![Acumatica — The Cloud ERP]

BATCH PROCESS MANUFACTURING
Multi-Modal Industry Brief

Batch process manufacturers use recipes or scalable formulas to define material requirements for food, chemicals, pharmaceuticals, and other products. Batch processing varies from discrete manufacturing due to the unique nature of raw materials used, operations performed to convert raw materials to finished goods, and specialized industry requirements.

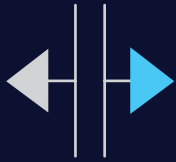## Manage Formulas, Recipes, and Batch Orders with Quality and Compliance Control

Formulation, scalability, batch yield and loss, concentrations, quality testing, and compliance reporting are just a few of the many unique challenges facing batch process manufacturers. Unfortunately, many companies struggle with entry-level accounting systems or ill-fit legacy ERP applications with limited process functionality.

Process manufacturing limitations result in error-prone manual tasks and disparate cross-departmental workflows. Executives waste time in multiple systems with incomplete, inaccurate, and untimely information limiting their ability to make strategic business decisions to improve productivity and profits.

Batch processing is common in food and beverage, chemicals, petro-leum, nutraceuticals, cosmetics, paint and coatings, pharmaceuticals and life sciences, cannabis, and other industries where products are blended, mixed, or otherwise processed from volatile raw materials—often in liquid, powder, or gas states.

Manufacturers often use a variety of manufacturing modes alongside batch process manufacturing. Some make-to-order to customer specifications, while others make-to-stock for consumer goods with predictable future demand. Other companies implement continuous flow production where products are processed for long durations of time in an assembly-line fashion. Lastly, some manufacturers implement mixed-mode strategies where batch processing is used to make products with discrete upstream operations.

This industry brief explains batch process manufacturing with an overview of ERP technologies and features. Discover how food, beverage, chemical, life science, and other manufacturers thrive with a modern ERP platform designed for batch process manufacturing.

There are two fundamental categories of manufacturing ERP software—process and discrete. Both provide similar accounting, inventory management, purchasing, and order management features. However, they provide entirely distinct manufacturing functionality. Acumatica is one of the few ERP systems that support both disciplines on a single platform.

What is the Best ERP Software Choice for You?

Many process manufacturers effectively use discrete manufacturing ERP apps for recipes that are easy to setup in a bill of material. Most discrete ERP systems support lot sizing, lot tracking, and native or add-on quality control for testing. However, most discrete applications fall short in compliance reporting with limited support for allergen reporting, safety data sheets, or reports required by the FDA or EPA.

Batch process manufacturing systems like Acumatica's Process Manufacturing Suite from eWorkplace Apps are required for advanced process requirements. For example, a candy manufacturer may scale other ingredients based on the amount of chocolate used in the formula. Process-specific software is preferred when products are not easily disassembled; are comprised of liquids, powders, or gases; and have varied units of measure. Other requirements indicative of advanced process manufacturing includes formula concentrations, by-product production, and variable production yields or losses depending on temperature, humidity, and other environmental factors.

The table below highlights key differences between batch process and discrete manufacturing.

	DISCRETE ERP	**PROCESS ERP**
Disassembly	It is easy to disassemble finished goods back into the original bill of material components.	It is difficult or impossible to disassemble finished goods into the original ingredients.
Structure	Bill of Material	Recipe or Formula
Materials	Solids	Liquid, Powder, or Gas
Operations	Cut, bend, drill, assemble, mold, bore, ream, weld, etc.	Blend, mix, react, cook, reduce, hydrate, dehydrate, infuse, etc.
Quality and Compliance	Limited lot and serial tracking. Minimal industry quality regulations such as ISO, 21 CFR Part 820, and more.	Significant quality and compliance including lot attributes, hazardous materials, safety data sheets, EPA and FDA regulations, and more.
UOM Packaging	Typically managed in limited discrete units of measure (each, pound, feet, etc.). Simple product packaging.	Managed in multiple units of measure with complex UOM conversions and intricate packaging requirements.
Other Features	Engineering change orders, product configuration, estimating, installation, more.	Yield and loss, specific gravity, catch weights, concentrations, potency, expiration dates, more.

PHARMACEUTICAL FDA VALIDATION

Acumatica partner eWorkplace Apps provides Validation-as-a-Service with secure, private cloud hosting to help businesses align with FDA 21 CFR Part 11 requirements.

