



MAKE-TO-ORDER (MTO) MANUFACTURING

Multi-Modal Industry Brief

MTO manufacturers do not fulfill orders from inventory. Instead, they make products when they receive orders, making job costing critical for financial reporting and analysis. Various MTO manufacturers use assemble-to-order, configure-to-order, engineer-to-order, and job shop manufacturing strategies. Some batch process manufacturers also make-to-order.

TABLE OF CONTENTS



MTO OVERVIEW
Page 2



ERP BENEFITS
Page 3



ERP CHECKLIST
Page 4



PROFILES IN SUCCESS
Page 5



CONCLUSION
Page 6

Control Job Costs and Improve Manufacturing Throughput with a Future-Proof ERP Platform

Make-to-order (MTO) manufacturers rely on sales forecasts from reps, historical estimate conversion rates, and customer collaboration to plan manufacturing operations. Lack of predictable demand challenges executives responsible for planning and scheduling.

MTO manufacturers often sell custom products used by other manufacturers as opposed to products sold directly to consumers. Examples include products like machine tools, fasteners, and unique industrial machinery. Other MTO manufacturers use batch processing for special chemical formulations. MTO manufacturers tend to be smaller than their make-to-stock (MTS) counterparts due to the complex nature of managing and building customized products sold in smaller volumes with longer sales lead times.

Some MTO manufacturers are contract manufacturers or metal service centers, and others require nesting to schedule multiple production order operations for similar activities like laser cutting. Manufacturers typically keep minimal stock except for common raw materials with purchase-to-order strategies for other components.

Modern ERP applications like Acumatica streamline MTO sales processes with manufacturing estimates, planning bills of material (BOM), embedded CRM for opportunity management, rules-based product configuration, CAD and PLM connectors for BOM definition, material requirements planning, and streamlined order management for custom products.

This industry brief explains critical MTO business processes with an overview of ERP technologies and features. Discover how peers thrive with a modern ERP platform designed for MTO manufacturing.



MTO manufacturing hinges on agile and collaborative product design, new product estimates, efficient manufacturing processes, and real-time production insights. Issues with any of these crucial systems cause significant challenges for companies resulting in reduced profits, low competitive positioning, and unhappy customers.

Demand Planning

Unlike MTS manufacturers, MTO businesses cannot rely on sales history or known demand for operational plans. Demand planning uses a mix of estimate conversion rates and sales forecast probability from CRM.

ESTIMATE CONVERSION RATES

Use historic conversion rates to predict future demand based on open estimates and quotes for demand planning.

CRM SALES FORECASTS

Forecast demand based on sales forecasts and probability factors within customer relationship management (CRM) applications.

Product Design

Product design is unique in MTO environments. Job shops make custom products based on estimates, CAD and PLM connect for ETO products, and configuration rules build unique items for CTO manufacturers. Only ATO manufacturers have standard bills of material.

JOB SHOP ESTIMATES

Create new part estimates and custom BOMs.

ENGINEERING DESIGN

Sync CAD and PLM bills of material with change orders.

STANDARD ASSEMBLY

Use standard BOMs and routings for ATO products.

PRODUCT CONFIGURATOR

Rules-based product configuration creates new items for quotes.

Order Management

Sales Orders drive material plans, scheduling, purchasing, and production plans. In some cases, requisitions feed into estimates and outside processing costs are used in purchasing and estimating.

REQUISITIONS

Solicit vendors for new item quotes with bidding.

QUOTES

Convert estimates and send quotes for custom items.

SALES ORDERS

Drive purchasing and production from sales orders.

PRODUCTION

Production orders define operations for manufacturing.

Production Planning

Raw materials may be purchased just-in-time. Production orders drive operation schedules. Some companies nest or group similar operations together across orders for activities like laser cutting. Data collection feeds work in process with integrated quality activities.

PURCHASING

Link purchasing to sales orders, run MRP, or convert requisitions.

APS & NESTING

Optimize resources with finite schedules and nest or group like operations.

