



Cutting and separation technology

Background

Many food cutting systems are empirically designed and operated, with little fundamental understanding of the separation processes involved. Using technology developed in other industries, e.g. metal guillotining, they often require the food to be pre-processed (tempered) to give it the required properties. This added pre-processing is costly and time consuming, and if not carried out correctly can result in serious reductions in quality, yield and throughput of cut product. In addition to this, the cutting equipment can cause further problems, such as creation of debris (bone splinters, crumbs etc.), separation of food components, loss of yield and high maintenance and operating costs.

The benefits of optimised cutting parameters also apply to the more novel systems, but in addition, these systems offer capabilities beyond those of the traditional equipment. An example of this is ultrasonic cutting of multi-layered, multi-textured products such as coated and filled bakery or confectionery products. Ultrasonic excitation allows a clean, debris-free cut with very little or no compression and damage to the adjacent material.

How frperc can help

frperc is researching improved cutting technology to address these issues through a combination of long term research projects and shorter term and more specific consultancy contracts. This includes 'traditional' processes such as bacon slicing, meat and fish bandsawing, fat trimming, primal and sub-primal separation etc. and more novel approaches such as ultrasonic and water-jet cutting. For the traditional processes, optimisation of product and equipment parameters is often the solution. Using the example of bacon slicing, careful tempering of the product, followed by slicing with the optimum combination of blade edge angle and cutting speed can greatly improve yield, cut quality, slice dimensions and at the same time reduce blade wear and maintenance down-time.

To discuss any aspects of cutting or separation processes for food or other cellular materials, or how we can help in the specification, operation, trouble-shooting and optimisation of cutting equipment and associated processes such as tempering and product handling, please contact us on +44 (0)1472 582400 or email us on frperc@grimsby.ac.uk