Batch process manufacturers have similar financial, order management, and inventory requirements as discrete manufacturers. However, recipe and formula definitions may be drastically different from discrete bills of material. Further, production workflows often vary based on batch production requirements with highly specialized quality and compliance requirements for government and industry regulations. Unlike discrete manufacturers, product variants are common with additional controls required to ensure product quality. Production reporting must be flexible for multiple finished goods from batch orders with robust reporting and analysis tools to ensure safety and compliance.

Product

Define raw material and finished goods attributes, manage inventory levels and item defaults, and create recipes or scalable formulas for production.

MATERIAL ATTRIBUTES
Manage lot and serial numbers, expiration dates, potency, grading, and more.

INVENTORY
Setup item defaults for financials, locations, and replenishment settings

RECIPES & FORMULAS
Define recipes or formulas with discrete or scalable raw material quantities.

Quality

Implement laboratory systems for research and development and product verification, control formula and recipe revisions, and establish quality control processes for material and production testing.

LABORATORY
Use projects for product research and connect lab hardware and systems.

REVISIONS
Manage recipe, formula, and item revisions with approval workflows and audit logs.

QUALITY CONTROL
Conduct quality tests for items with non-conformance and corrective actions.

Manufacturing

Manage material plans and resource schedules. Report shop floor activities and finished goods production including by-products, and multiple packaging UOM.

MRP & APS
Manage purchased material plans and finite capacity scheduling for production.

BATCH ORDERS
Report material and labor against batch orders with yield and loss details.

FINISHED GOODS
Report finished goods with varied packaging UOM definitions and by-products.

Fulfillment

Automate warehouse transactions, order picking, packing, and shipment activities with barcode scanners. Create required documentation for shipments.

WAREHOUSE
Manage warehouses and bin locations with physical inventory and barcodes.

ORDER FULFILLMENT
Streamline order fulfillment and packing with paperless batch and wave picking.

SHIPMENTS
Create shipments connected to carrier systems with required documentation.

Reporting

Capture financial transactions for accounting with insights into production costs. Manage safety, security, and compliance data for regulatory requirements.

ACCOUNTING
Capture financial data for accounting and manufacturing cost analysis.

SAFETY & SECURITY
Manage safety with lot recalls, safety data sheets, and secured system access.

COMPLIANCE
Control processes with data required for compliance regulation reporting.

ERP systems are essential for batch process manufacturers. Without ERP, business and manufacturing executives struggle to manage material requirements, production schedules, and quality and compliance requirements resulting in delayed orders, error-prone manual processes, lost sales, unhappy customers, and costly fines for non-compliance.

Manage Growth with an ERP System Designed for Batch Process Manufacturers

The heart of every batch process application is the recipe or formula which drives batch production orders and related activities. Leverage a modern batch process ERP system like Acumatica for actionable insights to grow revenue, foster customer relationships, automate business processes, and avoid compliance nightmares.

Boost Revenues and Profits

Control costs with insights into material, labor, and overhead with automated notifications when situations require attention. Leverage embedded CRM to generate quality leads with automated lead assignment and configurable workflows to shorten sales cycles. Sell more with up-sell, cross-sell, substitute items, and multiple sales channel support including direct sales, online direct-to-consumer (D2C) apps, and business-to-business (B2B) storefronts.

Exceed Customer Expectations

Fulfill orders faster and accurately with embedded warehouse automation. Impress customers with superior products with connected quality management to meet or exceed customer specifications. Empower customers with automated notifications and self-service access to account and order information via the customer portal and connected commerce storefront applications.

Make Better Business Decisions

Manage your business by exception with mobile access to role-based dashboards with drilldowns to source transactions. Keep your pulse on every aspect of your business with automated notifications triggered by live data updates, actionable reports, and flexible Generic Inquiries. Armed with accurate, complete, and timely information, manufacturing executives address issues faster with insights to boost revenue while controlling costs. Establish metrics and key performance indicators to measure your success for continuous improvement across the organization.

