

MIGHTY MIXERS

With new product development and production pressures, dairy manufacturers take mixers to the max.

by Lynn Petrak

There are a lot of people in dairy plants getting agitated about the pace of new technology, at least when it comes to the function of mixing.

Attempts at industry humor aside, there have been noteworthy refinements to mixing and blending systems. Many new mixers installed in dairy processing facilities today reflect both technological and design improvements.

Although shear engineering advances have allowed for the latest generation of mixing equipment, the day-to-day needs of users are always a crucial influence. "Dairy processors are looking for versatility and speed with the appropriate end product being produced," says Jim LeClair, regional product director, Americas, for process engineering and automated solutions supplier Invensys APV, Lake Mills, Wis. "The size and power requirement of the equipment are changing, too. No longer is the functional-food portion of a dairy a side business, for example, so this has resulted in a demand for more in-line systems that can produce the volumes required for large processing facilities."

Peter Leitner, vice president of sales for sanitary mixer company Admix Inc., Manchester, N.H., shares his own list of top-tier dairy industry requirements: "ROI,

reduced energy consumption, reduced maintenance, lower cleaning chemical usage, reducing BOD, elimination of filtered-out ingredients and true cleanability."

The changing composition of many dairy-based products today also has a direct impact on the type of mixers that dairies are interested in buying for their operations. Take, for example, the influx of thicker products with more particulates. Bill Wade, manager for the Kansas City, Mo.-based Breddo Liqwfier division of American Ingredients Co., uses ice cream as an example.

"Customers are running higher viscosity ice cream mixes, which require more agitation on the front end. Those are also thicker products so it requires more horsepower, too," he says.

Leitner agrees that different formulations have caused issues with previous equipment and notes that dairy products are increasingly combined with different and sometimes more challenging ingredients.

"Today's applications have changed drastically. There are many more suspended, or undissolved, particles so the days when sweep agitators were sufficient to maintain a mix in the blend tank are gone. High-efficiency, ultra-sanitary, low-speed axial agitators are now required," he says.

"Besides the suspended solids, higher viscosities have also caused issues with existing equipment causing bridging powder induction systems, clogging of strainers and fouling in pasteurizers, among other things."

Håkan Pålsson, a product manager for Tetra Alfast and

Tetra Almix lines from Tetra



COURTESY OF ADMIX INC.

Pak Dairy and Beverage Systems, also points to the difficulties that can arise when mixing together new types of ingredients in traditional or old mixers, and cites the growing number of health-oriented dairy products as examples. "When you are coming into this part of new applications, there is a demand on

“Customers are running higher viscosity ice cream mixes, which require more agitation on the front end.”

— Bill Wade, manager, Breddo Liqwfier

the mixer. You have to be extra careful with products like that, because sometimes the powders like stabilizers, guar gum and others can be tricky," he explains.

Beyond product composition changes that are spurring enhancements in mixing equipment, there are other considerations affecting manufacturers' choices of systems. "I think food safety is an issue in operations. Now, with fully automated machines you can keep track of what's going and it gives you more control of the mixing process and that really boils down to safety," Pålsson says.

Blending In

Many mixing equipment manufacturers have recently introduced new models that reflect the needs of the



mid-2000s dairy customer. Admix, for its part, debuted its Rotomaxx™ mixer a couple of years ago featuring higher torque and larger volume processes that can handle undissolved solids and higher viscosities. Meanwhile, the Admix Rotosolver® high-shear disperser and dissolver is now being used for different types of applications than in the past, Leitner adds, including products that are highly viscous.

"This mixer is the only in-tank, high-shear mixer to earn 3-A approval under the newer third party verification," he says of the

Rotosolver, noting that the unit is a top-entry, high-shear, high-flow, clean-in-place (CIP) design which drastically reduces energy consumption and once the mix is complete, its speed can be reduced to provide gentle blending to maintain suspension for fast settling ingredients like carrageenan and cocoa.

The Tetra Almix line of mixing equipment is also more ergonomic in nature, notes Pålsson, and is used for a variety of dairy products, including reconstituted and recombined milk, flavored milk, yogurt drinks, ice cream mix and other applications. "We are combining a high-shear in-line unit with a liquid-filled mixing tank on the top, with or without vacuum mixing technology. By having the vacuum mixing technology, it minimizes air into the



COURTESY OF INVENSYS APV

final product," he explains.

At Invensys APV, meanwhile, LeClair reports that the company's most popular mixing equipment in the dairy industry includes its Liquiverter for high-shear mixing, Multiveter for high-shear mixing

with scraped interior walls and TPM Mixer for continuous incorporation of powders into liquids. "The benefits of the Liquiverter and Multiveter are the ability to batch together the required components into the tank and control the mixing

residence time," he says. For products that require extended mixing time, an operator can place all of the ingredients in the unit and let it run until the desired mixing is achieved, he adds.

