

7 STEPS TO SELECTING **DISCRETE** **MANUFACTURING ERP**

Your comprehensive guide to selecting the best ERP for your discrete manufacturing business

GUIDE HIGHLIGHTS



Achieving buy-in for your new ERP project



Engineering, inventory & more requirements analysis



Conducting requirements analysis in your business



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ACHIEVING BUY-IN FOR YOUR ERP PROJECT

It often takes an emergency to prompt a discrete manufacturer to consider a new or upgraded ERP system. For example, the manufacturer might have had trouble managing a prototype project last month causing delays in delivery of the product. It could be almost any event. But regardless of the straw that broke the legacy system's back, there are a number of steps you can follow to achieve buy-in for a new discrete manufacturing ERP.

INCREASING DEMANDS

Many manufacturers can remember how their businesses used to be. They had unwavering demand and their products were consistent. When changes were needed, they usually had plenty of time to make them. There is now a greater focus on product turnover, product prototyping and quick delivery of new products. Just as quickly as new products are created, other products become obsolete. Because of this, the pressure to reduce costs never goes away.

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It seems that the production schedule changes by the hour. When a deadline is missed by even minutes, everything goes awry. The communication channels are on fire on some days. This part will be early, and that part will be late. One order gets cancelled, another gets pushed forward. One employee takes a sick day, and the business needs a week to recover.

A legacy ERP just cannot keep up with these demands. It worked well ten years ago, but now its grey hair is really thinning. What can you do to justify an upgrade or replacement ERP?

BUILDING A CASE FOR SYSTEM CHANGE

Building up your knowledge of prospective replacement systems is crucial so now is the time for you to start looking at currently available discrete manufacturing ERP systems. In tandem, start some informal conversations with other departments; engaging your pool of internal stakeholders early and often will keep your project relevant and front of mind across the business.

You'll need to have the sales, finance, engineering production, materials, and quality departments on board. They will all have concerns and suggestions which should help you create a credible and well supported project outline.

“agreeing on the challenges your business faces will create common ground on which to build the project”

The conversation could begin with a discussion about how product turnover has changed along with the demands from consumers; agreeing on the challenges your business faces will create common ground on which to build the project. Your next ERP will need to be more agile and flexible. It must allow you to keep your core competencies efficient and shouldn't bog the business down in areas where your existing processes are working well.

Your initial meeting with stakeholders should begin a thorough requirements analysis phase in which you assess key processes for strengths and weaknesses, allowing you to pinpoint areas for improvement. Once you establish a preliminary list of requirements, you can start monetizing each one and forecasting a return on investment for the project. Only then will you have the tools to inspire buy-in for your discrete manufacturing ERP project.



REQUIREMENTS ANALYSIS: ENGINEERING

Products evolve quickly, and discrete manufacturers have to evolve alongside them or, preferably, stay one step ahead. This will often lead to an increased product development velocity putting pressure on the engineering ERP module and the processes it supports.

AUTOMATED SPECIFICATION PROCESSING

Many of today's discrete manufacturing ERP systems provide the ability to read technical specifications directly from a product engineer's documents, saving the time needed to type and proof them for use in ERP. It is no longer necessary to program equipment manually for first runs. Automating processes with the engineer's specifications saves time and promotes accuracy. The changes between the first and second runs are fewer, and the gains from automated processing make the second programming of equipment much more efficient.

MACHINE-TO-ERP COMMUNICATION

Legacy discrete manufacturing ERP systems often rely on shop floor personnel to input the units completed. Many of today's machines track completed units, and those values can be transferred to ERP systems with greater speed and accuracy. The time required for an operation is often inflated in legacy systems by the additional time needed to move from the work area to an input terminal. Machinery today can copy the data output of a production operation to an ERP system very accurately and in real time.

