Another "How To" Project

LEE INDUSTRIES, INC.

INCLINED DOUBLE MOTION

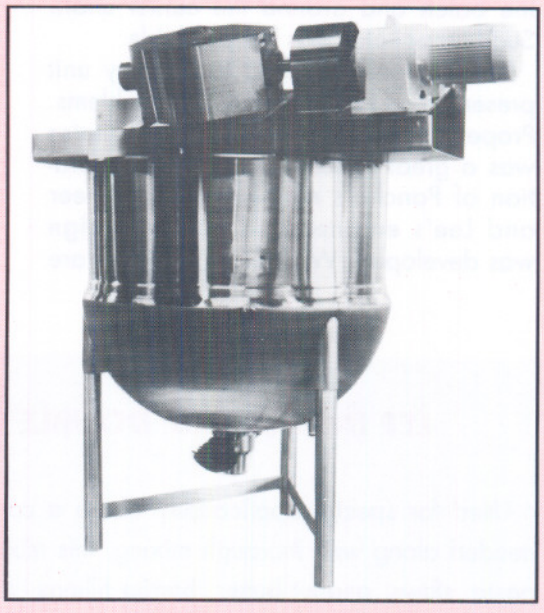
REPORT FROM THE FIELD

Double Motion Incline Mixer Solves Processing Problems for Mexican Food Distributor ...

Tacos, burritos, chili, enchiladas, and fajitas are quickly becoming favorite dishes throughout the United States. Fast-food chains, frozen foods, specialty restaurants, and buffet lines are all accepting these entrees as a standard selection. The preparation of these spicy, south-of-the-border items, however, can present unique problems when large quantities are required.

Ground beef or chicken is one of the basic ingredients for most Mexican foods, but both are difficult to prepare in bulk. Cooking in skillets, on grills, and in brazing pans is too slow and messy. Preparing meat this way also requires ventilation and extra handling. Larger batches of these products become a sticky mass and have a tendency to form balls, burn on the outside, and remain raw in the middle. Single-motion agitators just won't mix. Double-motion agitators still allow for a cone of uncooked meat around the center shaft. Even blenders do not adequately prepare the product.

Pancho's Mexican Foods in Memphis, TN was determined to solve the problems associated with cooking 2,800-pound batches of ground beef for taco and burrito fillings. The meat was to be thoroughly cooked only in its own juices with spices added. Afterwards, it was to be pumped to a bag filler.



The Lee Inclined Double Motion Mixer, Style D9MS, mixes large quantities of beef or chicken without balling or leaving uncooked meat in the center of the mixer.

A quick review of existing standard equipment prompted Lee Industries, Inc., the company assigned to solve the problem, to begin work perfecting the Lee Inclined Double Motion Mixer (Style D9MS).

Traditional methods of using small batches in kettles or cooking and brazing pans were too time consuming and

required a lot of space. Ventilation for such an operation also provided difficulties. Equipment designed specifically for this purpose is not very versatile or cost effective.

The blending motion of an inclined agitator in a hemispherical kettle showed some possibilities, but this method still allowed for balling of the product and under-cooking of the areas in the center. Drainage of the vessel through a bottom outlet was good. What was needed just didn't exist – a double-motion, counter-rotating, inclined agitator. This would provide the adequate mixing needed to prevent balling, the blending needed to move the product from top to bottom, and eliminate the dead zone in the center of the batch and around the center shaft. Such an agitator was not available.

The design of such a heavy-duty unit presented several maintenance problems. Proper Support for the inclined agitator was a great concern. With the cooperation of Pancho's maintenance engineer and Lee's engineers, a unique design was developed. While most agitators are designed to either lift from the bottom or pull down from the top, the new agitator was designed to do both at the same time. Dead zones in the middle of the batch and around the center shaft were eliminated. This allowed the heavy-duty mixer to gently blend the meat while assuring it was thoroughly cooked.

After preliminary tests were performed in the Lee testing laboratory in Philipsburg, PA, an easily removable and cleanable sanitary bottom footbushing was developed to support the agitator frame. The agitator's drive channel was offset to allow better top access for charging of product.

After several modifications of the design, the unit was built and put into service. The discharge of cooked product through a Lee four-inch flush bottom ball valve outlet allowed use of a standard positive displacement pump to feed the filler. And after two years of heavy use, no major maintenance problems have resulted.

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