Minimize Risk

Managing daily operations is challenging with federal and industry compliance regulations. In fact, the National Association of Manufacturers (NAM) estimates that the industry faces nearly 300,000 regulations and restrictions.[1] Regulations force manufacturers to complicate otherwise simple processes with significant investments in training and systems to streamline the audit process. Companies with modern ERP applications have the quality management and compliance tools they need to stay ahead of ever-changing regulations.

Automate Activities

Streamline operations and business activities with a future-proof cloud ERP platform with built-in artificial intelligence and machine learning. Scan barcodes for faster and accurate transactions and configure machine-to-machine interfaces for automated data capture. System defaults and configurable workflows facilitate collaboration across departments and externally with customers and vendors to keep your supply chain operating at optimal speed.

Empower Employees

Choose a business system with unlimited user licenses to empower every employee with the information they need to do their jobs effectively. Role-based dashboards and personalized workspaces provide a hub for employees with mobility for telework and field employees.

[1] How Regulation Is Affecting the U.S. Manufacturing Industry, Feb. 2020.

"The Acumatica QMS application really did allow us to show that all of the quality attributes, tests, and documentation are all in place supporting our positive release program, and it ensures product safety and regulatory compliance all in the system of record for us."

–Justin Dickerson, ERP Analyst, cdbMD

The Acumatica **Manufacturing ERP Evaluation Checklist** provides a high-level overview of major features required by most manufacturers. The table below highlights specialized features for batch process manufacturers.

FEATURE	BENEFIT	PRIORITY	Acumatica		
R&D Projects	Manage product development with native project accounting, expense management, and time entry.		✓		
Inventory Management	Define stock and non-stock items and prices, build kits, and create products using matrix item attributes. Connected apps extend features for item attributes.		✓		
Warehouse Management	Automate warehouse operations with barcoding and native WMS features for put-away, paperless wave or batch picking, packing, and shipments.		✓		
Lot Tracking	Cradle-to-grave lot and serial tracking for raw materials, intermediates, and finished goods.		✓		
Expirations	Manage lot expiration dates with first-expired-first-out (FEFO) picking.		✓		
Formulas	Define and adjust formulas and recipes for specified target characteristics with connected apps.		✓		
Product Revisions	Streamline recipe, formula, or bill of material changes with Engineering Change Control with configurable approval workflows.		✓		
Batch Orders	Create batch jobs using lot sizes and packaging configurations. Report material and labor transactions using barcodes from the shop floor.		✓		
By-Products	Define by-products that result from production and report quantities produced with connected apps.		✓		
Variable UOM	Define units of measure for purchasing, sales, and stocking with UOM conversions. Connected apps support production in multiple packing UOMs.		✓		
Planning & Scheduling	Streamline purchasing and production plans with material requirements planning (MRP) and advanced planning and scheduling (APS).		✓		
Quality Control	Perform QC testing for receipts, production, and inventory transactions, with AQL and sampling, certificate of analysis (COA), and checklists.		✓		
NC and CAPA	Track non-conformances (NC), perform root cause analysis, manage corrective and preventive action (CAPA) processes, and audit activities.		✓		
Supplier Performance	Evaluate, score, and summarize supplier activity and performance with detailed analysis.		✓		
Compliance	Securely store and access data required for government and industry compliance reporting.		✓		
FDA Validation	Obtain FDA 21 CFR Part 11 validation with private cloud hosting and services by industry experts.		✓		
Comprehensive Accounting	Access a comprehensive financial suite including general ledger, accounts payable, accounts receivable, cash management, fixed assets, payroll, and more. Automate intercompany transactions and manage currencies and taxes.		✓		
Business Intelligence	Gain insights with role-based dashboards, low-code and no-code reports, flexible Generic Inquiries, native business analytics, and automated alerts.		✓		
Hardware Connections	Connect scales, machines, laboratory systems, and other devices to automate data capture from external systems.		✓		
Future-Proof Cloud Platform	Build your business on a future-proof, secure, and mobile cloud platform with an intuitive user interface and hundreds of connected applications.		✓		

"Sun Ten's acquisition and implementation of Acumatica and eWorkplace Apps integrated process and quality management solution with its ability to control both powder and liquid formulas, handle multiple pack sizes and control the production of our products along with the ability to quarantine and test products will provide us an ERP solution that helps ensure we meet our goals in the areas of safety, quality, efficacy, and consistency."

