CDC Software

The Essential Guide to ERP Solutions for Meat Processors:

Specific Capabilities for Unique Requirements

By Jack Payne | VP Enterprise Solutions, CDC Software

Executive Summary

Whether you are in the process of re-evaluating your existing ERP application or looking to replace your existing spreadsheets, it's important to focus on ERP applications with strong capabilities to support your unique requirements, rather than changing your business to match the software.

This practical guide links many of the unique business requirements of the processes for the meat industry to specific capabilities available in process-oriented, recipe-based ERP solutions. Case study references provide insight into the capabilities needed to successfully manage the variability of raw materials, finished products and processes, as well as significantly improve product costing, production predictability, and scalability, as well as tracking and traceability.

Whether your processes include slaughter and evisceration, meat packing and/or further processing and cooking of any species of meat, this ERP Essentials guide is for you. To further assist in your ERP evaluation process, a checklist of specific capabilities is provided for use during the solution evaluation process.

About the Author

Jack Payne is Vice President of CDC Software Enterprise, and has more than 20 years experience in the food and beverage industry. His passion is helping process manufacturing companies develop technology solutions to drive market share while protecting the health and welfare of customers. He has authored many Food Safety articles in industry publications and works tirelessly evangelizing new technologies designed to keep our food safe all the way from farm to fork. He has supported many meat processors in their journey to establish best business practices by implementing ERP solutions designed for the meat industry.

Addressing the Unique Requirements of Meat Processors

Most ERP applications support the office needs of accounting, but when it comes to purchasing, inventory, manufacturing and sales, they do not meet the unique needs of a meat processor. Why? These ERP applications are generic, broad-based applications that support discrete manufacturing rather than food manufacturers, including meat processors.

The fact is that the underlying architecture and functional capabilities of a process-oriented, recipe-based ERP application is different than that of a broad-based, bill of material based ERP application. Today, many software vendors offering these broad-based ERP applications claim to be able to support food manufacturing requirements. However, when you are evaluating an ERP application, it is imperative to focus on the critical areas that distinguish these two types of ERP applications, because these critical areas support your unique requirements.

Be aware that all process-oriented ERP applications are not equal, so due diligence is required when going "under the covers" of each ERP application. Simply because a package supports food manufacturing doesn't mean it will support the requirements of meat processors.

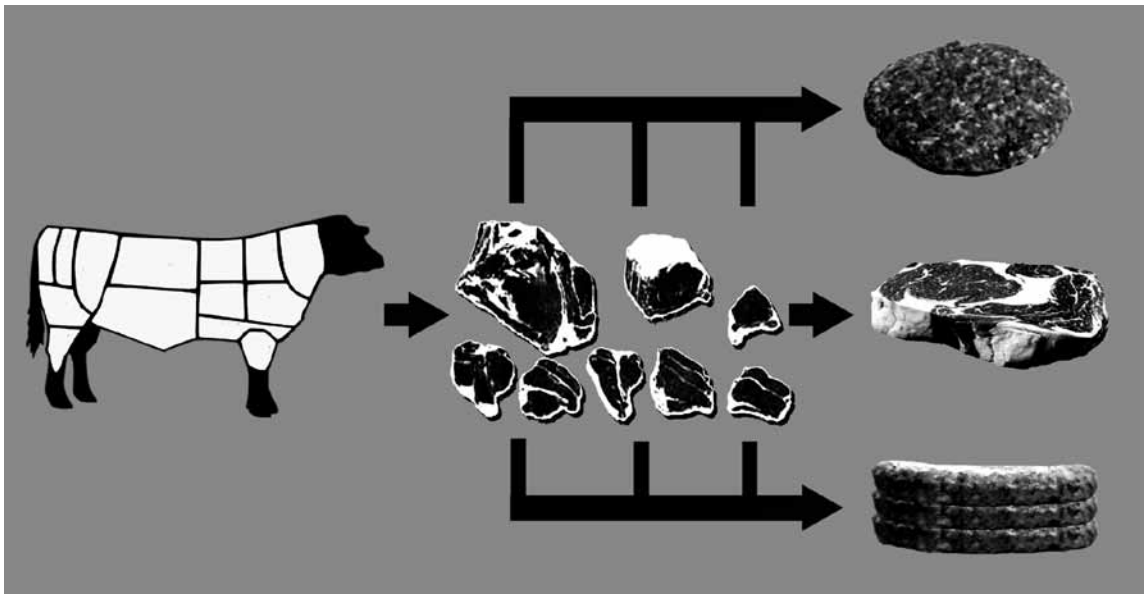
This practical guide examines these areas in terms of key ERP functional capabilities, data model characteristics, and enabling technologies, specifically:

- The inventory, accountability, and management of meat, spices, and other ingredients, as well as finished products, including co-products and by-products
- The ability to track and trace meat and ingredients, including co-products and by-products to support requirements of the USDA, GFSI, and customers in mock recalls and product recalls
- The ability to measure yields, scale production, and accurately cost all products
- The effect of standard weight, shelf life and expiration date, and variable lot characteristics on various ERP functions
- The impact of the ERP architecture and design on the application's functionality and its required IT maintenance
- The need to incorporate various technologies to improve visibility, collaboration and system interoperability

To further assist you in your ERP evaluation process, a summary of these critical areas is provided in the form of an ERP functional questionnaire to be used during software evaluations.

The Right Recipe for the Meat Industry

The recipe-based design is the foundation that defines the manufacturing, yield, quality, and costing processes for process manufacturers, including meat processors. Each recipe defines the process or processes, material inputs and outputs, labor requirements, instructions, and quality checks. The difference amongst recipe-based ERP applications is in their definition and usage of the recipe. Advanced recipe-based ERP applications extend the recipe capability by allowing you to link multiple recipes together to form a process specification to define the flow of all processes between inventory points, streamlining the planning, manufacturing, inventory and costing activities.



Flow diagram of a sample recipe process

In discrete manufacturing, a multi-level bill of material (BOM) is applied to produce one finished product in its base unit of measure from one or more inputs. In meat processing, a recipe is used to produce one or more finished products in the same or different unit of measure (including expected co-products and by-products), from one or more material inputs.

In meat processing, when a meat processor chooses to employ a discrete-oriented, BOM-based ERP application, that processor will be challenged in these areas:

- Managing inventory for both catch weight and standard/net weight with dual units of measure and inventory quantities (e.g. lbs and cases)
- Tracking and tracing materials from supplier receipts to customer shipments
- Accurate tracking and costing of co-products and by-products
- Accurate product costing and comparison of standard/estimated cost to actual cost
- Tracking and comparing actual yields to standard yields

- Managing larger volume of inventory transactions due to limited specification capabilities
- Measuring and comparing actual quality results to specification limits

Why the challenges? An ERP application that uses a BOM simply does not properly manage the business processes of a meat processor.

Flexible Specifications Support Multiple Processes

Assembly and packaging are standard processes executed by meat processors. Many ERP applications employ separate multi-level BOM instructions and routing instructions to manage these processes. The use of separate files typically require additional maintenance and can increases the risk that instructions are out of synch, which negatively impacts production.

An advanced recipe-based ERP application is capable of executing two or more processes in parallel and/or serial fashion within a single process specification. The intermediate inventory between process stages can be automatically transferred from one process stage to another in terms of both inventory adjustments and routing. The routing instructions can be defined within the recipe to ensure the routing is in synch with the defined process stages.

In the processing of a carcass or a primal cut, many meat processors have to manage multiple outputs, both co-products and by-products, following a defined disassembly process. Since only one output is produced from a BOM, meat processors who employ a BOM-based ERP application, find themselves performing certain "workarounds," such as entering negative values for BOM input quantities.

Recipe-based ERP applications can properly support supply-based or disassembly production, such as separating carcass or primal cuts into multiple outputs thanks to its capability to fully account for and cost all finished outputs. In fact, some ERP applications allow one to define all the meat processes from

Snapshot: Rochester Meats

Rochester Meat Company, based in Rochester, Minnesota, provides ground beef items, steaks and pork products to the food service industry nationwide. This customer-driven company focuses on supplying customized cuts of meat, chops, and other products to meet the specific requirements of restaurants, cafeterias, and institutions.

With its process-oriented ERP system, the company gains a competitive edge by being able to respond to special requests from customers quickly and easily. For example, if a restaurant chain wants to run a special on a 10-ounce steak, Rochester Meats is able to handle every aspect of that request, from placing the order to cutting the meat to packaging and pricing.

"When special pricing, trade promotions or program packaging are required, our ERP system provides the flexibility to meet the customer's needs without compromising efficiency," said Allyson Maurer, Business Systems Manager. "We can focus on our customer without worrying about whether or not our ERP system can handle the request."

In addition, the ERP system streamlines compliance, providing accurate, up-to-the minute information about where a specific item is located, where it originated, and where it is going. Customers gain peace of mind, so that if any problems should occur, the source can be identified quickly and the product in question can be removed from the supply chain. This access to critical information also gives Rochester Meats an advantage in the marketplace.

slaughter to further processing within one flexible recipe, which simplifies overall recipe maintenance and reduces production errors.