DATA COLLECTION

Real-time manufacturing data collection for materials and labor.

WIP & QC

Track work-in-process costs and quantities with integrated quality.

Post-Production

Finished goods hit inventory for fulfillment. WIP costs flow through to accounting for payable and receivable processing. Data is available for analysis including WIP job cost reports and general analysis and reporting.

INVENTORY

Manage items, kits, warehouses, lot/serial, and inventory.

FULFILLMENT

Pick, pack, and ship products with native WMS and barcodes.

ACCOUNTING

Manage AP, AR, cash, fixed assets, and GL transactions.

INSIGHTS

Role-based dashboards, inquiries, and reports.



Enterprise resource planning (ERP) systems are essential for MTO manufacturers. Without ERP, business and manufacturing executives struggle to understand demand and control costs resulting in delayed orders, costly rush orders, inefficient resource scheduling, lost sales, unhappy customers, and missed opportunities.

Manage Growth with an ERP System Designed for MTO Manufacturers

The heart of every MTO ERP system is the bill of material. Job shops must be able to create custom BOMs from estimates. CTO businesses generate BOMs from configuration rules, while ETO companies harmonize engineering BOMs from CAD or PLM with the ERP bill of material. Estimates flow into quotes, and quotes into sales orders. Purchasing and production are driven by sales orders affecting downstream resource scheduling. Acumatica is one of the few ERP applications to support job shops, ATO, CTO, and ETO manufacturers from a single platform. Acumatica also supports make-to-stock manufacturing for common components or raw materials managed differently than MTO products. Armed with the right business applications, MTO businesses reap countless benefits, including revenue growth, increased throughput, reduced scrap, more profitable jobs, real-time insights, and happier customers.

Boost Revenues and Profits

Create accurate product estimates with markup percentages for labor and material or manually define markup amounts for razor-sharp cost estimates and customer quotes. Monitor work-in-process costs and quantities in real-time with native manufacturing data collection, role-based dashboards, and flexible notifications to spot errors before they impact profits. Modern ERP systems like Acumatica provide insights into estimate conversions and sales forecasts from embedded CRM for better demand planning—even in make-to-order environments.



Exceed Customer Expectations

Get quotes to customers faster with manufacturing estimates, rules-based product configuration, and engineering connections for CAD and PLM. Streamline the quote process with automated quote delivery and electronic signatures for quote acceptance. Empower customers with self-service access to accounts, statements, and invoices online. Complete jobs faster with robust production management with better products resulting from native quality management processes.



Make Better Business Decisions

Role-based dashboards provide visibility into every corner of your manufacturing facility. Flexible reports and inquiries offer actionable data with drill-downs to source transactions to understand what is happening in real-time. Gain deep insights into job costs, resource utilization, capacity constraints, and other data with dimensional analytics via Microsoft PowerBI. Create business events to notify managers when emergency situations require immediate attention.



Accurate Manufacturing Plans

It all starts with accurate estimates, bills of material, and routings. Know exactly what it takes to manufacture MTO items for improved purchasing and resource scheduling. MTO manufacturers can react faster when customers approve orders with purchase and production orders linked directly to the sales order and finite scheduling to optimize resources.



Automate Activities

Material and labor backflushing alleviates data entry for mundane and predictable manufacturing transactions. Capture information faster with native barcode scanning for material, move, and labor transactions directly from the shop floor. Manage your warehouse with prioritized pick lists and streamlined inventory transactions via the native warehouse management system (WMS). Rough-cut-capacity planning (RCCP) drives material requirement planning (MRP) for an accurate and timely inventory of stock raw materials and components used in custom assemblies or common jobs. Embedded artificial intelligence with machine learning streamlines financial transactions such as accounts payable and expense management.



Empower Employees

Unlimited user license fees enable business leaders to extend the ERP system to every employee with role-based security to protect their data. Acumatica's intuitive mobile apps work on rugged devices, including tablets and smartphones, for remote and shop floor employees. Connect accounting, customer, vendor, inventory, and manufacturing data for a 360-degree view of operations in real-time.