–Jeff Hsu, eCommerce Supervisor, Sun Ten Laboratories

Acumatica Helps Craft Brewer Improve Data Control and Operational Efficiency

Founded in 2012 in South Africa, Devil's Peak Brewing Company has grown to 100 employees. After relying on QuickBooks since their start, Devil's Peak Brewing in 2016 determined they needed true ERP functionality and switched to Acumatica.

Managing Director Derek Szabo says the company considered several options, including SAP Business One, Sage, SYSPRO, and NetSuite. They determined they wanted a "full cloud solution," which narrowed down the choices to NetSuite and Acumatica. In the end, Szabo says, they valued Acumatica's functionality and ability to manage the ERP suite that the company wanted at a competitive price. "We were looking for a cloud-based solution which was able to handle the full financial and industry capability that we require," he says.

"We're currently using the full end-to-end suite, including raw material procurement, manufacturing, supply chain, and . . . financial functions . . . I would definitely recommend Acumatica . . . It integrates with other products well, and it's cost-effective."

–Derek Szabo, Managing Director, Devil's Peak Brewing Company

Devil's Peak Brewing chose the Acumatica suites for Financial, Distribution and Customer Management and the Acumatica Manufacturing Edition. Szabo reports, "We're currently using the full end-to-end suite, including raw material procurement, manufacturing, supply chain, and obviously all the associated financial functions."

According to Szabo, "What is impressive about Acumatica is the user interface is exceptionally simple, the help guides are very useful and friendly, and we use them continuously today."

Acumatica's cloud ERP has helped Devil's Peak Brewing improve "control and visibility of inventory as it moves through the end-to-end value chain," according to Szabo. This enhances the brewery's ability to grow. Szabo says, "Full supply chain visibility will enable us to target the areas where we have issues and tackle them to ensure we are operating efficiently and driving growth across sales, supply chain, manufacturing, and finance."

Devil's Peak Brewing expects Acumatica will help them continue to improve and grow their business. Szabo says, "We're also looking to do direct integrations with suppliers, with vendors, and potentially with international partners, which we believe we will be able to do with Acumatica. As our business grows and becomes more complex, and we add new regions and new products, we believe that Acumatica will be able to support us through that."

The benefits that Acumatica has brought to Devil's Peak Brewing encourage Szabo to advocate for other companies to switch: "I would definitely recommend Acumatica to other businesses. It covers the full ERP functionality, it integrates with other products well, and it's cost-effective."

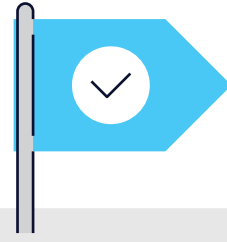# Grow Your Business with the Leading Batch Process Manufacturing Platform

Supporting mixed-mode manufacturing environments for make-to-stock, make-to-order, repetitive, and project-driven manufacturing, Acumatica is one of the few midmarket ERP systems with robust batch process manufacturing features.

Boost revenue, thrill customers, minimize risk, empower employees, and automate your business with a comprehensive suite of financial applications, embedded customer relationship management, inventory and order management, and extensive manufacturing applications for production, material planning, scheduling, change control, and more.

Acumatica Manufacturing Edition with the Process Manufacturing Suite provides the best business and industry management solution for transforming your batch process business to thrive in the new digital economy.

About eWorkplace Apps

eWorkplace Apps provides industry-specific products and consulting services that address the end-to-end business needs of Acumatica manufacturing and distribution customers. Our flagship products include Quality Management, Process Manufacturing Suite, and Validation-as-a-Service in compliance with FDA 21 CFR Part 11. eWorkplace Apps is a spinoff of BatchMaster Software, a 30-year global market leader in manufacturing software.

"With the Acumatica solution, it brings more of our departments together so that everyone is functioning on the same page and that has streamlined operations extremely well."

– KELLY JONES, DIRECTOR OF QUALITY AND PURCHASING, TRACE MINERALS

ABOUT ACUMATICA

Acumatica Cloud ERP provides the best business management solution for digitally resilient companies. Built for mobile and telework scenarios and easily integrated with the collaboration tools of your choice, Acumatica delivers flexibility, efficiency, and continuity of operations to growing small and midmarket organizations.

Business Resilience. Delivered.

Learn more about how Acumatica can work in your business by visiting us online at www.algorithminc.com.

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