Most recently, Invensys APV

launched two new mixers: the DARMix, an inline mixer with high-shear properties and the PowerMix, a very high-shear inline mixer. Both were designed based on industry interest and feedback.

Other suppliers have unveiled new mixing systems as well. At Breddo Liqifier, Wade says that a new CIP seal is available for mixers, so operators don't have to remove the impeller during cleaning. "Dairies are worried about cross contamination and that seal was industry driven, since many are looking for something that does not harbor allergens, for example," he says.

Paul Mueller Co., a Springfield, Mo. provider of processing equipment, also has upgraded its systems used for mixing purposes. "On our silos for raw and pasteurized milk, we use our horizontal agitator through the sidewall in the alcove for keeping a homogenous mixture of the product. The Mueller Agitator also promotes cooling of the product by moving it across the cooling surface," explains Paul Hume, national sales manager, adding that for products like sour cream and yogurt, the company also offers a side- and bottom-scrape agitator equipped to handle more viscous attributes. "The scraper will lift the product off of the side wall to help promote cooling." For blending applications, Hume adds, the company has an offset turbine and centered turbine with baffles or a side sweep agitator for thorough mixing.

In the meantime, SPX Process Equipment, Delevan, Wis., recently developed a Lightnin ECL mixer available in both a portable and fixed-mount version that feature an axial flow design to generate up to 70 percent more flow for the same speed power. The portability allows a user to move from one application to another with no cross contamination.

Finally, looking ahead, Pålsson predicts that mixers will have to be built for even greater power, volume and versatility "The demand for mixers for even higher capacity is coming," he says, citing the possibilities in burgeoning markets like China. "I also see having mixers for special products and a greater need for flexibility." ○

Lynn Petrak is a freelance journalist based in the Chicago area.

*We thrive on
making tall orders
look easy.*

Which is why five of the ten largest baked goods suppliers in the country look to us for new product testing, fast turnaround and special orders.

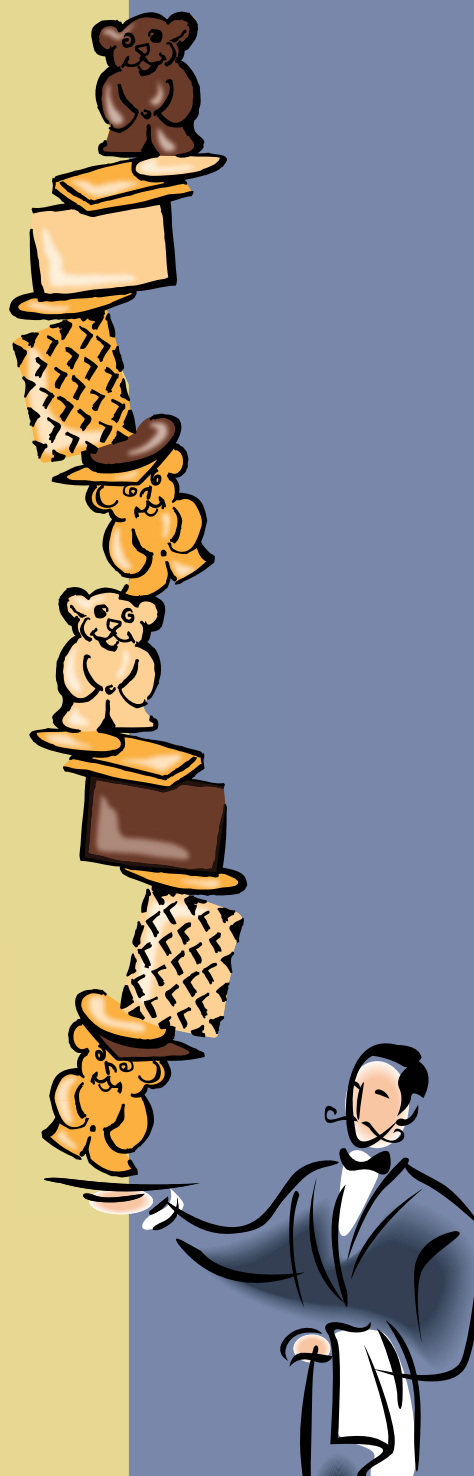
And why we've doubled our business in the past five years.

If you're looking for a partner with an entrepreneurial attitude backed by 100 years of experience, call Richmond Baking at 765.962.8535 with your next tall order.



BEYOND BAKING

www.richmondbaking.com



ICE CREAM INCLUSIONS | DESSERT CRUMBS | BATTERS & BREADINGS | CONTRACT MANUFACTURING