



Kerry: Leading to Better 1

# Discover a world of knowledge in every mouthful

More than ever, food producers are striving to meet consumer demand for more trusted, nutritious and delicious food. Examination of ingredient lists is now the consumer norm. Against this background there is a growing need to deliver safe, 'better for you' foods and great taste experiences, while minimising food waste.

At Kerry, we understand the science of taste and nutrition and how the two work together. We're passionate about creating food that consumers enjoy and feel better about eating.

With a solid food science foundation that links ingredient systems, to processing requirements, Kerry's food solutions allow our customers to create cleaner label foods that are fresher for longer and more succulent. This delivers improved mouthfeel and better flavour profiles. Our taste systems have been developed to reflect real food and capture the authentic taste, aroma and visual appeal that consumers love.

Whether you are looking for new textures, tastes or flavours; or to develop healthier, safer and more delicious alternatives, our culinary and R&D teams can help.

Inside this brochure are some compelling insights into consumer trends from around the world and the challenges faced by meat processors to deliver on these needs. We invite you to partner with us to develop foods that will delight and nourish your consumers.



American Hotdogs, British Bangers, Spanish complemented by a variety of ethnic spices category.

Kerry's holistic view of the factors that influence taste, means that our solutions help manufacturers to balance the cost and performance of their recipes. In addition, we offer 'better for you' solutions to address the consumer need for healthier, more balanced alternatives, allowing us to reduce salt, fat

Ingredients can provide key functional and organoleptic attributes to beef and pork including improved yield; enhanced water, fat and protein binding; improved manufacturability; improved or maintained flavour and enhanced shelf-life. Our fully integrated solutions tackle microbial challenges, creating not only great tasting foods, but also promoting fresher for longer, safety and colour stability in all our recipes.



The range of beef and pork products available on supermarket shelves is vast. The growth of this category is both inspiring and challenging. Using traditional and modern processing techniques, every corner of the globe is filled with products that use seasonings and functional ingredients to create new and exciting taste experiences.

Chorizo, German Frankfurters, Italian Salami, French Merguez, Polish Kielbasa and Turkish Köfte, are great examples of the new taste experiences that consumers are enjoying. Hearty cooking profiles like smoked, sous vide, roasted and baked, and seasonings are reinvigorating this

and sugar without compromising taste.



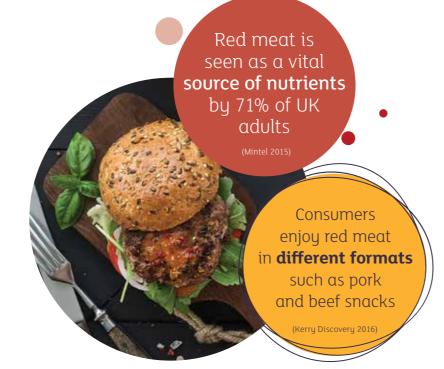
High salt levels in categories such as bacon and ausages are a major health concern in Europe

60% of UK adults spend less than 30 minutes on meal preparation

**Processed** red meat sales have

declined by 8.4% in the last five years

30% of French and German consumers are incorporating more **protein into their diet** compared to 2015, creating an opportunity for high-protein foods such as red meat (Mintel 2016)





# 52% of consumers prefer **cooking with poultry** as long as it is safe to eat

(Kerry Discovery 2015)

40% of European consumers consider interesting flavours and ingredients important when purchasing poultry

(Mintel 2016)

50% of European consumers state the importance of detailed information regarding sourcing in making a purchasing decision

(Mintel 2015)

Taste, food safety and sourcing are key growth drivers

(Kerry Discovery 2015)

# Versatility drives poultry innovation forward

Consumers lifestyles and tastes are changing and becoming more sophisticated. They demand more authentic flavours, improved freshness and savoury goodness. Furthermore, day parts offer opportunities for new, more convenient and innovative products.

