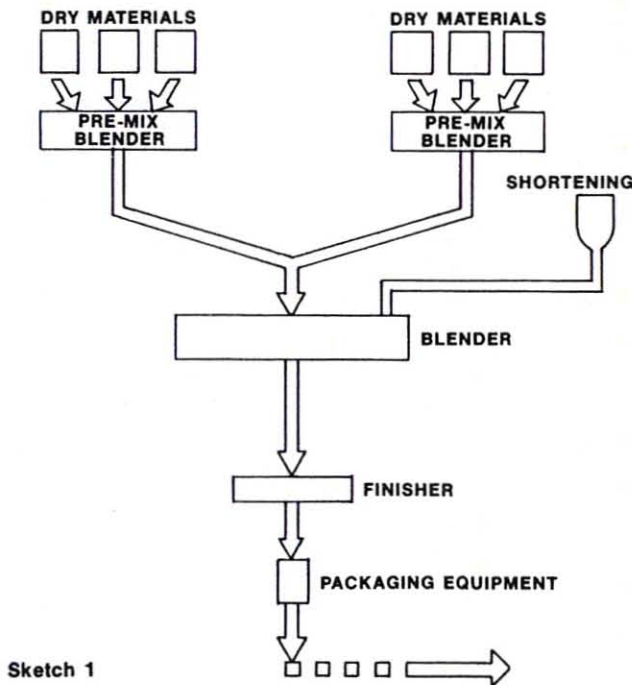
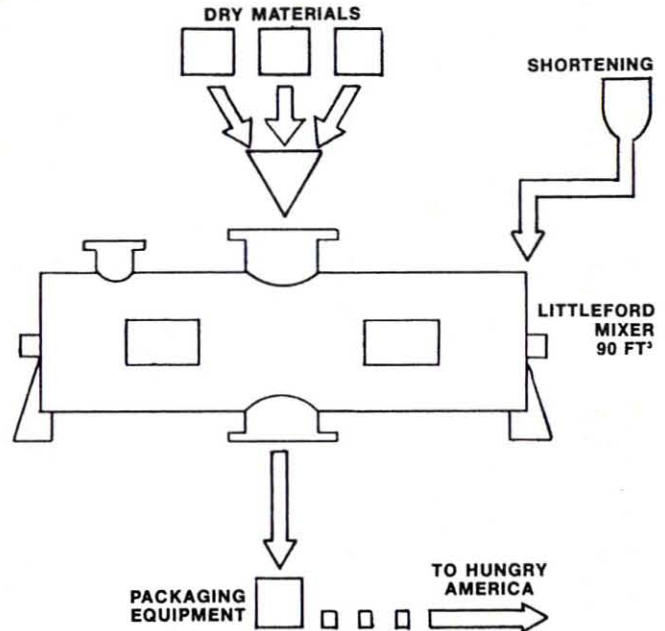


Efficient & Economical Bakery Mix Preparation

The great variety of bakery mixes available on the market today, such as cake, donut and cookie, all require the same basic method of preparation: precise mixing of several dry ingredients followed by the incorporation and dispersion of either a solid (plastic) or liquid shortening into the dry powders. The bakery industry, however, has been struggling along with an inefficient multi-step process to effectively combine these materials (see installation sketch #1). This usually consists of 1-2 ribbon type blenders to mix the dry powders, each mix requiring at least 10 min. to achieve an acceptable uniformity. Following the dry blending an additional ribbon blender is used to incorporate the shortening, usually requiring an additional 20-30 minute mix cycle. However, since the ribbon blenders are low intensity, low shear devices, the end product usually contains undesirable agglomerates of sugar and dry additives and also lumps (pinheads, fisheyes) of undispersed shortening. If it is necessary to remove the agglomerates completely, the bakery mix must be passed through a high intensity, high shear device known as a finisher. Removal of agglomerates or pinheads is usually necessary from the standpoints of uniformity, reproducibility and a more desirable consumer product.



Sketch 2



Littleford's process technology and mixer design present a totally new concept of bakery mix preparation that has been proven to be superior to existing ribbon blender processes (see installation sketch #2.)

The unique action developed by the Littleford intermediate intensity mixer assures a rapid and complete mix dispersion of powders and shortening in minimal cycle times. This action is developed by the turning of plow-shaped mixing tools at a speed sufficient to cause the materials of mix to become a pulsating, "mechanically fluidized" bed. The basic plow mix action is supplemented by high speed, high shear, chopping devices that are mounted between adjacent plows and act as a finisher does to de-agglomerate powders and disperse shortening. Since the chopping devices can be operated independently of the plows, there is little chance of overworking (greasing) the mix.

Since certain products may require some heating or cooling, the mixing drum can be equipped with a high efficiency A.S.M.E. code heat transfer jacket.

With very few exceptions, one of the main ingredients of all bakery mixes is sugar or a sugar derivative, both of which cause problems as far as shaft seals are concerned. The materials of mix press into these seals (stuffing boxes) where frictional heat develops. Due to this heat, the materials

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may scorch or caramelize and ruin the seals and thus contaminate the product.

Littleford has solved this seal problem by equipping mixers for this application with specially designed air purge seals. This is accomplished by purging a small volume of air through a narrow, encircling orifice around each rotary shaft as it passes through the wall of the mixer. This air passes into the mixer and is exhausted through a vent opening on the top of the mixer. As long as the air flow is maintained, it will prevent leakage of material into the seals.

Bakery mixes can usually be completed in a single Littleford mixer in 15-50% of the time usually required by the combined ribbon mixers and finisher.

The Littleford design has been tested in the lab and proven in the field many times. Littleford mixers can be purchased in a variety of sizes to meet most all production requirements. Littleford can assist in supplying fully automated process systems or the interfacing of mixers with existing equipment.

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