The Acumatica [Manufacturing ERP Evaluation Checklist](#) provides a high-level overview of major features required by manufacturers. The table below highlights specialized features for MTO manufacturers.

FEATURE	BENEFIT	PRIORITY	Acumatica		
Demand Plans	Use estimate conversion rates and embedded CRM sales forecasts to drive demand plans.		✓		
Estimating	Create estimates and bills of material with flexible labor and material markup.		✓		
CAD/PLM	Harmonize engineering BOMs from CAD or PLM with manufacturing bills in the ERP system.		✓		
Engineering Change Orders	Manage revisions with engineering change orders, engineering change requests, and approvals.		✓		
Bills of Material	Create standard bills of material and labor routings for assemble-to-order products.		✓		
Engineering Workbench	Shorten engineering cycles by creating or modifying multi-level bills of materials with drag-and-drop and copy-and-paste features.		✓		
Configurator	Create unique items and bills of material with a rules-based product configurator.		✓		
Requisitions	Solicit vendors for new material quotes with requisitions. Streamline bid approval processes and convert requisitions to purchase orders.		✓		
Quotes	Convert estimates to quotes or include ETO, CTO, or ATO items on quotes. Send quotes directly from the system with electronic signatures for approvals.		✓		
Sales Orders	Create sales orders manually or from quotes, online storefront apps, EDI, or imports. Link orders to purchase and production orders.		✓		
Production	Create production orders from sales orders, manually, or from MRP.		✓		
Outside Processing	Purchase services for outside processes like heat treating or coating. Manage shipments from WIP to vendors and receipts back into WIP for accounting.		✓		
Purchasing	Buy to the job or use MRP for raw material purchasing for items stocked in advance of orders.		✓		
Scheduling	Optimize schedules based on finite machine, work center, and tool capacity with a visual schedule.		✓		
Nesting	Create production order inquiries to group similar operations together for nesting to minimize scrap for operations like cutting or stamping.		✓		
Data Collection	Empower employees with real-time labor, material, and movement reporting from the shop floor using barcode scanners.		✓		
WIP	Capture WIP costs and quantities for real-time shop floor monitoring and reporting.		✓		
Quality Control	Use connected quality control for inbound material receipts and in-process manufacturing activities.		✓		
Inventory	Streamline inventory across locations with replenishment, physical inventory, lot and serial tracking, matrix items, kitting, and more.		✓		
Manufacturing Insights	Leverage role-based dashboards with actionable drilldowns to source transactions. Tailor reports and inquiries with analytical tools and create automated alerts based on real-time ERP data.		✓		
Flexibility	Build your business on a future-proof and mobile cloud platform with an intuitive user interface, open APIs, and hundreds of connected applications.		✓		



“[Acumatica] has allowed us a framework aligned with our current inspection and order processing requirements so that the process by which incoming inspections and in-process inspections and outgoing are seamlessly integrated...it’s a hand-off from one step to the next with full documentation of the results of quality which are mandated by our CGMP customers.”

-John Cote, Director of Quality, Carolina Components Group

R&I Industries Streamlines Job Shop Operations with Acumatica Manufacturing Edition

Founded in 1975, R&I Industries is a family-owned metal fabrication job shop in Ontario, CA. Struggling with an inflexible Sage 100 system with JobOps, R&I executives needed a better way to manage material plans and minimize scrap with a stand-alone nesting application.

CFO Jake Rowan said the company evaluated 15 to 20 ERP options, including Oracle NetSuite. They selected Acumatica in 2019 with implementation assistance from Acumatica partner, Blytheco.



“We were using a Sage product,” Rowan said, “And they have an add-on called JobOps. JobOps is kind of like Acumatica’s Manufacturing Edition, except it doesn’t even come close to being able to compete with it—Acumatica blows it out of the door.”