The poultry industry is dynamic, fast-paced and inventive. Kerry is committed to supporting our customers to develop products with clean label ingredients that are nutritionally balanced, and naturally delicious - a return to real food from trusted sources.

Poultry is regarded as
the most versatile of meat
proteins. New formats in
packaging and portions appear
daily. Kerry can provide a tailored
solution to meet our customers'
category needs, for example authentic
flavours like Tennessee BBQ, smoked
rotisserie, coated or deli.



Our range of systems provide customised flavour innovation for every market, ensuring each product is filled with great taste, while optimising cost, product yield and shelf-life. Here are some of the ways that Kerry can help:

- Taste: Coatings, seasonings, sauces, marinades, rubs, glazes, smoke condensates, stocks, yeast extracts and authentic flavours
- Performance: Brines, cures, emulsifiers, binders, preservatives and texturisers
- Better for you: Our baked crumb can
  be tailored according to application
  requirements or consumer preferences.
  Different types of fat, or blends of fat,
  can be applied to a variety of crumbs and
  infused with herbs and spices, oils, seeds
  and grains to create a truly unique
  coating

When it comes to poultry, transparency is not just expected – it is fundamental. Clean and clear labels are a key focus for poultry consumers as a result of recent food safety issues. At Kerry, we believe we have a responsibility to safeguard the security of the food supply chain. Our spices are sourced 100% from origin, while our reduced salt, clean label brines are made using natural poultry stocks, just like a chef in the kitchen – we use nothing but natural ingredients and time.



### Seafood, naturally healthy, enriched with great taste

Seafood is seen as the purest, most unadulterated form of natural protein. The health benefits of eating seafood are well established: it's a lean protein option, rich in heart-healthy omega-3 fatty acids, vitamin D and antioxidants and contains very little saturated fat.

The seafood industry has benefited from the development of more sophisticated food cultures, increasing demand for more exotic, multi-sensorial and premium seafood products. The pace of modern life means that health conscious consumers are looking for the convenience of easy to prepare and 'ready to eat' seafood that is easier for everyone to enjoy, whether as a quick snack or a prepared meal.

Whether smoked, cured or infused with refreshing or familiar brines, great tasting food is at the heart of our business. Kerry's natural brines and smoke condensates bring the authentic flavours that consumers love, enriching the goodness of seafood with great taste.

Created by our culinary and R&D teams, our taste systems range from seasonings to sauces, which deliver cost effective, exciting taste experiences for everyone.

Coated seafood remains high on consumers' preferred meal choices, with fish fingers and fillets found in many households. Quality coatings start with a passion for breadcrumbs. At Kerry, we can achieve the highest levels of quality control, traceability and consistency, while also tailoring flavour and texture according to the needs of our customers – from sweet and malty, to nutty and smoky.

Our safety and performance systems help maintain the naturally tender bite of seafood throughout processing. This delivers cost-effective, premium products that consumers go back for time and again.

> strong provenance **cues** highlighted on







was the second most important category for new product development in Europe, accounting for a third of new product innovation in 2014 (Mintel 2016)





# Meat free and flavour full

The meat-free category experienced a solid climb in volume sales of 17% between 2008 and 2013 in Europe. All indications are that this trend is set to continue, with significant growth expected in the years ahead - on both a European and global scale.

One of the main reasons for this positive forecast is that consumers' nutritional knowledge continues to increase. Enticed by the promise that it can help you lose weight, feel stronger and avoid age related muscle loss, 71% of consumers say they want more protein in their diets. In particular, consumers are looking at meat-free, plant-based proteins. 'Flexitarians' is the name given to this group of consumers. Processors are adapting and targeting both vegetarians and flexitarians.

At Kerry, we understand that historically, meat-free alternatives lacked taste and texture. Our seasonings, sauces and glazes were designed with meat-free applications in mind. We use great tasting textured vegetable proteins made with soya, wheat, or a combination, to provide all the textural characteristics that consumers enjoy.

