

a TNA whitepaper

seasoning systems to match your needs

top ten considerations when investing in,
or reviewing, your seasoning equipment





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With a degree in chemical engineering and as an active member of the Biscuit and Cracker Manufacturers' Association, David has been involved in the snack industry for 27 years. David joined TNA back in 2011 and is actively involved in the development of new spraying and seasoning technology to assist customers all over the world in applying flavour to snacks and other foods..

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summary

introduction

Seasoning systems are an integral part of any snack, confectionery or baking line, determining the flavour, mouthfeel and appearance of a product. Consumer demand for quality, flavour and choice, plus the need for exceptional food safety, and rising operating costs have all increased the pressure on food manufacturers to change and improve. Advanced seasoning systems can go some way to meeting these challenges, with the resulting efficiencies relieving the pressure on input costs.

Seasoning has four core dimensions: smell, taste, appearance, and time. The first two elements relate to the flavour recipe itself, whereas the latter two are a result of the seasoning process and set up during manufacturing. From these perspectives, processors need to consider what the product will look like once seasoned, and also whether flavours need to be encapsulated or applied in a specific way to ensure the appropriate flavour release over time.

Before any purchasing decision is made, however, food manufacturers should make sure they identify the seasoning system that best suits their needs, particularly from a performance and flexibility perspective. Here are our top ten considerations when investing in, or reviewing your seasoning equipment.



1

product the products to be conveyed

Finding the best solution for the product or product range that is going to be seasoned is essential. Each type of snack base product has its own set of attributes, unique product structure, surface and topography which will challenge the application needs. Whether goods have been fried or baked first during the manufacturing process influences how the seasoning will adhere and how it needs to be applied. Baked goods are too dry for some seasonings to adhere to, whereas fried goods may retain sufficient surface oil to allow powder seasoning to stick to it. Again, consider whether the surface oil will be even enough to provide a consistent coating of the seasoning, if not, you may need to look at another application method for fried goods.

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The physical structure of some products is also more amenable to accepting seasoning, for example seasoning powder will readily collect in the ridges of certain potato crisp shapes. However, if not properly adhered with say oil, or via a slurry mix, the seasoning may fall off once bagged and distributed, leaving the consumer with plain crisps and a pile of powder at the bottom of the bag. Failing to consider the physical structure of a product may also lead to overall inefficiencies since the system may use more seasoning powder than is needed.

Consider also how you look after your ingredients; presenting oil and seasoning powder in the best condition is also part of production line design. Seasoning is naturally hygroscopic, and should be kept in a dry environment and not opened before use. If not kept in the right conditions, seasoning powders can clump and stop a production line. Ensure that your inventory process keeps seasoning in suitably sized bags for the production requirements, and that old seasoning is destroyed.

As well as the products that you're processing today, consider the product areas that you may diversify into in years to come. This will ensure that you future-proof your seasoning system and get the most return on investment during the lifetime of the equipment.

2

method fulfilling different application requirements

The base product being processed will typically determine the type of seasoning method you will need to use. There are many configurations including, flavoured dry powder, flavoured oils or a flavour slurry mix of oil and powder, all of which deliver flavour differently and can be customised to suit consumers' palates. A multiple use factory producing numerous snacking or baking lines will often need the capabilities to service multiple seasoning methods.

Each application process has its own requirements in terms of raw materials. Feeding the system is an important opportunity to increase control and ensure consistency, for example look at how the seasoning hopper is refilled, and how the slurry is mixed. Automating these processes will smooth the production process and reduce labour usage.

Another key choice is between mainline (MLS) and on-machine seasoning (OMS) methods of application. OMS systems often provide greater production flexibility from a control perspective; several flavours can be produced at once for multipack or fulfilling direct sales needs, as opposed to bulk warehousing.

Cleaning and maintenance on OMS systems is typically easier, allowing quick flavour changes and more continuous production runs. MLS systems are better suited to larger production lines and more complex applications of slurries and liquid flavours. MLS is generally the lower capital cost option.

3 seasoning adhesion making the seasoning stick

Depending on the type of product being manufactured, oil is most commonly used to make sure the seasoning sticks to the product, particularly for powdered flavourings. The oil residing on the surface at the time of seasoning application is what matters, as there is a direct relationship between the evenness of surface oil and the seasoning pickup and distribution across the product. Determining when and how much oil is applied, is critical to ensuring that the spread of oil is across the surface, as opposed to being quickly absorbed by a product that is still very hot. Also consider the temperature of the oil, since hotter oil is less viscous and behaves differently when sprayed.