“Acumatica had the capabilities that we need, and it was in our budget. It’s turned out to be a fantastic choice, honestly, and all of us owners are happy with the decision.”

-Jake Rowan, CFO
R&I Industries

Armed with information and customized dashboards, R&I executives now have an in-depth analysis of job information for focused sales efforts to manage the business proactively. The company has streamlined accounting processes with automated dunning letters for collections, reducing average days late by nearly three weeks. Configurable workflows and notifications prevent errors, such as a material batch size issue resulting in a \$30,000 savings on a single order.

R&I Industries uses Acumatica to track labor issued to parts and to compare actual results to estimates with real-time analysis of costs and quantities. Request for quote (RFQ) documents and data are saved directly to the native Estimating application saving time and improving data accuracy. Estimates are converted into orders, routings, and bills of material, preventing costly data input mistakes. Further custom Estimating dashboards created by their partner Blytheco flag potentially costly errors in real-time.

“Acumatica had the capabilities that we need, and it was in our budget,” said Rowan. “It’s turned out to be a fantastic choice—honestly, and all of us owners are happy with the decision.”

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“As we build the business from purely a service company to a manufacturing and full solution provider, we needed more than just an inventory system. Acumatica gives us the capability to provide POs, available raw material, and manufacturing modules to provide accurate available for sale inventories, including all pertinent costs.”

-Yuri Durovskikh, IT Manager, OFS International

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CONCLUSION

Transform Business Operations with Acumatica's Future-Proof MTO ERP Platform

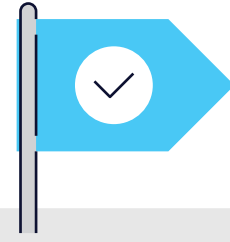
MTO manufacturing is very different than MTS. Demand is difficult to predict, and accurate bills of material are key to streamlining material plans, managing job costs, and optimizing resource schedules.

Acumatica's native estimating, product configurator, and CAD or PLM connectors make it the right platform for job shops and manufacturers who need configure-to-order and engineer-to-order functionality in a modern ERP platform.

Acumatica's unlimited user licensing makes the application affordable for smaller MTO manufacturers. Best in class functionality includes engineering change orders, real-time work-in-process, manufacturing data collection, embedded CRM, quality control, and purchase order requisitions to streamline business processes across the entire organization.

With Acumatica, MTO executives have tools to boost revenue, grow profits, and empower employees with information to serve customers better than competitors.

With Acumatica, MTO leaders have a robust manufacturing platform without intrusive customizations to manage highly customized products. Discover why Acumatica Manufacturing Edition is the fastest-growing and [most user-friendly ERP application](#) by discerning customers and industry analysts.



“Acumatica has been a game changer. It's made a huge difference in how we do things, how we can access everything we need from anywhere, and allowed our salespeople to work remotely.”

– HECTOR PINTO, CEO & FOUNDER
QUALITY MATERIAL HANDLING, INC.

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Acumatica Cloud ERP is a comprehensive business management solution that was born in the cloud and built for more connected, collaborative ways of working. Designed explicitly to enable small and mid-market companies to thrive in today's digital economy, Acumatica's flexible solution, customer-friendly business practices, and industry-specific functionality help growing businesses adapt to fast-moving markets and take control of their future.

For more information on Acumatica, visit www.acumatica.com or follow us on [LinkedIn](#).

THE ANSWER COMPANY



About The Answer Company

For the past 30 years, The Answer Company ERP consulting group has been a leader in transforming businesses with technology.

Our nationwide manufacturing industry experts are passionate about cutting-edge technology and have worked with hundreds of manufacturing companies seeking to digitize and streamline their processes, integrate their MRP systems with their other business systems, manage complex multi-modal manufacturing environments, and access intelligent, real-time insights across every department.

We work with clients to design business management solutions that speak to every business objective, giving them the power to make informed decisions, enhance productivity and employee satisfaction, and achieve sustainable growth.

With us by their side, clients can thrive in a rapidly evolving business landscape.

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