Why Your Food Company Needs a Food Specific ERP Solution

ADROIT
NORTH AMERICA

Enterprise Resource Planning

Food and Beverage production processes have many unique systems requirements. Trying to deploy a discrete oriented ERP system in a Food Processing environment will create challenges including with estimating yields of co-products and by-products per production run, determining the amount of product available to promise based on a limiting input of a particular raw material, and determining the cost of products. Some food processes require multiple stages with stage one being a fractionating process that produces multiple co-products. The co-products are then used as inputs to the next stage. Food processing can be further broken down into batch processing and continuous processing. Batches require specific amounts of ingredients added to tanks, kettles, etc which are then processed. Continuous processes require constant feeding of a principle raw ingredient with constant output. The incorrect ERP system can make completing these transactions a nightmare on the production floor.

Process oriented production takes raw materials that can be described in volumes, weights, densities, and potencies often of varying attributes and through the use of formulas create a set of outputs including Work in Process (WIP), By-Products, Co-products, and Re-work (planned and unplanned). Processes can be fractionating or combining. Output is typically in bulk and also is described in volumes, weights, densities, etc. The bulk output is then packaged in a variety of sizes and packaging arrangements. Discrete manufacturing which utilizes a multi-level bill of material to produce one finished product from one or more inputs that can be described in eaches, pieces, etc. is typically not a good fit.

Ingredient attributes such as potency, grade, PH, moisture, fat, etc are utilized in food formulas to drive to a consistent output via variable amounts of inputs, equipment settings, etc. Flexible recipes and formula specifications enable food and beverage processors to model their unique production processes in a series of controllable and repeatable process steps.Often challenges with inventory accuracy, costing, and labor variances can be tracked back to a misfit of the ERP production model to our clients production processes. The strongest Food and Beverage ERP systems support both modes and allow flexible support in mixed mode environments.

Standard Outputs With Variable Inputs

Adroit understands that unlike a typical discrete manufacturer, food and beverage processors need to be able to deal with more variability in the raw materials. This implies unique practices and systems which we can help you to implement. Managing variability starts with a purchase order for raw materials with specific product characteristics. At the time of receipt, raw materials may be sampled or the certificate of analysis used to determine critical characteristics. Raw material receipts are associated with lots and if necessary, serial numbers so that lot/serial specific attributes can be recorded as necessary. The formulas/recipes supported by the Food and Beverage ERP system can utilize the attributes to specify the correct combination of raw material inputs and processing parameters. This is essential to driving a standardized output.

The attributes should be definable and unlimited. Scaling production in food and beverage by not require directly proportional raw material inputs or processing times. Food and beverage ERP systems can accommodate that and support a process of accurately predicting production yields. Having the “batch sheets” on line improves record keeping and enables reporting as part of a continuous improvement process. Managing variability starts with a purchase order for raw materials with specific product characteristics. At the time of receipt, the raw materials may be sampled or the certificate of analysis used to assign the characteristics to the lot attributes.

Accurate Product Costing

Accounting for material and operational costs in the food and beverage production process is a critically important challenge as it provides input into pricing decisions. Without an ability to link finished products to customer volume discounts, promotional rebates and incentives, a food or beverage processor cannot determine product profitability.We find that often our clients don’t understand how to manage by variances.

The ERP system should capture, assign, and compare actual and standard costs for all finished products. Waste should be charged back to the primary product. Both the cost and if possible, residual market value….for example as animal feed. By-products are typically assigned a straight cost but where the by-product can be sold, consider attributing that revenue back to the primary product. Whey for example is a by-product of the cheese processing and has several markets. Sweet wheys can be processed into ethyl alcohol.By capturing and analyzing the actual vs standard costs for co-products and by-products food and beverage companies can optimize their processes.
By implementing a rational standard costing system it is possible to understand the drivers behind cost changes and to take proactive actions.

Food and Beverage Production Scheduling

Adroit brings a lot of expertise to help to reduce schedule thrashing, change over quantities and durations. Production sequences matter in Food and Beverage processing. Common piping, fillers, etc may be utilized across multiple production orders.