Advanced recipe-based ERP applications are able to streamline value added services and packaging through the use of flexible recipes. Recipes for slaughter, disassembly, value added services and packaging can all be linked together, but maintained separately, in order to:

- Produce different finished products that are similarly packaged
- Produce stock for future private labeling
- Produce and track intermediates
- Avoid process specification maintenance every time packaging changes and vice versa

Planning a single- or multi-stage production job based on "rates" (i.e., quantity per unit of time) is a standard mode of production for supply and demand. For example, a hog processor employs a disassembly process that is based on the number of hogs to be processed (input-based disassembly) and records the cuts of meat and quantity of each.

Flexible recipes allow meat processors to model their unique manufacturing processes in a series of controllable and repeatable process stages.

Better Accountability Results in Better Predictability and Scalability

Predictability and repeatability enable meat processors to accurately measure yields, standardize business processes, and improve customer service levels. Predictability and repeatability are dependent on how well an ERP application can manage material and process variability and account for all raw materials, intermediates, and finished goods in the manufacturing process.

Production jobs are predictable and repeatable in discrete manufacturing because of the low degree of product variability. With a higher degree of product variability in process manufacturing, the tendency is to expect production jobs to be highly variable, for example, no two carcasses or two primal cuts weigh the same or produce the same yield. In fact, a recipe-based ERP application can account for and manage all raw materials and finished goods, therefore delivering a high level of predictability and repeatability.

Without full accountability of all finished outputs, tracking and analyzing yields is a very difficult process. BOM-based ERP applications cannot accurately measure and track inputs to outputs. Since tracking and analyzing yields is critical to meat processors, in accurate yields can result in financial losses.

Accurate Product Costing Increases Profitability

Without accurate and up-to-date cost information, meat processors cannot make informed decisions on key business issues, such as product pricing strategies. Without the ability to link finished products to customer discounts, promotional rebates, and incentives, it is difficult to determine product and customer profitability.

An advanced recipe-based ERP application can capture, assign, and compare actual and standard or estimated costs for all finished products. Proper handling of costs of both co-products and by-products is critical to accurate costing.

Co-products costs may be based upon either a standard ratio of output quantities or based upon inequal market values. For example, in a meat processing organization, certain cuts of meat may be assigned a higher or lower percentage of cost based upon its market value. By-products are typically assigned a market value and costs applied to the multiple co-products.

By capturing and analyzing the actual versus standard or estimated costs for co-products and by-products, meat companies are able to optimize processes and make better decisions on product pricing.

Managing Variability

Material variability is a key concern for meat processors since it impacts the consistency and quality of the finished product. A good indication that an ERP application may be capable of properly managing product variability is that the "item" or "product master" supports variable lot characteristics for both raw materials and finished products. An ERP application tailored to the meat industry should support user-definable characteristics, but also contain predefined industry-standard characteristics such as grade, fat, or lean content. These product characteristics play a critical role in various processes, including inventory management, order management, production scheduling, manufacturing management, quality management, and product costing.

Managing variability starts with a purchase order for raw materials with specific characteristic requirements. At the time of receipt, these raw materials are inspected and characteristics are validated against a set of tolerances. For example, a purchase may be made for trimmings with a 60% lean content, and upon receipt the actual lean percentage can be recorded and compared to the purchase specification.

Meat processors should be able to optimize their production schedules based on characteristics or product groups (i.e., groups of materials with common characteristics such as species). Without proper consideration of product groups, a processor may perform an excessive number of changeovers, which negatively impacts their resource utilization, inventory levels, and unit costs.

Snapshot: Fiorucci

Fiorucci, a leading specialty meat producer, could not tag and track meat by-products and trimmings for use in its other products using its existing ERP application. The company needed a new application that would provide enterprise-wide product tracking and costing analysis so that it could account for losses in its raw materials.

"Since we did not have readily available detailed manufacturing information, it was extremely time-consuming to make informed decisions about the profitability of products and customers. We had a real need to know when and how to be profitable and the customer and product level, but could not access the information easily using our previous ERP application. Now, we are able to track products through their long curing processes, at a granular level, eliminating all errors related to manual processes. As a result, Fiorucci has increased overall operational efficiencies and significantly improved the bottom line."

