



# SCALING BAKERY PRODUCTION WITH AUTOMATED MIXING

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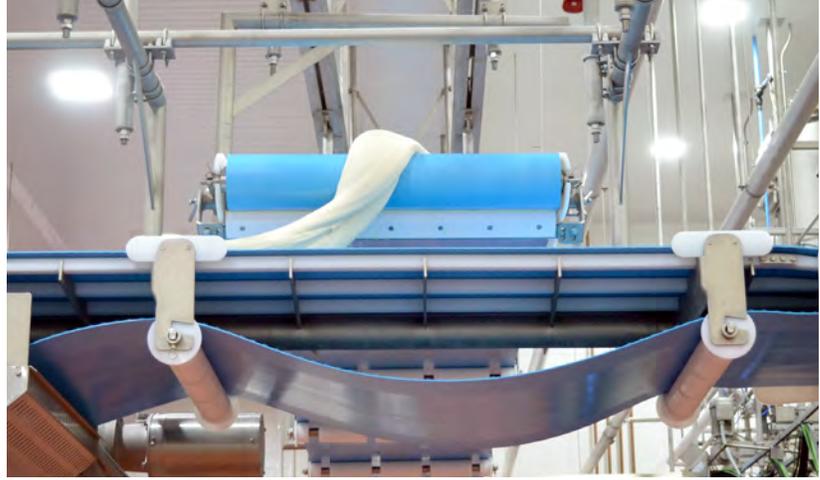
## *Increasing Output and Improving Consistency with Integrated Mixing Systems*

While it's true that any commercial baker would gladly welcome rising consumer demand for their products, there are many challenges that come with upscaling manual operations. Increasing manual batch processing can introduce human error into the production line, resulting in costly downtime and inconsistent output.

Scaling is more than simply speeding up processes. In order to strategically grow bakery production, it is essential to have the ability to control dough parameters and make process adjustments as issues arise in real time. Automation at the mixing stage can help to solve these problems.

New advancements in mixing technology from AMF Bakery Systems have enabled unprecedented automation possibilities for batch processes as well as seamless conversion to continuous mixing. By replacing manual mixing processes with automation, bakeries can realize economies of scale, improve consistency, and reduce labor costs while also expanding production output. This white paper explores the benefits of automated mixing for solving challenges in scaling bakery production.





## AUTOMATING FOR EFFICIENCY

Ever since the first industrial bakeries began to make breads and other baked goods on production lines, bakers have employed commercial batch mixers. Today, batch mixers remain a mainstay of the industry because of their versatility and compatibility with other processes, such as ingredient delivery and pre-hydration systems. It is commonplace for multiple batch mixers to support a single, high output line.

For small- to medium-sized commercial bakeries seeking to increase production output, automated batch mixing can help to reduce downtime and product loss. While automation requires a greater initial investment than manual processes, bakeries can realize efficiencies that offset the upfront costs.

Automated mixing speeds up batch processing by streamlining setup and reducing the time needed between changeovers. The implementation of automated mixing systems also curbs expensive losses of minor and micro ingredients. To these ends, AMF's automated batch mixing systems are designed to optimize control over ingredients, mixing, and dough parameters.

Efficient glycol cooling jackets on bowl mixers and AMF's patented Dough Guardian technology help to maintain constant temperature and dough structure consistency. Intuitive operator controls and alarms allow for more control over mixing and refrigeration times. This cuts down on the amount of training and onboarding needed for new production personnel. In addition to giving operators more control, AMF automated mixers are designed to speed up other time-consuming processes.



## SIMPLE DESIGN FOR EASY SANITATION

Ease of cleaning is an important factor to keep in mind when deciding to upgrade to automated batch mixing systems. AMF's horizontal batch mixers are designed for simple, efficient sanitation. Bowls and agitator assemblies are engineered for sanitary design to be easily accessed and expeditiously cleaned.

Mixers are designed to be easily sanitized and can significantly reduce labor costs by decreasing the amount of time needed for cleaning. Key aspects of hygienic design include protected connections, minimal flat surfaces, welds that do not trap particles, and tubular frames that shed water rather than accumulate it. These features expedite the work of sanitation teams and make it easier to access every part of the mixer.

### OPEN FRAME MIXER

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AMF automated mixers are designed with simplicity in mind and have an IP55 washdown rating. For example, the AMF Open Frame Mixer (OFM) is engineered with sanitation in mind. These mixers are constructed with round tubular framing, easily removable polyethylene main shaft seals, and a maintenance-friendly direct drive tilt mechanism with a 140° forward tilt for uncomplicated washdown access. The OFM's simple design and heavy-duty stainless steel construction allow for reliable operation and the flexibility needed to handle a variety of dough applications.

## FLEXIBILITY AND FUNCTIONALITY

Future growth should be kept in mind when choosing automated mixing systems to scale up production. Automated batch mixers must be flexible enough to handle many types and volumes of dough. The aforementioned OFM is readily converted from a



**SNAX SIGMA MIXER**



standard triple bar to AMF’s proprietary Y-T agitator, which is shown to reduce high speed mix times with multidirectional dough stretching. As such, automated open frame mixers can scale production for a wide variety of applications, from soft bread and buns to artisan bread and rolls to pizza and flatbreads.

The SNAX Sigma Mixer by AMF, which is designed for flexibility in mixing doughs for cookies, crackers, and specialty snack doughs, has a bowl tilt system that ranges from 120° forward tilt to 100° rear tilt. The versatile SNAX Sigma Mixer is designed for reliable operation and easy sanitation. It comes with an optional Durabowl™ cooling jacket. This versatility in mixing types and tilt systems helps especially when automating a production line used for multiple applications.