COMPONENT MANAGEMENT

Modern engineering ERP modules also benefit from better control of component parts. Many make-to-order (MTO) discrete manufacturers use their customers' part numbers in their ERP systems. Customer A might call a part "123" and use that for the SKU. However, customer B might call the same part "456." The manufacturer ends up with the same part in the ERP system with two different names, and, of course, both parts are stored in the stockroom in their own bins. The ability to select parts based on a description or other fields can help match up parts and open up the possibility of changing the bills of material using those parts.

MACHINERY MANAGEMENT

Over the years, manufacturers have developed shop floor fixtures and tools that greatly help in production. Discrete manufacturing ERP systems should track and manage those tools. For many businesses, tracking of these tools is limited to what is in the engineering old-timers' heads; they remember that there was a tool, and they go find it. The latest discrete manufacturing ERP systems can be configured to tell users which tool is needed for which operation and move it there when needed. ERP systems can also help track the life of those tools so the manufacturer can plan for replacement and re-calibration.

Engineering ERP modules have huge potential for reducing costs during new and existing product runs. Engineers and product designers usually specify a particular part to be used, but if we can improve the process for sourcing and delivering this component, cost savings can be made.



REQUIREMENTS ANALYSIS: QUALITY CONTROL

Increased product turnover also puts pressure on your quality control processes. If your legacy system cannot cope with the throughput of quality requests, users will develop offline workarounds. In this case, most users want to be using the system for managing internal and external compliance, but they simply don't have the functionality.

RULE-BASED COMPONENT PURCHASING

Discrete manufacturers make discrete products from discrete components. Some products specifications need a specific part number from a certain manufacturer, and others might offer a choice of several items listed on the approved supplier lists. Your business should be able to rely on your ERP system to control purchases.

If you are making an SKU of product A, your ERP should plan purchase requirements based on the approved suppliers and components provided. Product B might need the same component, but if the product specification has not specified a particular manufacturer and model, your ERP should search all suppliers and components in your database for the most cost efficient or reliable purchase options.

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ASSEMBLY REPORTING

Another area of quality control that discrete manufacturing ERP can help with is meeting internal compliance requirements. For example, most manufacturers have assembly instructions which are parallel to ERP routings.

Your assembly instructions might say to slide the right side of a part into the tabs on another part and screw them together. The next step in the operation is to do the same for the left side. Your ERP system should track and report on this process to ensure this order of assembly meets your defined routing. It may not make a difference whether the left or right of the product was assembled first, but quality processes require you to make every product the same way to ensure repeatability.

QUALITY FEEDBACK LOOP

In the past, quality control has often been placed in a silo toward the end of the production chain. We cross our fingers and toes and pop the champagne when our production runs are cleared through QC. When QC reports an issue, we go back to the drawing board and start working on the solution.

The right ERP system can create a quality feedback loop which means the drawing board is left in product development, where it should be. Whether it was a one-off component error which can be traced to one of your suppliers or a recurring fault which can be reported to engineering, your ERP quality control module should be integrated with all other aspects of the system and be able to report back to the correct department on identified faults.



REQUIREMENTS ANALYSIS: MRP

You are probably one of the many manufacturers who are using the material requirements planning (MRP) module in ERP; but are you one of the minority using a system that truly works for your business. Do you remember having shelves full of every part under the sun but never the parts needed for production? When you finally decided that your legacy MRP module wasn't cut out for the job, it took a year to get production and purchasing back into sync. Are you going to go through that again?

THE BASICS

MRP requires a lot of discipline to run it well. Many discrete manufacturers have operated as “seat-of-the-pants” businesses for a long time. Some employees like working in that environment, and many consumers like doing business with easy-going, family-run suppliers. However, consumers have evolved; they are looking for product innovation and a well-oiled machine within which errors and omissions are almost never made.

Most MRP modules worth their salt can plan production jobs well in advance so scheduled jobs can be updated and monitored within ERP. MRP modules should also plan purchasing so that most purchase orders can be linked to scheduled jobs or inventory requirements. When you take advantage of this system simplicity, you can use the time saved for valuable analysis of unique jobs and purchase orders.

REAL-TIME INVENTORY

MRP modules depend on accurate inventory records. Bills of material, production time estimates, and purchasing lead times must be accurate. Determine whether yours are accurate in real time or whether your inventory is only accurate when one of the planners manually checks and verifies stock level.

