

A WHITE PAPER

## **The Top Ten ERP Features for Proteins and Meat Processing Industries**



## Table of Contents

<b>Introduction</b>	<b>3</b>
<b>Proteins and Meat Processing Industries Defined</b>	<b>4</b>
<b>Business Requirements and Issues</b>	<b>4</b>
<b>Top Ten List</b>	<b>5</b>
The Inverse Bill of Materials	5
Catch Weight	6
Shelf Life and Best-Before Dates	9
Lot Track and trace at the Sub-Lot/Serial Level	11
Dimensionality of Inventory	12
Containerization	12
Integrated Quality Control & Management	13
Costing Considerations	14
Yield Management	15
CFR Part 11 Compliance	16
<b>Summary</b>	<b>17</b>
<b>About Fullscope</b>	<b>18</b>



## Introduction

For enterprise resource planning (ERP) markets, what traditionally has been known as the “meat industry” has expanded into “the proteins industry,” which includes many non-meat sectors. The reason for this change is that consumer demand for meat has expanded to all sorts of protein-based products that represent alternatives to beef. In their quests for healthier diets, consumers are now looking at non-beef products (such as alpaca, bison, dairy products, elk, equine, goat, lamb, ostrich, emu, pork, poultry and venison and even soy) as sources of protein. Some sectors in the protein space obviously are not fit for human consumption (such as dog and cat food), but for the sake of ERP applications, the requirements are the same. This paper identifies the top ERP features that are necessary for proteins and meat processing companies to run their businesses efficiently and effectively.



## Proteins and Meat Processing Industries Defined

Using Standard Industry Classifications (SIC), proteins and meat processing industries fall into the following categories:

- 201x Meat packing plants
- 2013 Sausages and other prepared meats
- 2015 Poultry slaughtering and processing
- 2022 Cheese, natural and processed
- 2047 Dog and cat food
- 2048 Prepared feeds
- 2077 Animal and marine fats and oils
- 2079 Edible fats and oils
- 2091 Canned and cured fish and seafood
- 2092 Fresh or frozen prepared fish

## Business Requirements and Issues

The proteins industry is one of the most complex from a manufacturing perspective. It is driven both from the traditional consumer demand pull, as well as the unique problems associated with a push supply chain. In many of the organic companies in this sector, the planner/scheduler must deal with raw material that arrives at the dock every day, including live animals, (cattle, sheep, pork, fish, etc.) or an agricultural harvest that must be processed immediately. The challenge is to match this push supply to the current demand while minimizing the by-products that result from the manufacturing process.

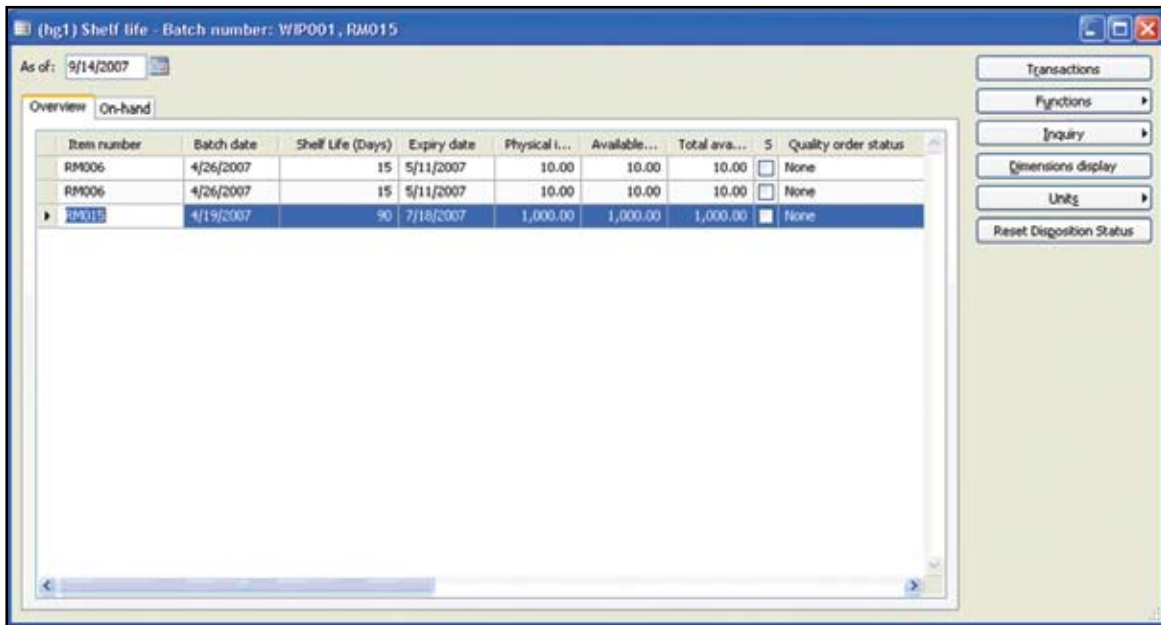
Since most of the end-products that come from these companies end up on the supermarket shelves, the demand curve is constantly skewed by changing consumer demand. Add to that the challenges of short shelf life for fresh products and the ever-changing growth in value-added products (pre-cooked and ready meals), and the planning options become quite complex. All proteins industry players typically need to deal with:

- Matching push supply and pull demand
- Minimizing or managing the production of by-products resulting from production
- Selling as much high-margin fresh products as possible
- Managing the variability of incoming supply (timing, quality, cost)
- Minimizing high carrying cost inventory (i.e., frozen products)
- Producing value-added (high-margin) products whenever possible
- Preventing missed orders, or short orders
- Managing the sales and purchasing of by-products and pre-processed stock

## Top Ten List

### #1: The Inverse Bill of Materials

Most discrete manufacturing applications are designed to create a product—they are not designed to disassemble a product into components. A bill of materials (BOM) defines the parts required to assemble or build one end item. The inverse bill of materials simply put, starts with one raw material and disassembles it into its many parts. In the proteins industry, a raw material may be an animal carcass, an agricultural product, or even a barrel of petroleum. The examples below illustrate two of the more common inverse bills for pork and poultry.



Item number	Batch date	Shelf Life (Days)	Expiry date	Physical i...	Available...	Total ava...	S	Quality order status
RM006	4/26/2007	15	5/11/2007	10.00	10.00	10.00		None
RM006	4/26/2007	15	5/11/2007	10.00	10.00	10.00		None
RM015	4/19/2007	90	7/18/2007	1,000.00	1,000.00	1,000.00		None

Figure 1: Pork Primal Cuts

Raw Material	Item	First Cut	Qty/Per	Second Cut	Finish	Cost Absorb
Chicken	Front	Breasts	2	Whole	Whole	40.00%
		Wings	2	Split	Bone In	20.00%
		Tenders	2		Boneless	20.00%
	Back	Legs	2	Fillet	Small	10.00%
		Thighs	2		Medium	10.00%
		Drums	2		Large	10.00%
By-products	Offal	Kidneys	1	Wings	Small	10.00%
		Hearts	1		Medium	10.00%
	Livers	1	Large	10.00%		
		Stomachs	1			
	Intestines	1				

Figure 2: Poultry Cutting Plan (one of many)



## #2: Catch Weight

Many buyers are confused when they hear the expression catch weight since many ERP vendors use the expression dual units of measure. The term catch weight originates from the seafood industry when large shiploads of freshly caught fish arrived in the processing plant. The plant contracted for a large number of pounds of fish, but they never knew what combination of fish they would receive until the catch was sorted at the plant. The sort identified how many pounds of fish, by species, and that determined the pay for the fishing boat captain and crew. The original expression catch weight applied to the total weight of the catch, and has now been applied to other proteins industries such as beef, pork and poultry.

In a traditional meat company, particularly on the fresh side of the business, products are tracked by actual weight throughout the entire supply chain. These products, which do not have a nominal or net unit weight, are identified as catch weight items. Throughout this document, the term "actual weight" will be used to describe the catch weight requirement. The issue of variable weights permeates the entire supply chain. Companies must have the ability to value, inquire, commit to orders, cost, receive, produce, place orders, price, ship and invoice by actual weight. The ability to handle variable weights is a fundamental requirement that must be properly and fully handled by the core transaction ERP application.

Meat processors run their businesses differently than poultry, fish or agriculture, so in some cases a few minor changes may be necessary to accommodate unique business processes. However, most catch weight-based companies share about 90% of the same ERP functionality.

Catch weight is much more than dual units of measure as it requires the identification of a lot, sub-lot or serial number identification to apply an actual weight to an item or a container of product. It also permeates throughout the entire transaction backbone (ERP) system, including:

- Manufacturing and in Work in Process
- Purchasing and Receiving
- Warehousing
- Sales Orders and Shipments
- Invoicing and Returns



## **Manufacturing and Work in Process (WIP)**

Catch weight is integrated throughout the manufacturing process. For example, a traditional meat processor has a few areas that need to measure production or WIP inventory by actual weight. All proteins/meats-based companies tend to track material movement throughout the various cut processes (primal cut, second cut, finishing cut). The weigh-ins after each set of cuts allow the manufacturers to track efficiencies and yield by operations.