Kerry's 'Cereshred' is a textured protein made from soya and wheat. It is uniquely processed to give a meat-like texture and absorbs about three times its weight in water ensuring excellent flavour delivery. Every time.

Our 20 year history as a meat-free supplier means that we can deliver differentiated, authentic profiles. We know the meat-free category is one to watch and where manufacturers need to find innovative solutions to the challenges still experienced by the industry today.

Our functional systems for binding, provide great mouthfeel and additional benefits such as added fibre combined with 'fresher for longer' processes to reduce waste.

Our complete systems for end product applications — such as meat-free crispbakes with sauce topper and coating — mean that our customers' food products deliver fantastic taste, great texture and a balanced nutritional profile.



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### Appetisers, a bite-size indulgence

Whether you call them starters, tapas, finger foods, sides, or party foods; the popularity of appetisers is undeniable. These tasty bite-sized indulgences play into millenials' adventurous nature, giving consumers permission to experiment with different flavours, textures and shared food experiences.

Consumers are looking for innovative and creative new dishes from around the world. Appetisers offer the chance to explore food in a versatile and affordable way.

At Kerry, we track emerging retail and foodservice trends, which our skilled R&D scientists translate into innovative food products. Our range of process-stable cheeses and sauce portions deliver high performance on the line, and satisfaction on the plate. Our authentic blends of carefully prepared seasonings contribute bold flavour that excites the taste buds.

Kerry's customisable coating systems provide a distinctive golden crumb, crispy or crunchy texture, and a range of flavour profiles to engage all the senses. Our savoury taste solutions enhance flavour and aroma to create a premium product that consumers will crave.

For the growing number of health conscious consumers, appetisers are a good way to exercise portion control. Kerry's 'better for you' systems can further improve meatbased and meat-free appetisers by reducing fat, salt or sugar, without compromising on taste. Our wholegrain breadcrumbs, glutenfree systems, or fibre-enriched seasonings give food products a competitive edge.





Around the world, supermarket aisles are filled with examples of meat products that use seasonings and marinades to bring food to life.

Consumers understand that high salt, sugar and fat content are a concern, but they are not prepared to sacrifice taste. Food manufacturers are responsible for reformulating recipes so that consumers don't have to.

At Kerry, we view these challenges as opportunities for our customers to use innovative seasonings and marinades, which are nutritionally improved. Our meat scientists use a bespoke range of yeast extracts and salt perception solutions to deliver an impactful, concentrated savoury taste without compromise. Marinades have also been developed that deliver up to 30% sugar reduction, without impacting taste or functionality.

As market leader in meat seasonings, our R&D team draws on our global network of marketing, culinary and sensory experts to develop product concepts in line with local and global trends.

Our portfolio of ingredients includes Savoury Flavours, Smoke & Grill Flavours, Yeast Extracts and Spice & Herb Extracts. When combined with our 100% sourced from origin spices, we create a winning formula for our customers' products.

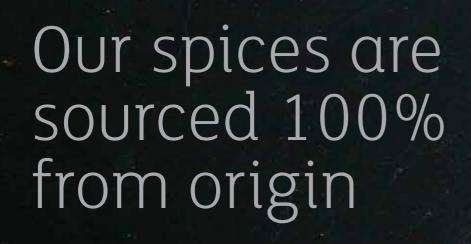
Our seasoning and marinade systems can be used in a variety of applications for beef and pork, poultry, seafood and meat free and can be divided into two categories:

 Taste: Coatings, seasonings, sauces, marinades, rubs, glazes, smoke condensates, stocks, yeast extracts and authentic flavours

 Performance: Brines, cures, emulsifiers, binders, preservatives and texturisers

With each customer, we tailor our capabilities to meet their specific needs.





Challenges, such as adulteration and contamination of spices in the past, have caused consumers to lose confidence in the industry. At Kerry, our spices are sourced 100% from origin, offering our customers complete traceability, across an end-to-end supply chain. This delivers peace of mind for the consumer, and a unique selling point for our customers.