**Find the correct mixing system for your application (capacities are listed in pounds)**

	100	150	200	250	300	400	450	500	600	750	800	1000	1200	1300	1600	2000	2100	2400	2800	3200	3400	
<b>APEX</b>	▼		▼			▼			▼		▼	▼										
<b>SBM</b>															▼	▼			▼			
<b>TBM</b>											▼	▼		▼	▼	▼			▼	▼	▼	
<b>OTBM</b>											▼	▼		▼	▼	▼			▼	▼	▼	
<b>OFM</b>		▼			▼		▼		▼		▼	▼		▼	▼	▼			▼	▼	▼	
<b>SNAX</b>				▼				▼		▼		▼	▼		▼		▼	▼	▼			▼



Finding the space to add new equipment can be a common challenge for small- to medium-sized bakeries that seek to increase production. However, with systematic design and strategic layout, automated batch mixing processes can integrate into existing facilities that are currently organized for manual production. For emerging markets, the [APEX Direct Drive Mixer](#) with Sigma Arm option from AMF has a very compact footprint and can mix up to 1,000 lbs. of dough. This type of multi-purpose mixer would be ideal for upscaling production of premium, small batch bread, buns, snacks, and cookies.

## **MAINTENANCE AND RELIABILITY**

Whether a production line is used for many applications or is dedicated to high output of one or two product variations, the reliability of automated equipment is essential to avoiding costly delays. When implementing automated mixing systems, bakery managers must consider the dependability of equipment and downtime risk. Scaling throughput can place more stress on equipment and increase the likelihood of breakdowns.

AMF automated mixers are built to maximize uptime and minimize the need for maintenance. The AMF Tilt Bowl Mixer (TBM) and Offset Tilt Bowl Mixer (OTBM) are heavy-duty mixers with shaft mount tilt mechanisms and single-end belt drive systems that are designed to have fewer parts and require less maintenance. The TBM and OTBM also have features that keep the mixers balanced, which extends the life of drive components, increases safety, and keeps operational costs low.

The AMF Tilt Bowl Mixers, as well as the Open Frame Mixer and APEX Direct Drive Mixer, have binder-free belt and pulley main



drives with low centers of gravity, which makes the equipment very stable and minimizes damage to reducers from transferred vibration. This is a marked improvement over mixers with shaft mounted main drives, which can vibrate the agitator shaft and create wear and tear on reducers. The top canopy on AMF mixers is also welded to the mixer's frame, which eliminates the need for bolts and strengthens the overall structure.

## **INTEGRATION AND OPTIMIZING LABOR RESOURCES**

Beyond the economies of scale and efficiencies gained through waste-loss reduction, optimization of labor resources is another benefit of automated mixing. When production scales up, automation reduces the need for retraining employees or recruiting and training new mixing station operators. Labor costs can be further streamlined with automated dough handling after the mixing stage, thereby reducing the need for overtime and extra shifts.

### **ROTARY DOUGH CHUCKER AND FEEDER**

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Integrating batch mixers with automated dough handling systems further improves operational efficiency and decreases dough handling time. Even though automated mixing can increase throughput on the production line, those efficiencies will be limited if dough handling remains a manual process. To scale production with maximum efficiency, automated mixing systems should integrate with trough handling as well as dough transfer and conveying systems. Integrated dough handling allows operators to boost output and prevent bottlenecks in production.

One such piece of dough handling equipment is the automated trough hoist, which not only speeds up production but also solves



many of the safety problems inherent in manual dough transfer processes. AMF Dough Trough Hoists are designed for safe, labor-free operation and are customized to meet specifications for any application. Hoists are manufactured from heavy gauge steel and use robust, durable #120 lift chains to handle heavy shock loads. As an additional safeguard, hoists are designed with special cradle latches to prevent troughs from falling. With a wide range of support, chute, and gate options, AMF's Dough Trough Hoists are customizable to fit any mixer or divider.

#### AUTOMATED GUIDED VEHICLES

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Automated dough distribution systems can further optimize production. When automated mixers are combined with a traveling AMF Rotary Dough Chucker and Feeder, a production line can process up to 30,000 lbs. of dough per hour. Sanitary Dough Elevators and Conveyors transport these large batches of dough from mixers to dividing, sheeting, and other makeup stages without the need for stoppage or additional labor. For safe, custom-configured trough handling, Automated Guided Vehicles (AGV), offered exclusively through AMF to the baking industry, can safely move large dough troughs with minimal work for operators.

### **AUTOMATED MIXING SOLUTIONS BY AMF BAKERY SYSTEMS**

Automated systems scale production in ways that simply increasing volume through manual processes cannot. While manual processes may be preferable for small batch applications, when output needs to scale up, automated mixing is an effective solution to gain efficiencies and create value on the production line.



With over six decades of experience in the design and manufacturing of best-in-class commercial baking solutions, AMF Bakery Systems builds automated mixing systems that are engineered to lead the industry in sanitary design and reliable performance. AMF's automated batch mixers provide the control and consistency needed to scale production of baked goods to custom specifications.

## AUTOMATED MIXING MEANS

**INCREASED** PRODUCTION OUTPUT

**REDUCED** DOWNTIME AND PRODUCT LOSS

**STREAMLINED** SETUP

**FASTER** CHANGEOVERS

**LESS** MINOR AND MICRO INGREDIENT LOSS

**OPTIMIZED** CONTROL OVER DOUGH PARAMETERS

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Interested in learning more about custom solutions to increase the output and quality of your applications? **Reach out to us to find out more about how automated mixers by AMF can help you get the most out of your production lines.**