During the primal cuts, offal (or inedible parts) is generated. Offal can be hearts, lungs, livers, kidney and even blood, and are sold, or inventoried, by actual weight. This is common for meat, poultry and fish industries, but not so much in other businesses.

There can be various WIP inventory points in the operation depending on the item in production. For example, hot meat can be placed in combos and kept in refrigerated rooms overnight or bellies can be placed in trees and inventoried as work in process. At WIP inventory points, actual variable weights are tracked.

The reporting of finished goods productions is typically an automated process. Each case or box is weighed and a barcode label is created with the actual variable weight of the product. It is a good idea to consider a bar code solution to manage the high level of transactions at this end of the process.

Rework is generated when a product is sent back through processing from a downstream operation or from finished goods inventory. Rework is also tracked by actual weight. A rework item is transferred out of finished goods or WIP inventory into rework inventory and then used as an input for further processing. Depending on the nature of the rework, an item code may change (i.e., if smoked hams are sent back for rework they can be further processed and a different product can be created such as sliced ham or bacon).



Evaluation Tip: Catch weight is prevalent throughout process manufacturing operations, and any process ERP system must be able to track actual weights in every sub-process described in this section.

## **Purchasing and Receiving**

In a traditional meat company, purchased items with variable weights are classified into two major categories: work-in-process (WIP) items and items for direct sale. Purchased WIP items (such as bellies or trimmings) are typically procured from outside suppliers or from other companies within the supply chain, or from inter-company transfers. These items are usually received in combos (large containers) and both the number of combos and the actual weight of each combo are recorded into inventory. Purchased items for direct sale can be procured from co-packers. These items, such as hams, are usually received in boxes and both the number of boxes and the actual weight of each box are recorded into inventory. All of these instances require catch weight.



## **Warehousing (Internal vs. External)**

In some cases, the actual weights of each case or box are tracked when the product goes into inventory. Finished goods production is still reported by actual weights; however, when products are transferred into an in-house or external warehouse, they are received at a nominal standard weight (therefore visibility to actual weights is lost). Picking to customer orders is based on the number of cases or boxes ordered. At the time of shipment to a customer, labels are scanned to capture actual weights. Catch weight items are relieved from inventory based on nominal weights and then inventory is reconciled based on the actual weights captured at the time of shipment. Under this model, inventory is received at outside cold storage facilities based on an average standard (nominal) weight. Actual variable weights are captured at the time of shipment from the cold storage and invoices are based on this weigh

Companies may also use outside cold storage facilities to maintain product inventory. Under the traditional catch weight model, inventory at these facilities is managed by actual variable weights and number of cases (i.e., there is full visibility to the actual variable weight of each case). Inventory is received into the cold storage facilities based on the actual weights shipped by the manufacturing plants. At the time of shipment to fulfill customer orders, inventory is picked based on the number of cases or boxes ordered by the customer, and then the actual weights are scanned for customer invoicing purposes. There are some outside cold storage facilities that still require actual weights to be manually keyed at the time of picking prior to transmitting electronic data interchange (EDI) confirmation for invoicing and order fulfillment purposes.

## **Sales Orders and Shipments**

Typically the operating units receive customer sales orders for catch weight products in terms of number of cases or boxes. When the order is entered into the order management system, there is visibility to an approximate weight (nominal weight) based on a standard weight per case/box.

Pricing, sales promotions and broker/salesmen commissions across most companies are based on actual shipped and invoiced weight measures for catch weight items. Regardless of the number of cases sold, the actual variable weight of those cases drives freight, revenue, the promotions and commissions. Sales promotions and commissions for standard weight items can be based on weight or on the number of cases sold. The pick list must display the recommended lots and actual weights of inventory to match the sales order total. Once shipped, a system should update the estimated totals (nominal weights) for invoicing and all reporting.

## **Invoicing and Returns**

For most proteins/meats-based companies, invoicing and pricing are based on weight. For variable weight items, invoicing and pricing are based on the actual weight captured at the time of shipment. For net weight items, invoicing and pricing are based on the standard (nominal) weight of the product. Whenever customers return products, a credit is generated based on the actual variable weight of the product being returned. Based on the situation, the product being returned can either be distressed or re-introduced into inventory. In situations when the product is re-introduced into inventory, it is tracked based on the warehousing model (actual or nominal weights) at the particular location. Returns are uncommon in most proteins/meats-based companies, but when they occur it is typically for frozen products, not fresh products. In most fresh examples, the customer merely scraps the product and takes a deduction.



