MARLEN

A DURAVANT COMPANY

CASE STUDY

CHICKEN PROCESSING PLANT ACHIEVES BETTER RESULTS WITH MORE CONSISTENT CUBE SHAPES

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PROBLEM

A food processing company was not satisfied with the cube shapes produced by its dicing equipment. They desired an increase in larger sized pieces and fewer fines.

CASE STUDY

The processor performed a comparison test using its current technology and Carruthers' AdvantEdge Model AE5000 - 2D dicing machine to dice poultry. The study demonstrated improved performance with the Carruthers equipment.

How the Processor Performed the Comparison

The processor tested two different methods of dicing to perform their analysis, including:

1. **Method A** which utilized the company's old equipment: a two-dimensional dicer featuring small diameter, high speed circular gang blades to slice the product lengthwise. To make the crosscuts, the product is then fed into a set of blades mounted on a high speed drum. These blades shear the product against a fixed edge.
2. **Method B** involved the Carruthers AdvantEdge Model AE5000 - 2D dicing machine: a two-dimensional dicer that deploys large diameter low speed gang blades in conjunction with a slicing blade cutting perpendicular to the flow of product. The product is belt-fed into the dicing blades.

Product preparation

The processor performed the test using roasted, flattened, pre-chilled (39° F) chicken breast. The test equipment was set up to reduce the product size to 10 mm x 10 mm x flattened height (0.39 in x 0.39 in x flattened height). The processor discharged the diced product through a drop chute from the dicer into a spiral freezer. The frozen product moved onto a shaker sorting table.

For the test, the processor fed 364 kg (800 lb) of product through each machine. Both dicing machines were installed on the same production line so that the only equipment variable was the choice of dicing machine and each ran the same cut size and temperature of product.

Visual results point to quality difference

A visual inspection of the product was performed at the shaker table. The customer concluded that Method B, the Carruthers AdvantEdge Model AE5000 - 2D, produced less fines, with more pieces achieving the desired size.

Dicing Method A

Dicing Method B

CASE STUDY (continued)

Data confirms visual inspection

The processor performed a sieving analysis of the product produced by each method. The following table demonstrates a significant increase in the percentage of desirable cube sizes in the 8 mm (0.31 in) to 16 mm (0.63 in) dice size using Method B. In addition, results indicated that the Carruthers AdvantEdge Model AE5000 - 2D dicer produced approximately 20% more pieces in this desired size range. Finally, a significant reduction was achieved in undesirable pieces in the less than 4mm (0.16 in) size and greater than 16mm (0.63 in) size.

		Dicing Method A	Dicing Method B
Sieving Analysis	**Target %**	**Result**	**Result**
16-20mm	<3%	2.5%	0.37%
11.2-16mm	>35%	36.09%	61.11%
8-11.2mm	>30%	39.69%	32.30%
4-8mm	<25%	20.87%	5.80%
<4mm	<6%	0.85%	0.39%

SOLUTION

With the Carruthers AdvantEdge Model AE5000 - 2D dicer, the processor achieved the higher quality and greater eye appeal they preferred. As a result, the processor opted to replace their old machine (Method A) with Carruthers AdvantEdge Model AE5000 - 2D (Method B).

4.5 metric tonnes (5 tons) of poultry product is diced per hour by the processor. The plant operates 16 hours a day, six days per week. The resulting product is valued at $3,000 per .91 metric ton (1 ton).

About Marlen

Marlen is recognized as a leading provider of innovative food processing equipment for a variety of products including meat, poultry, fish, vegetables, fruit, bakery, confectionery, snacks and dairy goods. Marlen products are used for vacuum stuffing and pumping, portioning, filling, dicing, grinding, slicing, shredding, cooking and chilling food. For more information, visit www.marlen.com.