



GAZETTE

Monday April 1, 2019

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Challenges and opportunities in cannabis edibles

By Mark Hines, Global R&D director at MAFCO Worldwide, Camden, N.J.

At the beginning of 2019, ten states, the District of Columbia, and the entire nation of Canada have legalized recreational marijuana, and New Jersey and New York are likely to legalize in the near future. As the recreational industries develop, there is strong growth in the cannabis edibles market, as consumers seek non-smoking means to enjoy the benefits of tetrahydrocannabinol (THC).

The cannabis edibles market is rapidly growing in states where recreational marijuana has been legalized, and it is expected that edibles will eventually be the dominant market. There are plenty of opportunities, and challenges for the food and beverage industry to grow in these new markets. As the market evolves, (cont'd on pg.6—>)

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From The Chair:

Winter has ended and we can look forward to warm weather ahead, and an interesting April 1st meeting.

Let us welcome Mark Hines of MAFCO Worldwide. Mark is the Global R&D Director and will speak about the challenges and opportunities in cannabis edibles. His talk will be a wonderful follow-up to our speaker in January, so get your reservation in quickly.

Join us on April 1st, for an informative meeting.

Joe Minella,
Chair

LIIFT remaining meeting dates for 2019:

April 1, 2019—Mark Hines, MAFCO World wide—Challenges and opportunities in cannabis edibles

June 3, 2019—Rich Pisano, Jr President Citrus and Allied, Inc.— Flavor Safely

**All dates are Mondays
The venue will be the Inn at New Hyde Park**

check out our website: www.longislandift.org

MEETING PLACE & DIRECTIONS

Date: Monday, April 1 2019

**Place: The Inn at New Hyde Park
214 Jericho Tpk.
New Hyde Park, N.Y. 11040**

Directions: go to www.innatnhp.com

**Times: 6:00PM-6:45PM, cash bar, networking
6:45PM– 7:30 PM, dinner
7:30PM– speaker**

**Price: \$40.00 per person with reservation
\$50.00 per person at the door**

**Reservations: Carol Zamojcin @ 516-352-5772,
anytime before Fri. March 29th**

Getting into the Mix

Mixing and blending equipment is getting faster, smarter and more specialized

by Pam Demetrakakes, Senior Editor
Food Processing Magazine, Jan. 2019

Mixing and blending are among the most universal aspects of food production. Whatever food or beverage you can think of, there's a good chance that somewhere along the line, to make it, something (or many things) had to be mixed or blended.

With universal application comes universal concerns. Ask suppliers of mixing and blending equipment what their customers want, and they'll run through the litany of general food processing priorities: sanitation, high throughput, flexibility, consistency, digital capability, etc.

The priorities may be universal, but they're changing in emphasis, says Gary Seiffer, sales specialist at EnSight Solutions (www.ensightsolutions.us), owner of the Likwifier brand of high-shear mixers.

"The concerns have shifted and we have shifted with them," Sieffer says. "Homogenous blending in quick order is paramount as food producers look to increase capacities with what they have—all the while upping quality levels."

According to Matthew Hartman, senior automation sales engineer at Blentech (www.blentech.com), the trend is away from homogenous, do-it-all equipment and toward more specialization.

"We have seen a shift in thinking," Hartman says, "In the past, we have seen our clients looking for equipment that can do it all. Today we see them asking for

highly optimized processes designed for a particular family of products to maximize quality and minimize cost at that same time."

One of the biggest imperatives is high throughput, which can be tricky. As a line's or plant's throughput increases, the mixing and blending operations must keep pace. But this can be a problem for two reasons. Mixing and blending have to be done thoroughly and can't be rushed—at least, not without the right equipment. And mixing and blending usually are inherently batch processes, involving fixed quantities that have to come together in exact proportions.

Bigger batches

One way to increase throughput in batches is simply to increase the batch sizes, which means upgrading the equipment's capacity. This can be done by using several mixing receptacles, arranged so that a batch is always being worked on, say Ken Langhorn at Charles Ross & Son Co. (www.mixers.com).

"A buffer tank or second batch tank can be utilized to provide a steady output," Langhorn says. "When a change can-style mixer is utilized, multiple interchangeable mix vessels can be utilized to accomplish this. Often a change can mixer will be operated with three vessels: one mixing, one discharging and one being cleaned and prepped for the next batch."

However, there are applications where batch mixing and blending just won't keep pace with production requirements. That's where inline options come into play. Basically, they offer more capacity with less footprint and less steel.

“Processing from an inline perspective provides mainly process-oriented advantages,” says Lee Holliday, regional sales manager IKA-Works Inc. (www.ika.com/en). “For instance, large production volume requirements lend very well to inline processing. Space requirements can become an issue in facilities where several large vessels are needed to meet production demands. The addition of an inline process can significantly reduce the space required, without compromising the quality.

