Food traceability: what to expect from your production solution

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Food traceability has dominated the press since the horse meat scandal broke earlier this year. According to Mintel, the importance of the issue to consumers has more than doubled in the last six months.

As it is such a hot topic, this article looks at the range of traceability solutions available to food processing businesses.

When it comes to the food sector, every solution seems to offer 'traceability'. But what does it really mean? According to the European Commission, traceability is defined as 'the ability to trace and follow food, feed and ingredients through all stages of production, processing and distribution'.

The ability to track a product from farm to fork or ocean to plate is often complicated by the various stages of the processing cycle and the fact that many products contain ingredients from numerous sources that may have been mixed together in different parts of the supply chain.

Hot topic

Food traceability has been a significant issue over the past few years but the horse meat scandal has rocked the industry. To ensure a swift product recall, retailers needed

Food traceability is a significant issue (photo by Andrew Houghton).

to quickly find out where any affected product came from and where it went.

Traceability is not just an issue for the meat industry though, who can forget the Europe wide E. coli outbreak that affected the fresh produce sector back in 2011?

Angela Simpson, technical systems manager at Seachill, has identified that it is also an important issue in the fish and seafood sector: "100% traceability is essential in order to meet requirements set by retailers, the government and the best practice schemes we are affiliated to."

Retailer demands are already tough when it comes to traceability, with supermarkets fining processors if they fail or take too long to pro-

vide the information they have requested. Unfortunately, things look set to get tougher with some retailers already requesting meat DNA sample results as standard.

This means that manual traceability will become less acceptable. Not only does it take processors too long to gather information, but retailers and authorities are less likely to accept evidence that can be altered or completed post production. This is due to the fact that it is susceptible to error at best and fraud at worst. There looks set to be increased pressure along the supply chain for processors to have integrated, real time factory floor data capture.

With a wide range of solutions out

there all claiming to offer complete traceability, the decision of which one to choose can be tough for food processors. A production solution is a significant financial investment so this article aims to outline the different types of technology that are available and identify what food processing businesses need to look for in a solution.

100% traceability?

All processors can demonstrate some form of traceability. It is the level of accuracy, the amount of manual work involved and the batch size that differs. Some processors are able to identify source ingredients immediately and pinpoint to a production batch. Others struggle to gather the information in a timely fashion or are only able to trace an entire day or week's production. The problem with this is that it can end up in an unnecessarily large product recall.

So why do some processors cope better than others?

Most food manufacturers have a computerised accounts system which may include raw material intake and final despatch. It is the way data capture works on the factory floor, for the processes between intake and despatch, that varies widely. There are manufacturers that manually gather traceability

Table 1. The questions you need to ask when choosing a traceability solution.

- Does it capture factory floor data?
- Can it cope with barcoding/barcode scanning?
- Does it offer business analysis?
- Does it automate reporting?
- Is the solution hosted on site or remotely?
- Does it show live/real time data?
- Does it feature 'one click' traceability?
- Does it offer forward and back traceability?
- Can it record test results?
- Does it offer 'positive release'?
- Can your customers have online access to data?
- Can it share health data with farmers and the FSA?

MES

The Manufacturing Execution System or 'MES' as it is more commonly known is probably the most popular choice of solution for food manufacturers. MES technology is hardware focused and works by automating operational tasks in the processing cycle. There is an extensive choice of products available, with several that have been specifically designed for food processing businesses.

Although this type of solution will collect factory floor data for each individual process, the technology is limited by the fact that it cannot provide cohesive business intelligence. This is because performance data is not stored in a suitable or accessible format.

As MES technology is strictly limited to the factory floor, many food processors also choose to invest in an accounts software package and manage any gaps using a pen and paper or spreadsheet.

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Some capture part of the data manually and re- key it, which is typical of Enterprise Resource Planning (ERP) software. Others have a specific factory floor data capture solution, such as a Manufacturing Execution System (MES).