Sourcing from origin is nothing new to Kerry. Rather, it's a journey that we have been on for many years, building a deep level of assurance in this extremely complex area.

Firstly, we have put together a select group of preferred partner suppliers, chosen for their consistent high quality and reliability. In addition, we have Kerry's own strictly controlled supply chain.

We go to these lengths to ensure that we can guarantee quality assured sourcing, because we understand that you need promises you can count on.

Becoming one of our preferred suppliers is no simple matter. Suppliers must adhere to strict criteria, including quality control measures, conformity to industry standards, contingency planning and alternative sourcing. These protocols are audited regularly by dedicated Kerry personnel.

Sourcing 100% from origin is just one way in which Kerry is responding to our customers' need for safety, security and transparency in the food chain.

As consumers demand a return to real ingredients, Kerry is responding where it really matters.

### Kerry: Leading to Better A new world of Smoke Old world smoke taste ticks all the 21st century boxes. Smoked foods are very much a staple of our contemporary lifestyle, but the process of smoking is far from contemporary. It dates back to the Stone Age, when it was first used for preservation purposes, rather than flavour enhancement. Today, smoking still has a natural preservative effect, but it is used more extensively to impart distinctive flavour characteristics – along with the unique colour and aroma that we associate with smoked foods. Smoked products are popular in meat and poultry and are gaining popularity in all kinds of food and beverages. Great flavours start with a passion for authentic taste. At Kerry, we understand taste. Our smoke products create signature foods wrapped in delicious goodness, while also delivering a healthier option, minimising food waste and promoting sustainability. Offering a diverse range of taste and colour

profiles, our smoke flavours are based

on the finest woods such as hickory, mesquite, beech and oak - and deliver

delicious top notes and basic tastes. The end result is that every sausage,

marinade, sauce, hot or cold

dish, BBQ, cheese or

love.

fish is filled with  $\alpha$ 

rich taste that

consumers

Our smoke condensates offer a host of benefits:

### Taste and quality

- Authentic smoke taste
- Complete consistency, with no variation in flavour or colour
- Improved colour stability over the shelf life of the finished product

### Efficiency

- Reduced smoking time and low usage rate leads to more competitive costs
- Cooking loss can be reduced by up to 7%, resulting in higher yields
- Lower energy consumption due to reduced production cycles
- Increased smoke chamber capacity (1-50%) due to a higher product throughput

### Cost

- Minimal equipment supervision or maintenance required
- Lower cleaning and insurance costs
- Reduced need for industrial strength cleaning agents
- Purchasing or storing of woodchip is not required

### Safety

- Non-genotoxic
- Contributes to food safety due to the preservative effect of smoke
- Extends microbial shelf life (spoilage from bacteria) and increases microbial safety
- Eliminates fire risk
- · Controls yeast and moulds
- Creates a safer environment for operations staff due to the removal of ash, mulch and tar

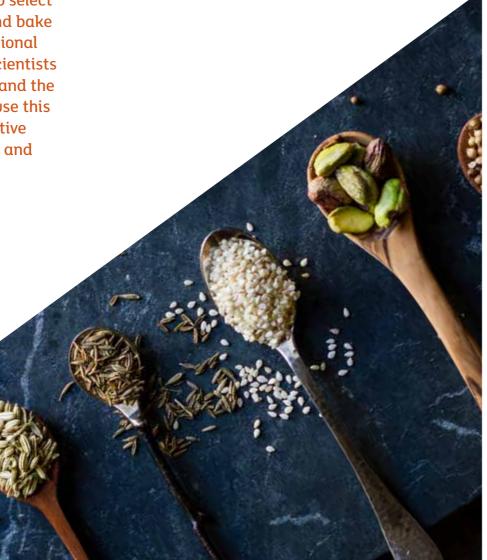
# We've got coatings covered!



