

A Radius Solutions White Paper



Selecting an ERP System for Packaging and Printing Operations: A Guide for Executives

It used to be that a common sentiment to be heard in IT circles was, “No one ever got fired for choosing IBM.” While many of Big Blue’s competitors could justifiably argue that their systems were faster, more innovative, had a better price/performance ratio or were cheaper to maintain, everyone knew that when you bought an IBM box it would work. Solidity, reliability and service were what IBM traded on then, and you knew that even if you were paying a bit more, what you were buying above all was peace of mind.

As electronic hardware became more reliable, that argument continued to become less persuasive. IBM suffered as a result, and eventually had to re-engineer its business to fend off competitors that continued to enter the arena. The 1990s saw the rise of the enterprise resource planning (ERP) system, and top providers such as Oracle and SAP emerged. Again the perception was if you chose a leader, perhaps in particular the renowned SAP, your job would be safe. How could you get fired for choosing the world’s bestselling enterprise software package?

The Three Most Important Considerations When Buying Software

There’s a world of difference, however, between buying a box of electronics and buying software. Ask any realtor what are the three most important attributes that a property can have, and they’ll answer with an old cliché – location, location and location. A similar concept applies to software. The top three attributes of an enterprise software package are fit, fit and fit.

There really is nothing that comes close to this attribute on the scale of importance. If you buy a software solution that doesn’t closely fit your business processes, then it will have a significant impact on the amount of time and money needed in order to try to make it work in your organization. This will drive up total cost of ownership for a solution – in fact the software costs may be outweighed by the services costs to try to make the solutions work, by three, four or even five times. In addition to the significant internal resources required during the process and the potential disruption to business.

It is particularly tricky to try to fit a generic manufacturing ERP solution into a packaging or printing business. Later in this article we will look specifically at the functional gaps to consider. One may argue that they may be so significant that it is questionable if it can be made to fit at any cost. So not only is total cost of ownership likely to be very high, adversely affecting whether any return on investment can be achieved, but even more significantly, the risk of complete project failure can be very high. Before we move into functional consideration, a brief overview of ERP and its history, can help to understand why most systems are geared toward repetitive manufacturing processes.

What is ERP?

By this stage in the enterprise solutions lifecycle, most people are at least somewhat familiar with ERP. In fact most mid to large size organizations are already using an ERP system, or have developed some equivalent types of functional programs on their own. The typical replacement cycle of ERP systems within companies, depending on the industry and source of information, is on average 7-13 years. So it is not surprising that many companies are currently looking to replace outdated technology and/or generic systems with ones that are fully integrated, founded on current, proven, open technology standards and are developed with industry specific processes that already fit their operations. Scalability and flexibility to meet the ongoing, changing needs of their organizations are also common considerations.

ERP systems are the evolution of a technique of planning and controlling manufacturing businesses developed by the American Production and Inventory Control Society (APICS) in the early 1960's. The concept was originally termed material requirements planning (MRP) because of the technique's focus on material planning and procurement. The technique continued to be developed (in US consultancy, the Oliver Wight organization was particularly noted in the field), and by the early 80's, the term MRP II came into use as the concept was extended to encompass high-level capacity planning. MRP became manufacturing resource planning and the 'II' was added to distinguish it from the previous definition. ERP is simply an updated term for MRP II, introduced by software marketing in the mid-90's to update the concept.

Functionally, the current product offerings in this area are similar to IBM's mid-70's MAPICS system, an early pioneer in the sector. These products are principally focused on manufacturers who assemble a range of standard finished products from

a large quantity of parts and sub-components. These products can range in complexity from an automobile, which might be comprised of several thousand components, to a personal computer with several hundred. Clearly, for this type of manufacturer, material planning is most important. You can literally stop a production line at a cost of a million dollars an hour for the lack of a ten-cent component.

The starting point for ERP software is to define every single component of the finished product. If you can imagine taking your car apart down to the last screw, you can appreciate how complex this can be. ERP packages use bill of materials (BOM) software to define how the finished product fits together. Maintaining a manufacturing company's bill of materials is a full-time job for a large department; because every small engineering change or improvement may result in a change to the BOM.