Evaluation Tip: A process ERP solution should track returns using non-conformance tags and reason codes. The non-conformance element should be trackable until resolution.



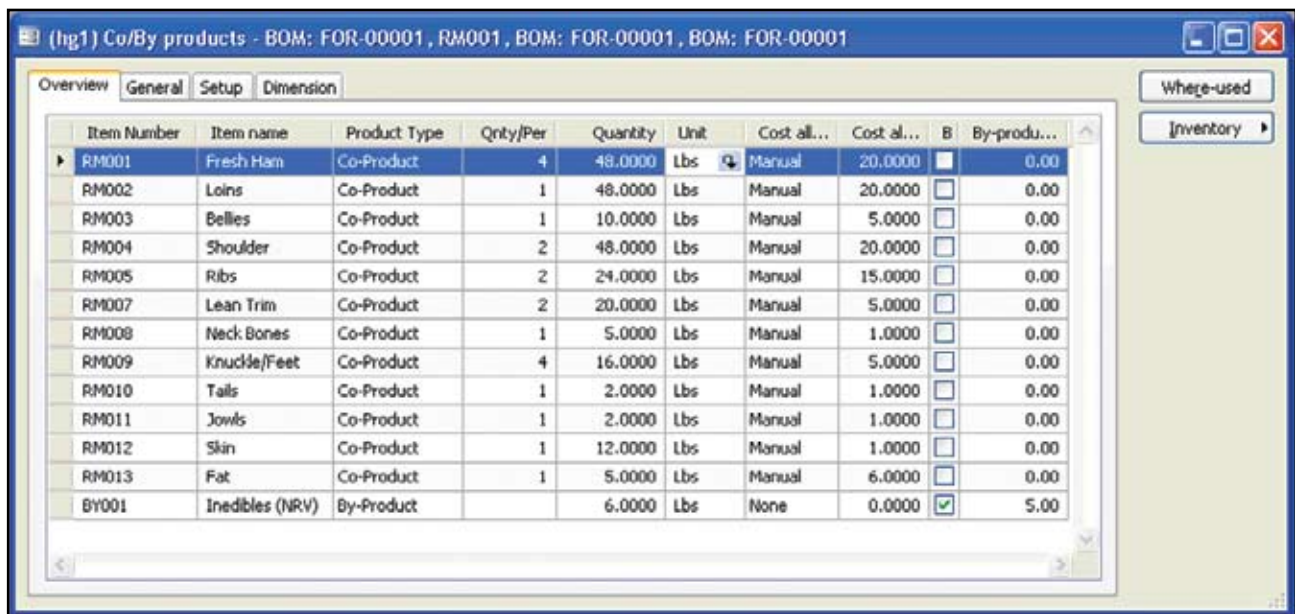
### #3: Shelf Life and Best-Before Dates

The concept of shelf life is a huge issue for process manufacturers. In the proteins space, material can, and does, expire if not processed in a timely manner. In process manufacturing, material can have a physical location and a logical status. An expired lot of material is unusable for production or sales, and so once a lot moves into a logical status of "expired," the value of on-hand inventory must be decreased by the size of the expired lot. Shelf life raises a lot of questions and options from a planning and scheduling perspective, but this document focuses what happens in an ERP system that can handle shelf life requirements.

First and foremost, the application must support visibility into the expiration dates of the lots in inventory. Most inventory-related ERP transactions must consider expiration dates to determine which lots of material to use. Expired materials are placed in a review status to eventually be scrapped or reworked, or even down-graded.

The two most common picking techniques in process manufacturing are first expire first out (FEFO) and first in first out (FIFO). FIFO works well with finished goods but not raw materials. FEFO works well with both raw materials and finished goods.

Here are two examples:



Item Number	Item name	Product Type	Qty/Per	Quantity	Unit	Cost all...	Cost al...	B	By-produ...
RM001	Fresh Ham	Co-Product	4	48.0000	Lbs	Manual	20.0000	<input type="checkbox"/>	0.00
RM002	Loins	Co-Product	1	48.0000	Lbs	Manual	20.0000	<input type="checkbox"/>	0.00
RM003	Bellies	Co-Product	1	10.0000	Lbs	Manual	5.0000	<input type="checkbox"/>	0.00
RM004	Shoulder	Co-Product	2	48.0000	Lbs	Manual	20.0000	<input type="checkbox"/>	0.00
RM005	Ribs	Co-Product	2	24.0000	Lbs	Manual	15.0000	<input type="checkbox"/>	0.00
RM007	Lean Trim	Co-Product	2	20.0000	Lbs	Manual	5.0000	<input type="checkbox"/>	0.00
RM008	Neck Bones	Co-Product	1	5.0000	Lbs	Manual	1.0000	<input type="checkbox"/>	0.00
RM009	Knuckle/Feet	Co-Product	4	16.0000	Lbs	Manual	5.0000	<input type="checkbox"/>	0.00
RM010	Tails	Co-Product	1	2.0000	Lbs	Manual	1.0000	<input type="checkbox"/>	0.00
RM011	Jowls	Co-Product	1	2.0000	Lbs	Manual	1.0000	<input type="checkbox"/>	0.00
RM012	Skin	Co-Product	1	12.0000	Lbs	Manual	1.0000	<input type="checkbox"/>	0.00
RM013	Fat	Co-Product	1	5.0000	Lbs	Manual	6.0000	<input type="checkbox"/>	0.00
BY001	Inedibles (NRV)	By-Product		6.0000	Lbs	None	0.0000	<input checked="" type="checkbox"/>	5.00

Figure 3: Picking Example 1

In this example, both lots are received on the same date, Feb.1st, and using FIFO, the system adds 30 days to the receipt date for a calculated expiration date of March 1st. Both lot dates are wrong.



Vendor	Vendor's	Receipt Date	Shelf	FIFO	Actual
Lot Number	Expiration date		Life	Expiration Date	Expiration Date
Lot 123	Feb. 15th	Jan 21st	30 days	Feb 21st	Feb. 15th
Lot 456	Feb. 21st	Jan 15th	30 days	Feb 15th	Feb. 21st

Figure 4: Picking Example 2

In this example, Lot 456 was received before Lot 123, but Lot 123 will expire first (vendor expiration date). FIFO logic will use Lot 456 first (FIFO expiration date), also wrong.



Evaluation Tip: When looking at a process ERP application, make sure there are two key components of shelf life:

- The system uses FEFO logic, not FIFO logic, or at least handles both
- The user has the ability to capture a vendor's lot expiration date and over ride the system assigned date.

FIFO works well in the production of finished goods. If remote warehousing is an issue, FEFO logic works best.

Best-before dates are generally found on consumer products found on retail shelves but they are not common in a business-to-business environment. The best-before date is one that occurs prior to the expiration date and alerts the retailer when to pull product off the shelves. A process ERP system needs to track both best-before and expiration dates. A CPG customer will always request x number of days of shelf life when the product arrives at its retail location. The ERP system needs to take that x requirement into account when performing a capable-to-promise lookup for a ship-to location. By adding the lead time to the days on site, an ERP customer service rep can determine which lots to ship to a particular customer.



## #4: Lot Track and Trace at the Sub-Lot/Serial Level

Proteins/meats-based manufacturers obviously must address lot track and trace, but most food companies also need to provide this information in case of a recall or Federal Drug Administration (FDA) audit. The nuance is the need to take a lot number down one level to track actual weights.

There are two good ways to handle this requirement. One is to use a lot and sub-lot capability, and the second is to assign serial numbers (unique identifiers) to each component of the lot. Here are examples of both:

Item	Sub-Lot	Product	Nominal	Actual	Actual
Lot Number	Number		Weight	Weight	Expiration Date
Lot 123	001	Smoked Ham	6 LB.s	6.2 LB.s	Feb. 25th
	003	Smoked Ham	6 LB.s	6.5 LB.s	Feb. 25th

Figure 5: Sub-Lot Example

Figure 5 uses sub-lots and identifies a product (ham) as a unique lot/sub-lot with a nominal weight and an actual weight. Quality control (QC) specs are normally attached to the lot level.

Item	Serial	Product	Nominal	Actual	Actual
Lot Number	Number		Weight	Weight	Expiration Date
Lot 123	1254001	Smoked Ham	6 LB.s	6.2 LB.s	Feb. 25th
	1254002	Smoked Ham	6 LB.s	6.5 LB.s	Feb. 25th

Figure 6: Serial Numbers Example

Figure 6 uses a serial number to track the item. In this case, plant number (1254) and a serial number (001, 002) are attached for the sequence.



Evaluation Tip: Without the ability to handle support sub-lot or serial number tracking, new lot numbers must be assigned to each end-item product that comes off the line where it is a case of sausages or an individual ham. This is not ideal and causes a lot of transactional issues on the production floor.