The appeal of battered and breaded foods has not diminished in the centuries since man first put food into hot oil, and it's no wonder. Few foods are as cravable – the distinct combination of the crunchy, crispy texture and mouthwatering savoury flavour of a good coatings system, will always have consumers coming back for more.

At Kerry, our extensive coatings range starts with the basics. We work with local farmers to select the right grains for milling and bake our breadcrumbs using traditional methods. Our team of R&D scientists and culinary experts understand the global coatings market and use this knowledge to develop innovative and unique flavours, textures and visual appeal.

Deeply rooted in both taste and nutrition, Kerry is a leader in providing 'better for you' solutions that don't sacrifice flavour. Crunchy wholegrain breadcrumbs, nonfried baked coatings, gluten-free systems, and salt reduced predusts and batters, are key elements of the Kerry portfolio for the health-conscious consumer. Kerry's scientists work with our taste experts to deliver a tailored flavour solution that excites consumers' palates and engages all of their senses.





At Kerry, we know the provenance of our ingredients. Our grain is sourced from local farmers and milled in our own flour mills, while our spices are sourced 100% from origin. Kerry creates coating systems without additives, using nutrient-rich ancient grains, whole grains and minimally-processed, traceable ingredients. These bring the consumer honest, wholesome, naturally delicious guilt-free foods that they can feel good about eating.



Continuous exposure to foods from different cultures or prepared in different styles, with new and exotic flavours and textures, has whet the appetites of today's consumers. Kerry's global footprint means we are inspired by international trends, as they happen. Our R&D scientists bring a world of flavour and texture to our coatings, opening the door to a multi-sensorial experience that will satisfy even the most adventurous new consumer and turn an everyday experience into an exceptional one.



In the fast-paced world of today, consumers take comfort in looking back on simpler, more traditional times. They desire authenticity and provenance, natural ingredients and old world craftmanship in the foods they eat.

Kerry, born out of the farming community, has always remained close to the soil and to the farmers who produce our raw materials. Our breadcrumb is baked by our own artisan bakers, who take exceptional pride in how they take natural ingredients and prepare them in a way that's true to slow food traditions. Whether you need a crumb that's hearty and crunchy or light, crisp and airy, Kerry can help.



Keeping today's busy consumer satisfied means robust ingredients, bolder textures and powerful tastes. Consumers want food that helps fuel performance and provides energy for stronger, busier bodies. Kerry's taste and nutrition solutions can provide just that; balancing high energy protein, healthy fats and big, bold tastes in a filling, satisfying package that will keep consumers coming back for more.





Increasing consumer awareness of the benefits of cleaner eating is driving retailers and processors to create clean and clearer label foods. Food safety scandals have also played their part in changing consumers' habits and buying behaviour in the supermarket aisles. Consumers are actively reviewing back-of-pack ingredient labelling and seeking out healthier, more wholesome and authentic foods filled with ingredients they know and trust. Driven by consumer demand, food processors and retailers are responding by re-evaluating their recipes and looking for healthier alternatives.

While the shift towards clean label foods is continuing, taste remains critical. Consumers are unwilling to substitute great taste for improved nutrition. Maintaining the sensory and textural characteristics that consumers prefer is essential.

Salt, sugar and fat reduction are key areas for meat and meat-free food producers.

### Salt reduction

Governmental pressure coupled with increasing consumer understanding of the health risks associated with salt rich diets, is fuelling the demand for healthier foods and keeping the spotlight firmly focused on the salt agenda. Salt reduction is all about balance and recipe reformulation is complex. Maintaining product taste, texture, appearance, quality and shelf-life, while keeping costs and prices competitive can be a major challenge.

At Kerry, we look at every recipe in its entirety. Our salt perception solutions deliver all the flavour of salt and the great taste that consumers love. By reducing the salt content in our marinades, rubs and glazes, coating systems and our natural brines and cures, our solutions bring authentic, full flavour to meat and meat-free products, while improving our customers' nutritional declarations.