The bill of materials defines which components make up a finished product, but this is only one-half of the manufacturing equation. The manufacturing processes required to produce the product also need to be defined. In ERP systems, this is typically defined in the production routing. The production routing defines the work centers, set up and run times of each operation. By combining the information on the bill of materials with the routing information, it is possible to compute the cost of producing the final product.

The original MRP function is still a key component of ERP systems. It is MRP that works out the required quantity of each component to support the forecast production of the finished product. It can also work out when these components are required.

The Business Challenges of trying to implement manufacturing ERP systems in Packaging and Printing Companies

The fundamental challenges for packaging and printing organizations trying to deploy generic ERP systems, is that they are designed to address a set of manufacturing problems that are quite different from the special circumstances of printing and packaging organizations. These differences are best illustrated by looking at a few selected functional areas.

Estimating

Providing fast, powerful and accurate cost estimating has always been a fundamental requirement of printing and packaging businesses. There are arguably fewer sources of competitive advantage in printing and converting than other manufacturing sectors,

for example, an automobile maker can differentiate on style, technology, performance or luxury. In printing and converting, there are many competitors who can produce the same products. There is always someone who is prepared to do the job at a lower price. Ultimately, printers compete on service and responsiveness, and responding quickly to inquiries is the essential starting point.

So how would you try to quickly develop an estimate with an ERP system? First you would set up a bill of material and a production routing for the product. This in itself is problematic, because BOM software is essentially designed for the assembly of discrete components. Fundamental concepts like impression size, number up and number on, grip allowances, and web cutoff lengths are completely alien to ERP systems, so you would have to work out the usage of paper per section manually. Additionally, manufacturing ERP systems are not developed to address the concept of ink and varnish coverage, so the quantities of coatings required would also have to be worked out manually.

These restrictions are significant enough to cause delays and errors, but the real issue is that ERP systems have no mechanism for automatically working out the make-ready and run times of each production process. This is because in the ERP world, the creation of the bill of material and production routing data is a relatively leisurely process at the culmination of a long period of production engineering trials. Since most discrete manufacturers only introduce a small handful of new products each year, it is not a problem, or an urgent need. Printers, on the other hand, do a hundred new and unique jobs a week, and might prepare quotes for a hundred more, which need to be turned around in a timely manner for clients, to address their services expectations. A sophisticated, automated and efficient method of calculating make-ready and run times based on machine speeds and capabilities is essential.



A final challenge is that most ERP systems do not have sophisticated pricing functionality; so setting the price becomes a manual process. Contrast this with a purpose-built estimating system like Radius Solutions' PECAS Vision. PECAS Vision can be set up with all the most common print and folding signature formats. Estimators simply assemble the format they want from a list. The system is designed to automatically calculate paper weight based on area and GSM, and coating quantities based on coverage. PECAS Vision can calculate make-ready and run times automatically based on the performance capabilities of your equipment. You can arrive at an accurate

cost in minutes. If you want to compare the cost of running on a different print machine, or using a cheaper board specification, you can do so in seconds. You then have sophisticated price-modeling capabilities available to fine-tune the prices to be quoted to the customer.

ERP systems designed for manufacturing do not address any of these requirements. In order to try to make them function in this manner significant, time consuming, expensive and risky modifications would have to be developed, before a company could even begin to effectively use the system for estimating. Once developed, those modifications would also have to be maintained in order to be useful if the company ever wanted to upgrade their technology to take advantage of more efficient hardware or new software enhancements.

Manufacturing Orders

Manufacturing orders, also referred to as work orders, production orders, or production jobs, are the mechanism used to plan and control production. Generally, the manufacturing order functions of ERP systems have difficulty in dealing with the routine methods of printing and converting. ERP software is designed for businesses producing standard stocked products that are produced in an identical fashion every time, but printing is essentially a make-to-order business where each manufacturing order can be different. In an ERP system, the manufacturing order is generated from the bill of materials and the production routing. This means that for every job you do, a BOM and routing must be created. As we have seen in the previous section on estimating, this is far from a simple process, and is impractical for day-to-day use, customers expect orders to be turned around quickly, often in only a day or two.

Because PECAS Vision was specifically designed for the needs of the printing and converting make-to-order environment, producing a manufacturing order for a new product is efficient and straightforward. You simply choose the appropriate sections from a pre-defined list (for example 2 x 32pp sections and a 4pp cover) and PECAS Vision automatically calculates the necessary paper and coatings, and machine make-ready and run times.