Chris Maze, CFO

Being able to deliver products that meet customer requirements has become a necessity for meat processors to remain competitive in the marketplace. A certain product may be acceptable in one process specification, but not in another, because its characteristics will not produce finished products that meet customer specifications. For example, one customer might order ground beef with a certain lean content percentage, while another customer has different requirements. With full visibility into available raw material inventory and characteristics, meat processors can promise, produce, and ship finished goods that meet their customers' requirements.

Manage Inventory to Improve Profitability

Shelf life can be an on-going challenge for meat processors. In addition to basic inventory rotation methods (e.g., last in first out LIFO, and first in, first out FIFO), the ERP application should support additional methods, such as first expiry, first out when selecting meat and ingredients for production, based on the supplier or packer production date. This should also be carried forward when selecting goods to ship to customers.

"No inventory will be used before its time" is a philosophy shared by some meat processors. Inventory is managed by its aging date — before, during and after production. For intermediate products that are produced in between multiple process stages, the ERP application should be capable of automatically placing this intermediate inventory on hold until its aging period has concluded, at which time the next stage in the process is automatically initiated. An example is aging beef loins for a specified amount of time before cutting into steaks.

By ensuring that the best inventory rotation methods and quality standards of inventory are met, meat processors can significantly reduce customer charge-backs and improve customer satisfaction levels, as well as reducing waste from expired inventory.

Great Variability Requires Greater Quality Functionality

With little variability in discrete manufacturing, quality decisions are usually black and white. A received or manufactured part either passes or fails to meet a quality check. With the high level of variability in meat processing, there are more shades of gray when it comes to making quality decisions. For example, the purchase of trimmings with a lean percentage of 60% may have a specification that accepts from 59% to 64% and rejects/holds any receipt outside this range. Therefore, meat processors who employ discrete-oriented ERP applications rather than process-oriented ERP applications typically cannot effectively track the various quality conditions of raw materials and finished goods.

Snapshot: Premium Brands

Premium Brands, a holding company for high end deli and specialty meat producers, date codes every individual item to the unique requirements of each customer. Special consideration must be given to the proper curing of its meats, both as ingredients and finished products.

"Our ERP application allocates product out of the warehouse to ensure the best rotation of the product. With 39,000 sales unit ordered and 252,000 kilograms being processed for shipment daily, the task is sizeable. The company is on track to slash lost revenues from returns by 50% in the next twelve months. This will add another 2 to 3 % directly to the bottom-line company performance."

John Christiaens, Director of Information Technology

Quality checks of raw materials and finished goods should be able to be defined for supplier receipts, inventory, manufacturing, and customer shipments. By collecting and analyzing quality data, a meat processor can identify problems with raw materials, finished goods or equipment.

Accelerating Product Recalls

Lot control is a standard ERP feature, in terms of assigning a lot number to a raw material or finished product, entering a lot number during receiving or order selection, and generating a variety of reports or queries based upon lot-related parameters.

Lot traceability is a crucial ERP function that is responsible for tracking and tracing the lineage of all raw materials and finished products, including their characteristics and lot numbers. Due to the batch-run quantities produced in process manufacturing, a process-oriented ERP application should be capable of tracking and tracing an ingredient even if it only present in miniscule amounts such as a spice in a finished product; this is especially critical for meat processors.

In many ERP applications, lot traceability is limited to an inventory snapshot, meaning information on a product is available for its current state. Full lot traceability requires the merging of inventory records, which can take days to manually compile with many ERP solutions. Although some of these ERP applications can merge or link this information, these reports can still take almost a day to complete.

Leading process-oriented ERP applications are optimized for full lot traceability. With "end-to-end" or bi-directional lot tracing, these ERP applications can quickly track raw materials from receiving into production, track finished goods from supplier receipt to customer invoice, and identify the raw materials and resources that produced the finished products. As customers and regulatory agencies continue to pressure food processors to deliver 100% accurate lot traceability within shorter and shorter periods of time, bi-directional lot tracing enables food processors to respond to product recalls in a matter of minutes, rather than hours or days.

This capability allows meat processors to pass customer mock recalls and certification audits. In the event of an actual product recall, the ability to remove suspect products from the shelves quickly minimizes consumer risk as well as contain the scope of recalls. Taking quick action helps protect the long-term value and reputation of the brand.

Meat processors who employ leading process-oriented ERP applications that exceed today's stringent food safety and compliance mandates have a competitive advantage when seeking new business and retaining existing customers.

Supports The Need To Manage Catch Weight And Net Weight

The units of measure (UOM) defined for raw materials and finished products serves as the basis for tracking inventory as well as converting one UOM to the next level of UOM. In the meat industry, weights are measured in "catch weights." Meat processors typically track products by its catch weight (or actual weight) throughout the entire production and sales process.

