

# Technology drives growth in automated portioning



Ultrasonics can help negate the problems encountered with traditional cutting equipment when it comes to soft, sticky or delicate products.

*Food Processing* looks at a cutting technology that is helping meet the ever-growing demand for pre-portioned, sliced food products.

There are a number of factors driving the increasing demand for pre-portioned products in recent years. These include a greater tendency to eat-on-the-go, convenience for consumers at home, time savings for retailers and the hygiene benefits of foodstuffs being handled and portioned within a controlled and clean environment.

Although traditional mechanical cutting systems used for slicing, dicing and portioning works perfectly well in many applications, when used on soft, sticky or delicate products their limitations became

clear as there is a tendency for these types of products to adhere to a traditional mechanical blade which can pose a risk of smearing product, or crushing softer and more delicate products.

An alternative technology has been developed, which can help negate the problems encountered with traditional cutting equipment and which also has the capability to meet the food industry's demand for higher throughput and less waste.

Put simply, ultrasonic cutting technology consists of a knife blade designed to vibrate at an ultrasonic frequency which significantly

reduces the friction between the product and the knife so even at high cycle speeds it is still possible to achieve neat cuts.

## **Eliminating challenges**

The ongoing application of ultrasonic technology – such as that offered by Telsonic – has eliminated many of the challenges relating to soft and delicate products and has also played a key role in driving efficiencies, increasing productivity, gaining higher yields and improving product quality and portion control when used for food cutting and portioning.

Martin Frost, sales manager at Telsonic UK, explains more about the technology: "Each manufacturer has their own specific requirements and there is an equally diverse range of solutions to their cutting and portioning applications. The flexibility of the ultrasonic process means that it can be integrated into dedicated automation systems, perhaps incorporating one or more ultrasonic blades, or highly flexible multi-robot systems, capable of producing cuts in different positions and orientations. The many benefits of the ultrasonic process, together with these automated production concepts, mean that a growing number of items such as sandwiches, cheesecake, gateaux, cheeses, and increasingly tray bake products including brownies, flapjacks and protein bars are now being successfully cut and portioned automatically." A knife edge vibrating with ultrasound makes a fast and precise cut with minimum resistance and without releasing particles. When cutting bakery products, energy bars, cheese or pizza, for example, the vibrating (cold) cutting sonotrode reduces the resistance in the cutting process and also cleans itself of any product remains attached. The result

is smooth, reproducible cut faces without deformation or thermal damage to the product.

### Trying new things!

Using ultrasonic processes also allows food manufacturers to consider new products or ingredient combinations, which may previously have been extremely difficult or impossible to cut and portion successfully using traditional methods. The clean cutting nature of the ultrasonic process also improves product aesthetics by providing consistent portion control and eliminating crumbs, important considerations for customers viewing products on the shelf. Manufacturers also realise increases in yield, due to the consistency in cut, and the ability to cut very thinly. All of these attributes can also have a positive impact on downstream packaging operations by eliminating issues related to product inconsistency.

Significant productivity gains are achieved through the speed of the process, and because the cutting sonotrodes do not suffer from the same contamination problems as traditional cutting blades, uptimes are much higher. It is also possible to introduce

automated cleaning cycles on dedicated cutting systems or robot-based systems if desired, either by dipping the sonotrodes in a cleaning bath and activating the ultrasonics, or by jet washing within the machine.

The relatively simple configuration of the ultrasonic process means that the sonotrode and its associated converter can be mounted to multi-axis robot systems and this is one feature which has had a positive impact on the uptake of the technology. The increase in the number of systems being integrated into robots can, in part, be attributed to the development by Telsonic of special 500mm and 760mm wide sonotrodes with IP-rated booster-less systems and special double length yet lightweight 'T' sonotrodes for deeper products, all driven by flexible compact 20 and 35Khz MAG – S type generators. The relatively low-weight of these sonotrodes makes it possible for automation specialists and system integrators to use smaller robots, which in turn makes for a more compact system, taking up less floor-space. The flexibility of the process, especially when combined with a robot, makes it simple to change the portion size or shape as required for different customers. ■

## Moving to the next level of automated loading from slicers

The food industry is demanding ever more creative packaging formats for sliced products and this often requires innovative automated solutions to make them viable.

Weber has offered such solutions for many years. Its most recent offering is the Weber Shuttle System (WSS) which transcends traditional solutions for sliced portion loading into thermoformed packets and could be used in multiple sub industries of which slicing may or may not be a part.

There are already many delivered examples of how the WSS can fit into various food production processes, such as sandwiches, pizzas and ready meals. An advantage of this system, which is available in the UK from Interfood Technology, is its flexibility. It can be partnered with a wide variety of additional equipment to create multiple end results from a single system. Various slicers from differing levels of HACCP (Hazard Analysis and Critical



Control Points) can be incorporated and combined via a pick-and-place system to create a multi-topping pizza – for example ham and salami. A WSS producing

sandwiches or ready meals can be sped up or slowed down under third-party dosing stations to create the right layering of butter or creamed potato/vegetable, for example.