Once the product is evenly coated in oil, it's important to ensure that the seasoning is spread well across the wet product. This will provide the consistency of application that you are looking for.



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4 coverage and accuracy achieving an even application

With increasing pressure on manufacturers' bottom lines and the need to enhance efficiencies throughout production, reducing waste and raw material costs has become an even greater focus in recent years. Applying an incorrect level of seasoning can have a large impact on both input costs in terms of raw materials, and in wastage costs from rejected products that are either over or under seasoned. In such a competitive market as food and snacking, achieving the desired flavour profile consistently is also critical to creating and maintaining consumer appeal.

With this in mind, it's important to consider integrating control and monitoring solutions into your seasoning system selection. This will ensure seasoning levels can be adjusted to suit the production line and ensure optimum efficiency levels and minimum giveaway

5 declaration needs creating greater trust in labels

Consumers are now much more likely to read the declaration label when making their purchase decision. The level of fat, whether saturated, unsaturated or 'trans' is of concern, even if they do not fully understand the implications of the fat level. Fat, however, is a flavour enhancer and without it the consumer may not have a pleasant eating experience, and will therefore not make a repeat purchase. Selecting the best application system will enable the manufacturer to apply as much as they need for taste, accuracy and consistency so that they only need to declare that amount on the product label. The same is true for salt in seasoning, if you can prove you only applied what was necessary, then your declaration is kept to the minimum, instead of declaring your worst case scenario.

1 <https://www.gov.uk/government/policies/reducing-and-managing-waste/supporting-pages/food-waste>

6 **food waste limiting breakage and waste**

Both raw material and finished product waste can have a substantial effect on the productivity and profitability of a production line. Taking the UK as an example, it is estimated that by reducing waste, the food and drink manufacturing sector could save about 720,000 tonnes of food and other material, worth £404 million, annually.¹

Minimising waste, either from breakages, fall off, or inappropriately seasoned products, should be carefully considered when designing or planning seasoning equipment purchases. For example, choosing a system that minimises drops and ensures a gentle tumble whilst seasoning is applied, rather than lifting and dropping the product, can significantly reduce product breakages. Furthermore, mass-based controls in spraying and dry seasoning systems weigh the raw materials and products to ensure the correct amount of seasoning or oil is being applied. If the system detects a fault, or inconsistency, it can automatically adjust the seasoning levels to reduce waste.

7 **flexible operations responding to changing manufacturing needs**

Variety will no doubt remain pivotal in consumers' purchasing decisions for snacks and seasoned products. As such, creating new product flavours can have a significant impact in maintaining consumer loyalty and interest. With pressure on manufacturers to deliver a range of product flavours in the same line, the need for fast flavour changes has never been greater. Since machine downtime can have major cost implications, seasoning systems that offer fast changeover times and minimal clean down requirements are essential to maximise efficiencies.

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The freedom to adapt and exercise precise recipe control are also important factors in ensuring flexible and efficient operating practices. The latest OMS solutions include independent scarf feeders and separate tumble drums to accommodate alternative product varieties alongside traditional lines, for example for low salt options. Plus, independent drum drives with variable speed control and adjustable angle options can help achieve the desired application and correct percentage of flavouring.

With machine lifetimes of 10 to 25 years selecting a seasoning system that is suitable for different types of seasoning (wet and dry), has a wide range of spraying options and is upgradeable, will help future-proof the investment.

8 **ease of maintenance minimising downtime and repairs**

Seasoning systems that offer simplicity in design and provide ease of access to all moving parts help speed up maintenance processes, ensuring machines are back up and running as quickly as possible. This ultimately streamlines both labour and operating costs.

In terms of cleaning, food-grade stainless steel materials, along with seasoning drums that can be removed without the need for tools, present easy to clean, hygienic options. Again, time is money here, so it's essential that labour is minimised and machines can be put back into service swiftly.



Planned maintenance schedules and monitoring systems' power usage can ensure that potential equipment failure is identified before it impacts production.