## #5: Dimensionality of Inventory

There are several components of dimensionality in process ERP systems that are necessary to support the needs of the proteins/meat industry. Dimensionality refers to how on-hand inventory is seen by the user. Different types of dimensionality depend on the type of business. A dairy may consider butterfat content to be a dimension of inventory, while a meat company may consider protein percentage, or a chemical company may consider potency. For the purpose of the meats-focused white paper, let's look closer at a meat example:

## #6: Containerization

Many proteins/meats-based customers produce an item (ground meat, sausage links) and then dispense that item into multiple pack configurations. With most ERP applications, manufacturers have to define both a formula and a routing for each combination, resulting in a proliferation of both formulas and routings in the database. Additionally, many meat companies also require custom labels. Operational staff must constantly substitute materials in the formula to make sure the custom label is issued which can become a huge maintenance problem. Another major concern is once a bulk item is packed into a container, it is assigned a new item or product number and visibility of the bulk item is lost.



**Evaluation Tip:** Look for a process ERP solution that supports containerization, which allows companies to view inventory and bulk, regardless of how it is packed. By allowing the flexibility to see both bulk and packed quantities, companies can re-pack if necessary or substitute products for customer orders.

Containers should be user-definable to allow for a combination to contain as much or as little product as needed. A case of product for one item is different than a case of a second item. User-defined containers imply user-defined unit of measure conversions, which allows unlimited flexibility in running or managing a plant or warehouse.

A typical inventory screen may resemble this chart:

Item Number	Description	Lot Number	On-hand Inventory	Status
LT1001	Lean Trim	1001	500 lbs	Avail
		1002	300 lbs	Avail
		1003	200 lbs	Avail
Container		<b>Bulk Total</b>	<b>1000 lbs</b>	
LT1001-001	LT in Combis	1010	2000 lbs	Avail
LT1002-002	LT on Racks	1009	3000 lbs	Avail
LT1003-003	LT on Trays	1008	1000 lbs	Avail
		<b>Total LT</b>	<b>7000 lbs</b>	

Figure 8: Typical Inventory Screen

In this case the bulk item is lean trim. Total inventory of bulk is shown as 1000 lbs. in work in process, and maybe another 6000 lbs. in or on containers. In any case, there is visibility into a total bulk equivalent of 7000 lbs. of lean trim available for sale or processing downstream.

## #7: Integrated Quality Control & Management

Quality control is a huge issue for proteins/meat manufacturers and requires integration into several areas of an ERP system. Quality management is performed in multiple areas, including incoming receipts, inventory warehouse levels, work in process, finished goods receipts, as well as with returns and non-compliance issues.

			Test Plan 100	Test Plan 200
Physical Tests	Result			
Needles Present	Y or N		Y	Y
Volitative Tissue Residue	Y or N		Y	Y
Chemical Hazards	Y or N		Y	Y
Microbial Hazards	Quantitative PPM	Acceptable		
E. coli	10-10,000	50-100 PPM	Y	Y
Salmonella	10-10,000	50-100 PPM	Y	Y
Pathogens	Quantitative PPM	Acceptable		
Trichinella spiralis	10-10,000	50-100 PPM	No	Y
Toxoplasma gondii	10-10,000	50-100 PPM	No	Y
Yersinia enterocolitica	10-10,000	50-100 PPM	No	Y
Campylobacter	10-10,000	50-100 PPM	No	Y

Figure 8: Process Quality System for a Pork Processor

Consider the above example of how a processor might set up its Process AC quality system to test for incoming receipts. In this case, they have set up the various tests they perform for pork products, and then grouped them into test plans (Test Plan 100 and Test Plan 200). This processor has determined that certified vendors' products do not need to be tested for pathogens since they can provide the COA to prove they have already tested the products. They are assigned Test Plan 100, and the process ERP system will only request tests for Physical and Microbial. Non-certified vendors' products are assigned Test Plan 200 which also requires testing for Pathogens.

This level of quality control should be available at any part of the ERP system. On the shipping side of the plant, the same concept of test plans can be assigned to customers. This concept is called specifications matching, and when products are sold to individual customers, the same application of quality testing will apply to finished goods.



**Evaluation Tip:** Make sure the process ERP system offers quality test results that follow the lot tested throughout its life. When the lot is tracked or traced, test results are visible as well. Also make sure the test results are used in shipping the appropriate product to a customer.



## #8: Costing Considerations

A good process ERP system provides the ability to cost products correctly because it was designed to support formulas as well as a traditional bill of material. If the initial raw material is an animal carcass, the downstream co- and by-products must be driven by the standard cost (or average actual) of the starting raw material. Assuming the use of an inverse bill of materials concept to disassemble the carcass, here are the costing options that should be taken into consideration:

*Commodity pricing*—Commodities-based businesses work from a daily price register, such as Urner Barry, or directly from a trade exchange.