“An additional benefit can be realized in reduced labor related to personnel need for charging raw ingredient or cleaning.” he adds.

Solid strategy

Inline mixing can have processing advantages, especially when a solid, usually a powder, is being combined with a liquid in which it is immiscible (i.e., the powder won't dissolve in the liquid) This requires the solid and liquid to come together as a suspension, a situation often seen in viscous products such as dips, dressings, and sauces.

A common arrangement is an inline, high shear mixer that uses a rotor immersed in a pipeline. The difference between the speed of the liquid in the middle of the rotor and its speed at the top creates shear, or flow force. The shear can be enhanced by the addition of a stator, a sleeve that encloses the rotor and heightens the

the liquid's flow as it exits. The high shear creates an environment in which powder or immiscible liquid can be dispersed with maximum efficiency. (High-shear mixing can also be done on a batch bases, with the rotor mounted on the bottom of the tank.)

Once the product has been blended, a common way to keep it that way while it's being passed along for further processing or packaging is to put it through high-shear pumps. However, those can be hard to clean, making product changeovers more problematic, and many processors are trying to do without them, Seiffer says.

“In the case of high-speed, high-shear blending, our customers want to reduce or eliminate shear pumps after blending, and our Likwifer does that,” he says.

Thermal time

It's common for mixing and blending equipment to heat or cool product during the process. The temperature change often is accomplished by “jacketed” mixing vessels that have a layer between the outer and inner walls, through which thermal fluid flows.

Heating and cooling product this way is energy-efficient and reliable from a safety standpoint, to the point where it can be established as a critical control point in a HACCP plan. When done gently, cooling can always help stabilize ingredients. Seiffer says.

If we take the word cooking and replace it with temperature stabilization,

we get many more applications,” he says. “Keeping product cool to avoid breaking down or separation of ingredients is huge, and we do it very well.”

Another way to cool product during mixing and blending is to introduce a cooling agent like carbon dioxide or nitrogen. This is commonly done with ground meat, which is cooled as much as possible to make it easier to form into shapes like patties and nuggets.

Scott Roberson, a vice president with RMF Steed (www.rmfworks.com), says some end users want cooling to take place as fast as possible, to increase throughput. The problem is that if the cooling takes place too fast, it could stiffen the ground meat or other product to the point where it might damage the mixing equipment. The best way to prevent this, he says, is to monitor the power that the equipment is drawing.

“Just keeping track of the temperature is something end users do, but you can also monitor the amps that the drive is using up. If those amps get too high, you can shut down the mixer before something gets damaged,” Roberson says. “When they’re using CO₂, or nitrogen to chill down the meat, it gets cold and that product gets difficult to move. You don’t want to take it to where something might get damaged inside the mixer.”

Data enters the mix

Monitoring and acting on operational parameters are growing priorities for mixing and blending equipment, suppliers say. As with most other types of food processing

equipment, mixers and blenders are expanding their digital capacity in terms of generating and receiving data, storing formulations and other information, and even joining industrial internet of things.

Langhorn says the most significant improvements to Ross mixing equipment have been to the control systems. “Not only do they monitor critical parameters such as temperature, pressure, agitator speeds and motor loads, but they also have the ability to prompt operator at critical stages of the batch or even call for automated delivery of the batch ingredients,” he says.

EnSight can be “as advanced as our clients desire” in automation, Seiffer says. “We can monitor and maintain temperatures. We can raise and lower in different times of a process. As an example, in our mixer/blender series, where cook times are longer, we can start at low temps to achieve specific results and then raise to a much higher temperature to set a product of prepare for hot-fill application.”

Digital capacity doesn’t just extent to operations. Holliday says that IKA-Works has develop magicLAB, which can capture and export critical trending data for an easier transition from lab to pilot phase to production. “Information such as tip speed, temperature, torque and time all can be collected and downloaded for any

developmental process, “ he says.

Because they are so fundamental to many food formulations and have such a direct impact on food quality, demands and expectations for mixing and blending often reverberate back up the supply chain from the consumer.

As Seiffer puts it: “I often feel like I am selling to the end user more than the processor.

(cont'd from page 1), consumers have different and more demanding expectation on flavor quality of the edibles. This presentation will include market insights of the cannabis edibles market, the flavor issues, potential solutions for addressing those flavor challenges, and how to overcome challenges in sensory testing the flavor solutions.

About Mark Hines:

Mark Hines is the global R&D Director at MAFCO Worldwide in Camden, N.J. He has a PhD in food chemistry from Perdue University, and has worked at the Campbell Soup Company, Hercules Food Gums, Puratos USA and Ashland Nutrition. He started with MAFCO in October 2017, and is a resident of Moorestown, N.J.