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### Sugar reduction

Ever present in today's media, sugar is fast becoming the biggest influencer in consumers' buying decisions. Recent studies and reports are beginning to shift the blame for rising obesity levels from fats to added sugar in processed foods.

The food industry is responding by identifying ways to deliver the sweetness of sugar with fewer calories. The challenge lies in producing food products that continue to meet consumers' taste expectations. Whether it's a sticky and sweet BBQ marinade or a fruity dipping sauce, consumers want to experience the indulgent sweet tastes that they know and love. Kerry's understanding of taste and nutrition, allows us to deliver on those expectations, using clean label solutions to reduce the sugar content in our marindes, rubs and glazes.



### Fat reduction

The relatively high fat content of meat products (up to 37%), is leading many consumers in search of a healthier lifestyle to seek out reduced fat protein sources.

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Reducing the fat content of meat products, while complex, is key for meat processors as the trend towards healthier alternatives continues. Fat affects the organoleptic properties of meat products. Its removal requires a deep understanding of sensory science, to ensure that reduced fat options deliver the same delicious taste experience as their full fat counterparts. For example, fat reduction in sausages, can result in firmer, more bound textures and reduced succulence.

Kerry's reduced fat systems are designed to bind water when cold, retain their texture when heated and deliver the rich aroma and flavour that consumers expect. Our functional ingredient systems improve yield and manufacturability and also enable food manufacturers to produce replica fat that can completely or partially replace fat in the meat system.

Kerry's Slendercoat technology is used to deliver a baked crumb with reduced fat content. Our baking process mimics the effect of frying, but uses less oil. While in the oven, the starches and oil react together in the same way they do in a fryer, giving them a real taste advantage.





## Clean label, for clarity and confidence

E-number additives have helped in the development of meat products to suit different market conditions such as logistical demands, shelf-life and texture. The overriding consumer perception, however, is that E-numbers are undesirable and best avoided.

Consumer demand for meat products that are free from unrecognisable ingredients and have simpler back-of-pack labels, is leading manufacturers to re-evaluate their priorities. This is a major challenge for the meat processing sector.

Kerry's clean label solutions were developed to answer these challenges. We are committed to delivering great tasting foods made from ingredients consumers know and trust.

E-number additives are primarily used in meat products to provide functionality. At Kerry, we provide the same functionality through a combination of clean label ingredients such as proteins, starches and fibres. Kerry's spices are sourced 100% from origin. Our clean label solutions bring traceability, functionality and taste to the mix, while increasing and maintaining freshness. Solutions include brines for injection or addition to high quality hams, emulsifiers and stabilisers for cooked sausages and pâtés and complete seasoning systems for fresh meat preparations.

Through intelligent food design, we have successfully reduced sugar and salt in our marinades, rubs and glazes, in addition to providing clean label savoury taste solutions. Utilising our yeast extracts and savoury taste capabilities, we have solutions that replace MSG and HVP. All solutions have been developed and optimised by Kerry, tested successfully in industry conditions and provide simple, back-of-pack declarations on final products.

Other areas where we add value include phosphate and allergen removal. We also appreciate that cost effectiveness is crucial for the meat industry, therefore we offer solutions that meet our customers' cost-in-use requirements.

Our research teams work to find new, natural ways to provide functionality to meat products through collaboration with universities, research associations and suppliers.

### Shelf-life, one of the primary battle grounds

In the UK, millions of tonnes of food is wasted each year, because it has passed its expiry date. The world population continues to increase and is estimated to reach 10.5 billion by 2050, increasing pressure on the world's food market and highlighting the need to increase the shelf-life of perishable foods using natural ingredients and minimal processing.