9 food safety fulfilling the highest safety guidelines

With food safety a top priority for all food manufacturers, safeguarding against contamination should start with machine design and set up. Easily accessible, simply designed systems with few moving parts help ensure manufacturers adhere to strict hygiene standards.

Traceability also plays a key role in food safety planning. Without careful tracking of raw materials, for example, out of date seasoning powders or oils could easily enter the food chain, putting consumers at risk and damaging the company's brand when product recalls have to take place. In most countries, the law requires manufacturers to keep records to monitor product and ingredient movement. Installing appropriate automated control systems is typically the best way of setting up effective traceability methods.

Barcode scanning and in-line monitoring systems ensure products are always within specification and adhere to all food safety regulations, with accurate labelling to correctly identify what is



within the packaging. Using an effective tracking system to monitor any seasoning materials that arrive, control existing stock and keeping up to date on shelf lives, also helps reduce raw material wastage, make inventories more accurate and maintain product quality at all times.

In addition, with production tracking software, food processors can monitor and record information about their processes, enabling them to rectify any issues and have the documentation readily available to meet new record keeping requirements.

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control and monitoring

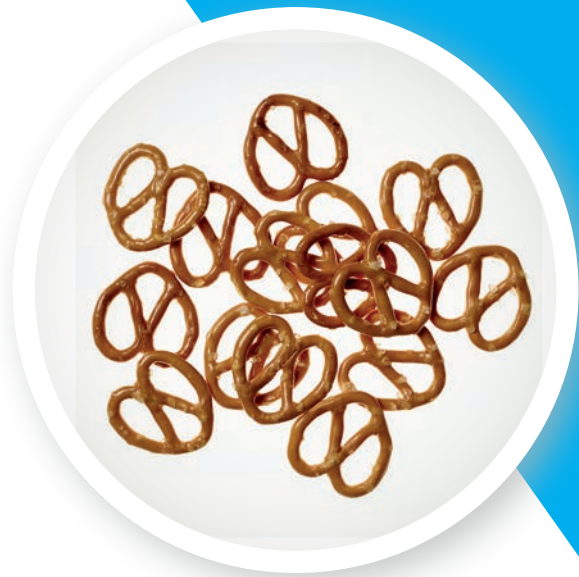
staying in control of seasoning processes

Collecting detailed and reliable data from as many parts of the seasoning process as possible is key to controlling product flows, raw materials, and for safe and efficient production. Keeping a close eye on consumption levels is also essential for all operators to maintain profitability.

Designing seasoning systems with integrated controls and monitoring solutions from the outset puts efficiency at the core of operations. Re-tuning these control systems for specific seasoning applications, recipes and products enhances that efficiency further. In order to maximise its effectiveness further, plant owners need to ensure all operators are fully trained.

Selecting a seasoning system that can be easily integrated into either a new or existing packaging line is also critical. Consider how the system will work alongside existing or other new distribution and packaging systems, in terms of throughput, volumes, infeeds, storage and outflow.

Control and monitoring solutions can also bring efficiencies here, since they can ensure that the system as a whole runs at the optimum pace. If each element is only considered in isolation, one section, for example the conveyor, may run too quickly for the next element in the line, leading to product build up and potentially damaged goods.



summary

Seasoning has two key aspects. Firstly from the consumers' perspective; they want a consistently flavoured product that looks good and tastes fresh. As such, manufacturers need to select seasoning systems that deliver on these desired elements, while also ensuring that the seasoning is applied appropriately and consistently. The second aspect is efficiency. Consideration must be given to cost efficiencies in terms of raw materials, giveaway and breakages, and the operating effectiveness from both labour and controls perspectives.

If you would like to find out how TNA can help you choose a seasoning system that suits your needs then please contact us at www.tnasolutions.com or email us at tnateam@tnasolutions.com



TNA is a leading global supplier of integrated food packaging and processing solutions with over 14,000 systems installed across more than 120 countries. The company provides a comprehensive range of products including materials handling, processing, cooling and freezing, coating, distribution, seasoning, weighing, packaging, inserting and labelling, metal detection and verification solutions.

TNA also offers a variety of production line controls integration & SCADA reporting options, project management and training TNA's unique combination of innovative technologies, extensive project management experience and 24/7 global support ensures customers achieve faster, more reliable and flexible food products at the lowest cost of ownership.



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