*Co-products*—Products that are pre-defined on the formula as produced and have equal value (+/-). Typically they will absorb a percentage of the rolled-up recipe cost (material, labor and overhead). It is generally planned for, not unexpected. Costs are distributed amongst the co-products based on a percentage of the rolled-up recipe.

*By-products*—Products that result from the production of product or co-product and have less value than either. Typically they will also absorb a percentage of the rolled-up recipe cost. These are generally planned for and not unexpected.

*Recycles*—Ingredients, or raw materials, that are consumed in one part of the process and produced in another part of the process.

*Scrap*—Product produced in any part of the process considered to be off-spec material. Scrap accumulates costs as it moves through the process, so scrap early in the process is cheaper than scrap later in the process. It is typically defined as an end-product, but can be generated anywhere in the process. It is different than yield and it is different than by-products and waste. It is generally unplanned and its cost is a net realizable value (NRV) cost.

*Waste*—This is product or material that is generated as a result of production, but not scrap. An example of waste is effluent (dirty water). This waste is a result of production, and costs money to manage, and so its cost is applied to those products that generated it. Waste can be smoke stack production, dirty oil, orange peels, pig droppings, etc. This is also an NRV item.



## #9: Yield Management

Yield is material that disappears into thin air. Sometimes it is measurable, but mostly it evaporates or sticks to equipment, or is simply lost due to loss of water or liquids. Yield is found in three major areas: item, operations, finished goods.

*Yield at the item level*—Material in storage can actually lose weight through dehydration (i.e., hams)

*Yield at the operations level*—Materials are lost as they move from one operation to another within a routing, very common in pharmaceuticals

*Yield at the finished goods level*—For example, “I may plan for losses in production because I know that for every 1000 labels I use the machine tears 100, so I need to plan on 1100 labels before I start my run to achieve the planned 1000.”

Yields are typically planned and the cost of lost product is rolled into the standard cost. Yields are different based on the formula used and the routing selected. A process ERP system typically selects one standard formula and one standard routing for planning purposes.



Evaluation Tip: For better scheduling, the ERP system should consider optimization logic to support the ability to select any process recipe and measure yield against that standard, which allows manufacturers to run several cutting plans and measure against their standards instead of using one that does not apply.

By building yields into formulas and routings, the results are:

- Better and more accurate planning and scheduling (order more to get the standard)
- Better and more accurate costing
- Better production measurements and efficiency reporting
- Improved standards



## #10: CFR Part 11 Compliance

Bioterrorism is such a prevalent issue today that protecting the food supply is at the top of the FDA hot list. As a result, the FDA is now requesting that many of the compliance issues originally built into ERP applications for pharmaceutical companies now be applied to food and beverage companies.



Evaluation Tip: In the future, CFR Part 11 will soon become a mandate for the proteins/meat industry so select a process ERP system that supports it now.

CFR Part 11 components needed to pass an FDA audit include:

- *Electronic signatures*—Originally designed to protect pharmaceutical companies from tampering at the formula level, this requirement has extended to other parts of an ERP system. Essentially this means that a user can see the data (e.g., a formula), but if they try to update or change it, it will prompt them for an additional password.
- *Audit trail*—In early versions of ERP systems, the audit trail only applied to changes that affected costs or value within the system (inventory for instance, not addresses or name changes). In the new world, any change to the ERP application must be captured and documented.
- *Calibrations management*—In ERP, quality control instruments must be calibrated on a regular basis. Plant maintenance applications need to calibrate machines that touch product (outside of scope for this paper). Consequently, if a test is performed with an ERP's quality management application, the manufacturer must be able to identify if that test was done with a calibrated instrument.
- *Time out*—Terminals left unattended need to turn off automatically or reset to request another password after a set time period.





## Summary

The requirements for an ERP application in the proteins/meat processing industry are quite extreme. By following these guidelines outlined in this white paper when evaluating and selecting a process ERP system, proteins and meat processors can rest assured of selecting a system with the core functionality to address their specific industry challenges.



## About Fullscope, Inc.

The 2007 Microsoft Dynamics AX Partner of the Year, Fullscope, Inc. is a Microsoft Gold Certified Partner that offers deep domain expertise for companies with process, discrete and hybrid manufacturing operations. The company develops and supports Process Industries for Microsoft Dynamics AX; offers an Independent Software Vendor (ISV) solution for Microsoft Dynamics AX for High Tech; and is one of the largest Microsoft Dynamics AX resellers in the United States and Canada.

