works seamlessly end to end, reducing downtime between processes and synchronizing all activities. Reduced production time is one of the most common advantages cited by food processes who upgraded their system. There are a number of ways to reduce production time, including the following:

- ▶ End-to-end automation: complete automation from the start of the process to completion means no stops, delays, or slow-downs. The process works seamlessly from beginning to end.
- ▶ Optimal system design: With each component in the system designed to work together, there are no idle processes. Mixing, cooking, weighing, batching and everything in between works simultaneously, with the right machine size, batch timing and programming to make this possible.
- ▶ Reducing implementation hurdles and project setbacks: Careful planning, a detailed timeline and technical assistance ensures machines are all implemented, repaired and maintained properly. This reduces some of the most expensive and time consuming problems: break-downs and slow starts.

Improving Accuracy

More accuracy ultimately means a better-quality product, but it also means reducing waste and eliminating defects. Automated systems utilize precise measurements and seamless coordination to weigh and distribute ingredients properly, improving accuracy in the recipe. Combined with programmatic record-keeping in an enterprise system, automated food processing systems also keep detailed records of lot numbers, ingredients, shipments, dates, and other essential information.

- ▶ Optimizing ingredient accuracy: Automated ingredient and micro ingredient systems utilize precise weighing instruments to distribute ingredients into the mix within acceptance tolerances. This reduces waste from extra ingredients, improves the quality of the mix, and reduces defects from inaccurate ingredient mixes.
- ▶ Automated record-keeping: Lot tracking is not only an FSMA requirement, but it is also required to verify that your system is working properly. Syncing your lot tracking system with your ingredient system improves accuracy across the process. As ingredients move into batches, turn into products, and become store merchandise, every activity is automatically tracked within the automated system.

Reducing Risk

Dangers to employees not only create an unpleasant place to work, but they also introduce risks for liability, penalties for regulatory noncompliance, and system shut-downs. Food safety risks are often an even bigger problem, putting dangers on consumers and exposing businesses to expensive recalls. Mitigating risk at every level means reducing liability and reducing costs. By improving consistency, reliability, traceability, and verification across the process, while placing safe distance between workers and processes, automated food processing systems reduce risks at every level.

- ▶ Despite using powerful equipment, automated technology in food processing also uses carefully-placed safeguards to keep workers out of danger. Automated technology also improves consistency and traceability across the process, reducing food safety risks.
- ▶ Reducing risk to employees: Automated equipment created distance between employees and potentially harmful processes, such as mixing, weighing, handling, cooking and other processes. Employees monitor, start and stop, and assist these processes where needed, with safety switches, railings, guards, and other mechanisms preventing injuries.
- ▶ Reducing liability through design: Process equipment design problems can create additional liabilities. The wrong steel grade can cause steel fragments to enter the produce. The wrong wiring configurations can introduce electrical hazards. Not using safety switches, temperature controls, or even placing equipment too close to one another can all create safety hazards for workers and consumers alike. An experienced engineering team knows where these risks exist, and how to control them.
- ▶ Improving lot traceability: Knowing the ingredients, origin, amount, shipment, date, time, destination and other data creates a fully traceable supply chain. This also makes a recall possible, and ensures regulatory compliance. As ingredients move through an automated system, all this information moves through the system simultaneously, supporting end-to-end traceability.

Easy Cleaning and Sanitation

Cleaning and sanitizing are vital processes that, unfortunately, can also be time-consuming. If these processes aren't uniform and reliable, they can also be dangerous. The right food processing system design can make this process easier, not only saving you and your staff time and energy, but also reducing risks from foodborne illnesses.

- ▶ Hermetically sealed load cells: Small spaces in equipment components are nearly impossible to completely clean. These small spaces also create breeding grounds for bacteria. Hermetically sealed load cells close off small spaces around electrical components, preventing bacteria from entering, and making it easy to spray down the machine. This not only allows you to safely use accurate load cells in food processing and fast, thorough cleaning measures, but also extends the life of the device.
- ▶ Good manufacturing practices: Food processing systems are designed to operate for years, but this is dependent on the design and construction quality of the system. Experienced engineers use the steel grade and finishes that are right for your ingredients and processes, and welders remove metal burrs and open spaces that create safety risks. Quality engineering and construction supports easy cleaning and sanitary design from the start.

APEC Case Study

- ▶ **Customer:** Manufacturer of seasonings and marinades
- ▶ **Problem:** To eliminate labor and human error, while enhancing recipe security and record keeping, the customer needed to weigh and transfer small amounts of spices to two different batch mixers. The system had to be able to weigh the additives to two decimal places and deliver the finished batch to two separate mixers before packaging.
- ▶ **Solution & Results:** APEC provided the customer with an [indexing micro ingredient scale](#) and [recipe automation](#). The micro ingredient scale would travel to the designated ingredient dispenser based on the recipe. After the scale had weighed all the spices in the formula, it would stop at one of two mix stations to dispense the batch. Results The customer was able to automatically weigh the spice mixtures and can limit access to recipes and has a record of how much, where, and when the ingredients were dispensed. The system has reduced labor and exposure to the ingredients. A record of each batch that is produced has simplified the record keeping.

CONCLUSION

Harnessing innovation in food processing can help streamline your operations, speed up production time, and improve product quality, facility safety, and cleanliness.

If you're considering automation upgrades for your operation, or you have questions about automation equipment, we can help.

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