

Gourmet Pasta.

'Rolling Wave' Freezer from Messer Speeds IQF Pasta with Soft Touch for Pierino Frozen Foods, Inc.



Pierino Frozen Foods, Inc. (Lincoln Park, MI) is one of the first prepared foods processors to harness new cryogenic 'rolling-wave' technology to individually quick freeze (IQF) gourmet pasta. The Messer Wave Freezer, patented by Messer (Bridge-water, NJ), uses a proprietary rolling-wave action to keep IQF products separate as they freeze.

The rolling wave agitates the moist pasta items on the belt to keep them from sticking and to improve the flow of cryogen around the product. The

result is more rapid heat transfer, much higher throughput, and lower operating costs than is possible with a similar-sized tunnel freezer. The cryogenic freezer, which can use either liquid nitrogen or carbon dioxide (CO₂), also avoids the snow buildup associated with other types of cryogenic freezers.

The hygienically-designed Messer Wave Freezer has already proven successful on IQF protein products. Stuffed pastas, though, are far more fragile than, for example, diced

chicken or shrimp. So the question became: Could the new freezer gently handle gourmet pastas with little or no breakage? (A difficult challenge for a traditional flighted freezer.)

Quality has been a priority ever since company founder Pierino Guglielmetti and wife, Ida, first started in Detroit in the mid-'60s. For the past 17 years, the company has been quick freezing fully cooked pastas using a 20 ft. Messer cryogenic tunnel freezer, maintained by Messer.



Quality, High-volume IQF
 The new Messer Wave Freezer quick freezes a range of fully cooked, stuffed and unstuffed gourmet Italian pastas for Pierino Frozen Foods, Inc., including rotini, ravioli, tortellini, macaroni and mostaccioli.



More Macaroni, Less 'Elbow'
 Because the Messer Wave Freezer is so efficient, belt loading could be increased by about 50 percent for a rapid jump in productivity with less labor. Only one quality inspector is now required on the input side rather than two or three.

In 2014, Pierino passed the leadership mantle to son, Gianni, who grew up in the business, attended college at night, and spent 15 years on the production side. Now 40, Gianni and wife, Tonya, are raising two daughters. All six of Gianni's siblings (3 brothers, 3 sisters) work in the business, so family values remain vital to the company outlook.

"Our goal, collectively, is to follow in the tradition my father started and to build a legacy for the future. As president, I am now responsible for ways to improve production. The Messer team helps us with that, and also to maintain our high standards for food safety and quality," Gianni said, noting that the 30,000 sq. ft. facility is now SQF-certified.

He first became interested in the Messer Wave Freezer after learning of its success for IQF diced poultry. Last year, he asked the Messer food team to evaluate the performance of the existing tunnel freezer vs. the new IQF rolling-wave freezer, beginning with a detailed assessment of the current process.

The Wet Pasta Challenge

Because the fully cooked pastas are still moist from the boiler, they would tend to stick together as they entered the tunnel freezer, and also to stick to the belt. For gourmet pasta, the product appearance is a hallmark of quality, so any pieces locked together, clumped or broken during quick freezing must be scrapped. The existing freezer used steam injection to minimize this, and required at least two inspectors upstream on the incoming side to keep pieces apart on the belt.

In contrast, with the new 5-meter (16.4 ft.) Messer Wave Freezer, the adjustable rolling wave action allows the items to stay in motion as they are gently tossed on the belt. To ensure high product quality and success, a variety of pasta products were pre-tested on the freezer at the Messer food laboratory in Cleveland, Ohio. During commissioning, the Messer food team optimized the process – the belt speed, temperature and wave frequency – to maximize productivity for each pasta recipe and noodle size.

The incoming belt can be layered and can quick freeze up to 25-40 percent more per hour than before depending on the product – on the order of 900 pounds per hour. The new IQF freezer line is so productive, only one worker is needed on the incoming side.

"With Messer, we are now meeting the needs of a new generation who crave the comfort of gourmet Italian cooking, but also demand convenience. As I like to say, 'if you can't marry Italian, Pierino Frozen Foods may be the next best thing.'"

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