Although salt reduction is healthier, it reduces the shelf-life of perishable foods. Shelf-life and food safety are affected by a range of different intrinsic (pH, water activity) and extrinsic (packaging, storage temperature) factors. To increase the safety of a meat product, it is essential to manage all of these parameters.

Shelf-life management is multi dimensional. Spoilage and pathogenic microorganisms need to be considered, as well as colour degradation and rancidity, due to fat oxidation. Kerry can offer many years of expertise in solutions such as chemical preservation systems, smoke technology, fermented ingredients and spice and herb extraction. These influence the factors that prevent the growth of bacteria.

Our pioneering research has enabled us to harness the preserving effects of smoke, by fractionating out the anti-microbial compounds, allowing us to design products to meet the specific needs of our customers.

Our knowledge of food applications, combined with a deep understanding of food fermentation, enables us to offer a wide variety of fermented ingredients. Through recipe engineering, together with our 100% sourced from origin spices, our intervention technologies promote taste enhancement, shelf-life extension, food safety and colour stability.

Kerry's solutions also allow our customers to benefit from more flexible production and distribution chains. Our range of chemical shelf-life extenders have proven efficacy against Listeria monocytogenes, improving shelf-life with a measurable cost benefit against traditional lactate solutions particularly in cooked meat applications.







# Balancing food safety and performance with cost

In today's highly competitive manufacturing sector, there are more pressures than ever to control cost through the supply chain.

At Kerry, we can offer advice on best practice with regard to process and overall factory efficiency, as well as provide high performance systems to manage cost.

Here are some areas that we believe are key:

### Control and testing of raw materials

Meat is the most important component, whether supplied internally or externally. All deliveries need to be assessed and rapid, accurate, chemical compositional analysis is strongly advised. Understanding the full breakdown composition of the raw material, against specification is crucial. Meat above specification can provide an opportunity, while below specification material can be rejected or adjusted. Understanding raw material variability allows Kerry to develop solutions that lead to better performance, more consistent quality and improved cost.

### Intermediate and final yields

Control of yield throughout the manufacturing process is key, whether at intermediate or final stage. Effective control through the use of good procedures and record keeping ensures yield and cost is controlled. For example, injected weight is the weight of meat and brine only. Free brine content needs constant attention.

Kerry's functional systems can be developed and tailor-made as a total solution.

We take into account all aspects of production, including raw meat cuts and consistency, local considerations, key processing equipment such as injectors, cutters, cooking and cooling methods.

### Process speed

Products need to be manufactured at the correct rate to maximise efficiency. If the process is rushed then yield and cost can suffer. Too long a process can also lead to inefficient capacity usage and quality issues. Kerry focuses on providing functional solutions, designed to perform in line with the customer's production environment and are optimised to work correctly every time.

### Overall plant efficiency

The best use of plant equipment almost always involves achievement of the maximum possible yield. If there is an intermediate cooked weight with no cooking loss (e.g. logs for slicing), then the focus can be fully concentrated on slicing yield. Inconsistent intermediate yields prevent this level of focus and ultimately leads to lower efficiency levels. Simply put, yield loss equates to manufacturing capacity loss.

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### Kerry. Leading to Better.

At Kerry, by combining the science of Taste & Nutrition, we aim to make better tasting and more authentic products that meet vital nutritional needs for people in all parts of the world and at all stages of life.

We understand that taste is influenced by many factors: cultures, life stages, memories, environment and more.

Consumers are demanding more authentic tastes, textures and aromas in every product they purchase. Our leading-edge research and extensive knowledge of consumer behaviour, combined with our unparalleled expertise in the science of taste, allow us to maximise flavour in everything we do.

We also know that nutrition is a core driver for the global food and beverage industry. In a world where people expect not only to live longer, but also to live better, consumers are paying more attention to the ingredients in their food and its nutritional value. Our global reach, physical infrastructure and cutting-edge technology, enable us to expertly assist our customers in meeting the challenges that this poses.

We are Kerry. Leading to Better.









Leading to Better



# Notes