The key to success appears to be where the stock system resides. MES solutions are typically designed for multiple transaction types as they are able to mimic the process.

These types of systems work with differing stages of part processed stock. They have the ability to track hundreds of thousands of small stock movement transactions in and out of multiple processing areas every day. Even processors that have invested in both ERP software and an MES solution can still have issues if the touch points of integration are not thought through. Quite often these systems end up as

ERP

Some food manufacturers have recognised that operating a combination of manual and automated processes creates 'islands of efficiency' and have chosen to invest in ERP software to combat this. ERP solutions are software focused business management systems that cover stock, accounts and customer relationship management.

ERP software is a generic solution designed to be suitable for businesses across all sectors. This means that most food processors find that while the software enables them to manage certain parts of the business, it often struggles with sector specific issues such as the complex nature of part processed product, yield and traceability.

ERP solutions do not automate the collection of factory floor data and struggle with weighing, barcoding and barcode scanning.

e-MES

The Enterprise Manufacturing Execution System is an advanced form of MES. It solves the complex integration issues between MES and ERP by moving the business functionality that affects the factory floor out of the ERP system and into the e-MES.

This includes stock, planning, sales order processing, raw material and dry goods intake, labelling, despatch and advanced business analysis. It requires a less functional ERP or accounts system and creates a much simpler level of integration between systems at the ledger level, rather than the stock transaction level.

'islands of efficiency' that only share top level data.

The most successful businesses run a more advanced MES solution or Enterprise Manufacturing Execution System (e-MES). This type of solution gives instant forward and back traceability in addition to total factory floor visibility and enhanced production performance.

An e-MES includes all of the business functions that affect the factory floor. In addition to stock this includes planning, raw material and dry goods intake, sales order processing, labelling and despatch. These systems are usually run in conjunction with a basic accounts package or a 'cut down' ERP featuring standard accounts functionality.

An alternative solution for food processing businesses are cloud based applications.

These can be appealing as they do not require a large initial financial outlay like systems that are hosted on site. However, cloud technology can raise concerns over security. High profile cloud data losses such as Sony and Amazon can make businesses wary of this type of technology. Most companies will opt for using their own server for data storage.

Cloud based applications also

struggle to record the fast paced movements of thousands of items of stock as internet speeds can be temperamental. There are some applications that collect data offline and re-sync with the cloud when an internet connection is available. However, this means that data is not visible in real time.

So what should food processors look for?

The ideal solution for businesses in the food processing sector must be able to offer factory floor management that can cope with barcoding, yield and traceability, but also offer easy to use, real time reporting and business analysis.

'One click' traceability

Retailers ask for detailed traceability data, often within short time frames. To meet their requests you need a solution that allows you to access the data you want with the click of a mouse. Data should be live and you should be able to access and distribute it with ease. You should also be able to 'drill down' and analyse any results.

It is essential for food processors to be able to demonstrate complete forward and back traceability. The best systems should give you the option to allow your customers to have online access to your traceability data. Some food processors prefer to allow supermarkets to access information whenever they want, saving them precious time.

However, this does not suit all businesses so it is important to have the choice on what your customers can see, if anything.

Testing times ahead

With retailers already starting to ask for DNA sampling as standard, another important feature to look out for is the ability to record test results against individual products and only allow the release of those that pass. This enables complete traceability, allowing you to quickly

provide any testing data to retailers. It also significantly reduces the chance of product recalls, as well as the risk of fines and bad press.

This is not just important for the meat sector. Processors across the food industry are constantly being asked to provide traceability information, be it for an audit by the British Retail Consortium (BRC) or requests for test results from agencies such as Defra's expert Committee on Pesticide Residues in Food (PRiF).

The best systems should enable a food processor to meet requests from retailers and authorities with speed and ease. The ability to share veterinary data with farmers has been available for a while. It is only relatively recently that the Food Standards Agency (FSA) is in a position to receive individual animal health data electronically and a reputable software supplier should be involved with this pilot. ∎

In the cloud

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