In addition to catch weight, many meat processors also have to manage net weight or standard weight products, typically for finished goods. For example, a hot dog producer may pack the same product in one pound, two pound, and five pound packages that are packaged in cases. Although there may be some variability in the actual weight of the one pound packages, each package has to weigh at least one pound. Giveaways, amounts over one pound, is a yield that must be controlled through tracking and analysis.

For net weight or standard weight products, the meat processor also has to track by the number of cases and weight. Typically customers order by the case and the price is by weight (lbs), such as 20 cases at $2.95/pound.

From purchasing through inventory, order management through shipping, the ability to work with multiple UOMs simultaneously improves overall performance and customer service.

The ERP Data Model, Aligned and Simplified

Standard data dictionary utilities found in most ERP applications allow the ERP software provider to "personalize" the existing field names, titles, and other related labels. ERP applications delivered to meat processors should come with predefined labels that are consistent with food and meat industry naming conventions.

In advanced ERP applications, industry-standard terminology extends from label-naming conventions down to database table and field-naming conventions. At this level, the use of industry naming conventions reduces the time required to perform IT activities, as well as the associated risks.

The difference between ERP data models for generic and industry-specific applications can be recognized at the granular field-definition level. For example, tracking very miniscule amounts of an ingredient, such as a spice, in a finished product requires certain data fields to be defined with the correct number of decimals. Round up calculations within various ERP operations can lead to discrepancies in inventory levels, production yields and product costing.

Summary

If you are a meat processor searching for the right ERP application or are in the process of re-evaluating your current ERP application, you should focus on applications with a strong process manufacturing foundation that easily manages the unique requirements of the meat industry.
By investigating available ERP applications, you will discover that a process-oriented, recipe-based ERP application can successfully management the variability of products and processes, accurately account for all raw material and finished products, and significantly improve product costing, production predictability, and scalability far better than a generic or discrete-oriented application. Designed with the right baseline functional capabilities, data model structures and enabling technologies, your next ERP application will support your business requirements with minimal customization and consulting services. A focused solution will conform to your business rather than requiring you to change your business to use it, while reducing operating costs and improving customer service levels.

ERP Checklist for Meat Processors

To help you evaluate and select the ERP solution that is right for your business, this checklist summarizes the key points made in this guide to facilitate side-by-side comparisons of ERP applications.

Improving production through recipe management

- When stages within a recipe are linked together, can the output of one stage become the input for the next stage, without having to perform an intermediate inventory transaction or define an unnecessary intermediate product?
- Can yield be measured by operation and across the process?
- Does the system support different units of measure throughout the process specification (e.g., pounds, packages, cases)?
- Does the system support input-driven (for supply) as well as output-driven (for demand) process specifications?
- Can the system handle disassembly steps necessary for meat processing?

Managing the variable characteristics of products

- Can the system update actual lot characteristics based upon QC values recorded during manufacturing?
- Can the system accept or reject receipts based on actual values, such as lean content?

Reducing customer chargebacks and inventory write-offs with expiration date management

- Can distribution days (minimum days of shelf life that must remain when product is shipped) be defined separately from standard shelf life?
- Can the system net the quantity of product reaching expiration from available quantity if demand does not consume all available inventory of that lot/batch by its expiration date?

Managing multiple units of measure simultaneously

- Does the system support different units of measure for receiving, producing, storing, and selling the same item?
- Can the system support catch weights with verification to minimum and maximum catch weight
- Can the system support net weight or standard weight products (and track give-away)?

Meeting regulatory compliance

- Does the system provide adequate record keeping to meet USDA requirements?
- Can product characteristics be used to force or limit the selection of specific lots/batches based on matching the actual characteristic values to a specific customer request?

Accelerating product recalls through lot traceability

- Does the system maintain full forward and backward lot/batch integrity when product is converted during manufacturing, without losing any audit or trace linkages?
- Are lots tracked at every step in the process (from receiving to manufacturing to shipping), capturing materials, production resources, people, processes, steps, and time?
- Is the traceability program capable of handling recalls and mock recalls in minutes instead of hours?

Improving product costing

- Can actual costs be tracked and compared to standard or estimate cost?
- Do you have options for standard cost, weighted average cost or actual cost by lot?
- How are costs for co-products and by-products handled?
- Can the estimated cost of a process specification be compared with the actual cost of a job/batch?

For more information on how the Ross ERP application from CDC Software is the perfect fit for the meat industry, contact us at 770-351-9600 or send an e-mail to info@cdcsoftware.com.

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