## About Process Industries for Microsoft Dynamics AX

Developed by Fullscope as part of the Microsoft industry solutions program, Process Industries for Microsoft Dynamics AX is ideally suited for beef, poultry, pork and other meat processors as well as manufacturers in other protein industries (dairy, agricultural). For functionality specific to the proteins/meats industry, see the addendum in this white paper titled, *A Functional ERP Checklist for Proteins and Meat Processing Companies*.

Unless noted as "future functionality," this document references functionality in Microsoft Dynamics AX 2009 and Process Industries for Microsoft Dynamics AX 2009.

An additional white paper, *Organic Supply Chain Management: Issues and Answers for Process Manufacturers of Natural Products (Proteins/Meats, Agricultural)*, is also available.

For more information, contact Fullscope at [info@fullscope.com](mailto:info@fullscope.com) or visit [www.fullscope.com](http://www.fullscope.com).

This document is for informational purposes only. FULLSCOPE MAKES NO WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, AS TO THE INFORMATION IN THIS DOCUMENT. Trademarks are properties of their respective companies and are noted.



## Addendum

### A Functional ERP Checklist for Proteins and Meat Processing Companies

When evaluating ERP applications for a proteins/meats-based industry, there is a core set of functional requirements that must exist in the base application for the product to work without modifications. During ERP evaluations, use this checklist as an initial guide to identify the necessary functionality required to run the business. It is critical for an ERP software vendor to demonstrate the required functionality. Be aware that many vendors have ERP systems designed for discrete manufacturing process and try to present creative work arounds to mask inferior functionality. Ask the vendor to fully explain each feature to make sure they understand the functionality and how it will really work.

#### **Manufacturing Checklist:**

- Formula-based Application
- Ability to plan and schedule multiple versions of formulas and routings
- Ability to model the inverse bill of materials
- Ability to define item formulas as well as packing formulas
- System defined (pounds to kilograms) as well as user defined units of measure
- Co- and by-product management
- Ability to define ingredients and products in multiple units of measure on the formula
- Ability to track rework and value added process after a product fails quality control (QC)
- Ability to track yield losses
- Ability to track scrap and waste
- Ability to track shrinkage at the item levels
- Ability to cost co-products using percentages of rolled recipes
- Ability to define costs as positive or negative net realizable value (NRV)
- Multi-dimensional inventory (dual units of measure)
- Potency at the item and lot level
- Logical status of materials: (i.e., available, rejected, on hold, in transit)
- Shelf life (expiration dates both assigned automatically and manually)
- Best before dates (in addition to shelf life)
- Lot control at the item level
- Lot control at the sub lot or serial level
- Ability to split lots
- Complete lot track and lot trace
- Catch weight
- Containerization (ability to produce bulk and pack off in separate pack bills)
- Inventory visibility across bulk and containers
- Flexible costing: standard, and average actual
- Integrated quality with purchasing, receipts, work in process, shipments
- Receipts in any unit of measure for catch weight items



### Quality Management Checklist:

- Ability to track quality control specifications at the item level
- Ability to define tests and specifications
- Ability to define qualitative tests (color, smell, etc.)
- Ability to define quantitative tests (i.e., e. Coli PPM)
- Ability to group tests into test plans
- Ability to assign test plans to vendors
- Ability to assign test plans to customers
- Ability to work with certified and non certified vendors
- Ability to define your own sampling policies
- Test visibility on Certificates of Analysis (COAs) optional
- Pass/no pass decision at the test Level
- Ability to define tolerances at receipts and shipments
- Non-compliance management (sales order, purchase order, work order, returns)
- Integrated email alerts with non compliances
- Workflow for non-compliance
- Returns materials authorizations, with tracking
- QC tests tied to lot/sub lot/serial number for catch weight items
- COAs on shipments or any lot QC
- Non-compliance tags printing

### Distribution Checklist:

- Catch weight at the sales order level (ability to sell in multiple units of measure)
- Unlimited customer ship to and bill to Combinations
- Customized header and line item detail by the user
- Ability to assign price lists by region or individual customers
- Multiple discounting scenarios (by line or order)
- Ability to apply promotions
- Ability to apply rebates, off invoice or accruals
- Ability to issue freight rebates
- Visibility of inventory in multiple units of measure
- Visibility of inventory across containers (pack)
- Forward looking available to promise
- Shelf life visibility at the lot level
- Best before dating at the lot level
- Catch weight pick lists with Nominal as well as actual weights
- Invoice adjustments based on actual shipping weights for catch weight items
- Returns management
- Rebate checks from accounts payables