If the latter describes your inventory processes, you really need an MRP module with self-reporting inventory powered by feedback from WIP and accurate supply chain data. You should also look for an ERP system which provides exception reports and alerts that will help you develop the accuracy you need to achieve this self-reporting system.

INVENTORY RESILIENCE

You might not currently perform cycle counting, but a new ERP system should have functionality to support the process and downstream improvements in inventory accuracy. Instead of conducting a specific analysis well after the inventory value is lost, alerts can help you avoid surplus inventory by warning you as soon as the condition of the inventory changes. In the current manufacturing climate, a resilient MRP module must adapt to disruptions in supply or changes in demand.

Most of us agree that we need to run our discrete manufacturing shop with the discipline required to provide the products that consumers want. We need accurate, on-time production jobs. We need discrete purchase orders to be placed and received when required. Upgrading your ERP system to include real-time and resilient MRP will help you achieve those goals.



REQUIREMENTS ANALYSIS: PRODUCTION

During your requirements gathering phase, it is important to always remember the bread and butter of any manufacturing business; orders and production. In a discrete manufacturing environment, some of these orders will have more than one delivery date for an item, while others may need to be delivered alongside another SKU line item. Discrete manufacturing orders don't always include long-term, repetitive requirements; product development will provide the production team with technical specifications, drawings, and other requirements, and expect production to deliver what they ask for by the time they need it.

AUTOMATED LEAD TIMES

All orders are placed in the ERP system and these should include due dates. Does your legacy system feedback expected lead times to product development? If the answer is no, you will often find that these due dates are putting incredible amounts of pressure on the production process. If configured correctly, ERP can check on available materials and shop capacity and use this data to create automated lead times during the product development and prototyping stage.

Production and order management needs to be coordinated with engineering and purchasing to meet demands placed on product turnaround

REAL-TIME PRODUCTION RESCHEDULING

Flexibility is important throughout the production process. Things can happen while the order is in backlog or production. Production can only recover if there are workflows in place to compensate for all eventualities. This practice relies on a flexible ERP system which can update production schedules in real-time based on current pressures along the production chain. Is overtime required? Can another order be rescheduled without affecting the original order's delivery date?

REAL-TIME CUSTOMER COMMUNICATION

If these production delays occur in contract or MTO discrete manufacturers, ERP systems must provide businesses with communication and CRM tools to manage the affected account; this could

include a customer portal or automated emails which display order progress (ideally in real-time).

The customers in question are in business to make a profit. They expect on-time delivery on every order, but, at the same time, they know it won't always happen. The key is to build processes which accommodate or mitigate delays to ensure the customer does not feel the effects of any delay too acutely.

Production and order management needs to be coordinated with engineering and purchasing to meet demands placed on product turnaround in modern manufacturing environments. Bills of material and routings should be added to the ERP system quickly so they are ready for the next order, which could arrive at any time. Purchasing sources should be identified and tracked within your system to support future operations. Sometimes the next order never comes through, but when it does, you will discover the value of well managed production database.



REQUIREMENTS ANALYSIS: INVENTORY

The ability to use inventory cycle counts in place of periodic physical inventory counts is often high on the list of discrete manufacturing ERP priorities for people who manage materials. Such processes use frequent, statistically sound sample counts rather than wall-to-wall counts of every component part. A wall-to-wall count can take two or three days and introduce as many count errors as it finds and corrects. Statistical cycle counting will ensure the high level of accuracy required for material requirements planning and ensure enough accuracy that buyers and planners will not need to request a count.

Despite the historical importance of cycle counting, modern ERP systems have developed a number of features which can dramatically reduce the reliance on infrequent or incomplete inventory audits.