The production schedule needs to take into account product attributes so that like products are scheduled together. Some customers have much more rigid attribute requirements and production processes utilizing those raw materials may need to be scheduled together.

Shelf Life and Aging Management

Product age is different than product expiration. Expiration dates can be impacted by a number of factors including storage temperature. For example, for some products expirations may be extended by freezing the product. In some cases, the freezing process may actually add days of shelf life remaining at room temperature.
In addition to standard inventory rotation schemes like First in First out (FIFO) a food and beverage oriented ERP should also support shipping based on the anticipated expiration date, being able to select ranges of expiration dates for specific customers, being able to identify inventory that is sufficiently aged. Aging processes should be enabled by segmenting the lots and controlling their use until they've sufficiently aged.

Quality Control

Raw material variability is typically greater within food and beverage processes than we typically see within discrete manufacturers. Production startup may cast off greater amounts of scrap and waste and rework may be inherent in the recipe. As such quality checks should be built into the full process.

To reduce quality issues tied to production startup losses, manufacturing processes, and scrap and rework activities manufacturers need real-time visibility into product quality and equipment performance trends.

By collecting real-time data from plant operators and production equipment, real-time performance management can measure rates, yields, utilization, overall equipment effectiveness and per-unit cost data. Using this real-time information process setpoints, individual machine rates, etc can be adjusted. In our Quality, Regulatory, and Safety solutions we discuss this in more detail.

Bi-directional Lot Traceability for Faster Recalls

Food traceability is now a given requirement among our clients. The question we help our clients wrestle with is to what level of granularity to go to on the traceability and how to design a reliable lot control process that enables backwards and forwards traceability.

Lot control is a standard ERP feature that enables the assignment of lot numbers to raw material and finished product, validating a lot number during receiving or order selection, and generating a variety of queries based upon lot related parameters.
In food and beverage processing, lot numbers are assigned to raw materials, finished products, co-products, by-products, and at times rework.

Lot inheritance is a critical ERP function that enables tracking and tracing the lineage of all raw materials and finished products, including their characteristics and lot numbers.


PR1 PR2 PR3 PR4 PR5 PR6 PR7

Attribute and Nutritional Roll-Ups

Product labels and certificates need to accurately convey the nutritional contents of a given amount of a food item. For more complex formulations, determining the total amount of a nutritional element can be difficult when the attributes drive varying quantities in the formulation. The most sophisticated Food and Beverage ERP systems facilitate these rollups.

Multiple Units of Measure and Catch Weights

Traditional ERP systems typically declare an “inventory unit of measure” for a given SKU. There are standard UOM conversions to allow alternate views but only as standard conversions. In food and beverage systems this isn’t adequate because raw and finished items may have the same formulation stocked in a variety of packaging sizes. It is often imperative to know the total amount of formulation on hand sorted by the various packaging options. Production planning needs to be able to account for the formulation quantities on hand but sales needs to account for the number of cases or packs. The whole thing can be confusing or impossible without the correct ERP system.

We frequently see raw material shipments where the amount of raw material in one container varies to the next by several percentage points. The purchase order was placed in lbs, gallons, etc but the inventory control system needs to be able to direct the pick and put of specific serialized containers and account for the total amount on/in that individual container. Catchweight functionality accommodates this challenge. Individual containers are serialized and tied to the receiving or production lot.

Food Safety Support

The FDA continues to increase pressure for companies to adopt electronic records and to utilize systems to demonstrate food safety program compliance. The Food Safety Modernization Act and Global Food Safety Initiative define requirements for food companies. A proper food and beverage oriented ERP solution provides the ability to trigger control points based on time of day or concurrent with an event such as product receiving. Once triggered the software spells out the procedure and captures the notes/values necessary. A robust reporting solution then allows management to monitor compliance and flag trends and exceptions.

Conclusion

The ERP requirements for food and beverage processors are unique. Implementing ERP is a challenging project that ultimately forms the informational backbone for the company. Avoid the pitfall of attempting to implement a generic discrete oriented ERP system as it will create significant challenges on the plant floor and will not provide the informational insights to properly plan and execute the company's mission.