

Mixing it up

In the food and beverage industry, high-quality mixing and blending equipment can improve the versatility of a product. *FoodBev* spoke to Erin Dillon, media and marketing coordinator at mixing, blending and dispersion equipment company, ROSS, about this important sector.



Why should food and beverage manufacturers invest in high-quality mixing and blending technology?

Mixing is at the heart of most food and beverage production. Even with the right ingredients and flavours, a great recipe will not transform into a great product unless the components are well mixed. Taste, texture, colour, appearance and stability are all crucial parameters intimately influenced by the mixing process.

Within the food industry, a high level of batch-to-batch consistency is required, and proper mixing is key to accomplishing this objective. Various kinds of mixing equipment are utilised – their use and application determined by the phases being mixed (liquid-liquid, solid-liquid or solid-solid), shear requirement and physical characteristics of the raw materials and end product (viscosity, density, friability, particle size, etc.).

How can this technology be tailored to meet specific customer needs?

ROSS has a testing and development centre where our team can determine the right mixer model, size and horsepower for the customer's product.

Once the right mixer is chosen, it can be optimised for sanitation by including features such as high polish on stainless steel surfaces, interchangeable mix vessels, sanitary fittings and valves that can be quickly disassembled for thorough cleaning, drain ports, easy access to the agitators, CIP spray nozzles, and so on.

On the controls side, the appropriate control system offers electronic soft start, overload protection and other features that prevent premature failure.

What are some of ROSS' current technologies in this space?

One of the most popular ROSS equipment supplied to the food industry is the Ribbon Blender for powders, granules or other solids (cake and muffin mixes; flours and bread improvers; trail mixes,



granolas and snack bars; spices, herbs, rubs and seasonings; teas and coffees; beverage blends including whey protein shakes, powdered juices and energy drinks; and many others).

When dry blending food products, relatively small amounts of liquid may be added to the solids in order to coat or absorb colouring, flavouring, oils or other additive solutions. Liquid ingredients can be added through a charge port on the cover but for critical applications, liquid addition is best accomplished through the use of spray nozzles installed in a spray bar located just above the ribbon agitator. Although dry blending is its more popular function, the Ribbon Blender is also used to prepare wet foods (like guacamole, salsas and sandwich salads), as well as flowable slurries or pastes, say in food extrusion operations.

Food extrusion is a processing technology employed for various end products, from pasta and ready-to-eat cereals to snack chips...The function of the Ribbon Blender in the extrusion process is to homogeneously mix two or more grains, flours, oils, sugars, emulsifiers, extrusion aids and other powders. Once the constituents are

blended, water is usually added to the batch to raise the existing moisture content to the proper level for extrusion.

Could you highlight some of the challenges manufacturers face during the mixing and blending stage? How are these being resolved?

Powders such as guar gum, carrageenan, xanthan gum, pectin and flours can be difficult to process in the mixing room. Charging these types of solids on top of a well-agitated batch can still result in floating powders or the formation of agglomerates and lumps if the addition is done too quickly.

The ROSS Solids/Liquid Injection Manifold (SLIM) system combines vacuum with high speed and high shear mixing. SLIM employs a specially designed rotor/stator assembly that creates its own powerful vacuum to draw solids sub-surface. This method enables the operator to inject powders at a rapid but controlled rate, resulting in highly repeatable and superior dispersion results. Powders come into contact with the liquid phase not only below the surface but also where shear conditions are the most intense, preventing the formation of agglomerates, also known as 'fish eyes'. ●