INVENTORY SHELF LIFE AND ENVIRONMENT

Although shelf life does not immediately spring to mind when discussing discrete manufacturing inventory, materials such as adhesives, paints, and lubricants lose their effectiveness over time. With that in mind, ERP should have an optional shelf life field at the very least; ideally, this would trigger alerts when the stock may perish. ERP systems should also track inventory environment such as temperature, humidity, and even magnetism; this is often driven by compliance requirements, so ensure this is taken into account when selecting your system.

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CONSIGNED MATERIAL MANAGEMENT

Many discrete manufacturers take advantage of consigned component materials, and many suppliers now support this method of meeting demand. ERP systems should be able to track whether the inventory is owned by the company or their suppliers. The ERP system should also plan to use up any company-owned inventory before using consigned parts. Your business may find it useful to have the ability to include a requirement to use consigned materials within a set time limit, and for the ERP to alert you when those materials must be returned or paid for.

OBSOLETE INVENTORY

ERP systems should also help manufacturers control obsolete inventory caused by design changes. In an MTO environment, a customer may request that a different material be used in a product. If the manufacturer immediately knows the inventory level of the component being replaced, they can ask to delay implementation until the on-hand balance is used or negotiate a settlement with the customer while the inventory still has value.

WAREHOUSE MANAGEMENT

When selecting a discrete manufacturing system, you should also look outside your niche and take advantage of ERP features usually prioritized in other sectors. Distributors use cross-docking to avoid stocking and immediately picking a component that is required right away; discrete manufacturers often have parts arrive just in time for production. Slotting could also be used to store parts frequently selected for production jobs near each other and the front of the stock area.

Combine these inventory management tools with your well established cycle counting process and a powerful new ERP system, and your inventory accuracy and efficiency can improve no end.



IDENTIFYING THE RIGHT ERP FOR YOUR BUSINESS

Selecting a discrete manufacturing ERP system that fits your method of operation is absolutely critical. At the beginning of your search, this may have seemed like a simple task but as you begun researching products for your shortlist the enormity of the task will have become clear.

EACH DECISION BOILS DOWN TO AN ERP REQUIREMENT

The key to simplifying discrete manufacturing ERP selection is to break every decision down until you are discussing a specific requirement within your business; whether that is rule-based component purchasing or machine-to-ERP communication.

Having broken each decision down to requirements, you can now begin to assign priorities to each existing or prospective ERP feature linked to a business process. It is this context and priority which will guide you through shortlisting, request for proposal, demos and the final purchase.

SEEKING OUT CHALLENGES AND IDENTIFYING SOLUTIONS

Discrete manufacturing relies on an integrated chain of product development, engineering, production and quality control. ERP systems should therefore link production jobs to technical specifications. The component inventory used for those jobs should also be tied to quality control reports, and the ERP system should help manufacturers analyze profitability by product.

The key to simplifying discrete manufacturing ERP selection is to break every decision down until you are discussing a specific requirement within your business

Staying lean in production is important to many discrete manufacturers. Cost pressures are always present, so ERP systems should help avoid overproduction, excess inventory, and unnecessary transportation. An ERP system that is tightly connected to demands can help manufacturers build more products that demonstrate consumer demand and completed sales.

If a discrete manufacturer has many production jobs open and running in parallel, their selection would prioritise an ERP which can schedule all work to ensure that each operation is ready for the following operation. The ERP system also needs to help control the actual work to ensure that shop floor personnel follow schedules and alert management of variances.

WHAT'S NEXT?

These are just a few examples of the challenges discussed in this guide and the solutions which ERP can present. Applying the methodology outlined in this guide will allow you to identify areas in which your current ERP system is lacking as well as processes which will require the support of ERP in the future.

Research all prospective systems thoroughly, weighing your needs against their features. Check the providers' financials and product development track record to ensure they will meet these needs for the considerable future. Check references for your shortlisted products and talk to those in your discrete manufacturing peer groups. Conduct demos, forecast ROI, the list goes on.

There are many comprehensive discrete manufacturing ERP solutions on the market, the real challenge is identifying the one which you can apply to your processes in a positive and effective manner.

This guide was written by Tom Miller, ERP Focus Columnist, with contributions from Tom Feltham, ERP Focus Editor

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