Scheduling

Do you routinely run more than one job on a sheet or bind two-up? If so, you will find that ERP systems' manufacturing orders aren't designed to address these operations.

Many ERP systems do not have finite scheduling systems as standard functionality, although some offer interfaces to third party products. But even here, there are some fundamental difficulties with the functionality.

ERP systems generate manufacturing orders by running an MRP program and expanding the bill of material. This works fine for mainstream manufacturers, but it is not good for printing and converting. Consider a routine publication of the format 2 x32pp sections and a 4pp cover; here, an ERP system would create separate manufacturing orders for each of the printed sections and for the binding process itself, and these manufacturing orders would also be created as separate entities in the finite scheduling system. Because they are not related, the scheduling process could produce some highly illogical results. For example, it would not insist that the printing process starts before binding because there is no dependency between the processes other than the printed sections' due dates.

By contrast PECAS Vision Scheduling Assistant knows that all the processes are related under the same manufacturing order and, therefore, ensures that physical dependencies are applied.

A Thousand Little Things

The above examples highlight some of the more obvious functional gaps, but there is a long list of smaller, but equally important, "fit" issues that will hamper a smooth implementation. Some examples include the following:

- ERP order processing systems don't deal with routine print industry concepts like run-on and run-back pricing.
- ERP systems are not designed to store the innumerable technical characteristics required such as flat size, paper specification, PMS specifications and packaging specifications. These are essential in order to produce accurate work instructions or job bag information.
- ERP stock control systems can't deal with the physical characteristics of paper and so cannot store the sheet size, web width or GSM. They also cannot convert from sheet/web size to weight and back again. This can effectively be a showstopper for many organizations.

Closing the Gap

What is quickly apparent is that bridging the gap in “fit” is not a trivial matter. It has been suggested by some that bolting on a cost estimating system might work. Upon closer examination, this emerges as a difficult challenge. If you can imagine running sales estimating as a stand-alone system, you would have to set up duplicate customer, item, raw material and work center data to try to make it work. This approach is one that can hardly be likely to increase efficiencies and reduce errors.

But the real fundamental gap lies in manufacturing orders. The basic structure of general manufacturing ERP systems and their method of defining how a product is manufactured, is so unsuited to print production that it leaves the system incapable of a good fit, even when heavily modified. To re-work the software in order to try to meet the day-to-day operational needs of a printing and converting operation would mean extensive modifications to the core product, leaving it so heavily customized that it would be difficult and very costly to support and maintain.

With most of today’s manufacturing ERP systems offering essentially the same functionality as the MRP II products of 20 years ago, it is not surprising that they don’t fit well in a printing and converting environment – that is not what they were designed to do. For many years printing and packaging operations have explored the use of manufacturing ERP solutions and most have eventually come to the same conclusion – it is hard at any cost, to make it fit well enough to support efficient operations and derive any return on the investment from the project.

What are the options?

For many years, there have been seemingly few viable alternatives. If a company needed a fully integrated ERP solution that could address any combination of multi-site, multi-currency, multi-language, multi-product production capabilities, with a global reach, it would typically turn to a large generic ERP provider. Though there have been some niche providers that offered industry specific solutions, many times they were designed for smaller organizations, needing only single site capabilities and more limited functionality.

More robust solutions were limited and often from providers who were very small (10 to 30 employee operations) and or new – without a proven, referenceable client base. Betting on these types of companies to provide a solution on which a large company would rely on for its operations for years to come, could often seem riskier than

trying to modify a generic solution from a large ERP provider, to fit printing and packaging operations.

Over time, industry consolidation and fall-out from smaller companies without solid business operations and proven solutions, has narrowed the choices. There are still the giant ERP companies and other ERP consolidation companies who have a very broad portfolio of ERP offerings that they will sell into packaging and printing organizations. But their clients may quickly feel the lack of commitment to their product for their industry. Roadmaps for industry specific development may be hazy at best, and top notch services and support personnel who know the printing and packaging industry, may be scarce.

As analysts initially predicted, remaining niche providers would have an opportunity for strong growth. As they became larger and more established, they would become the most viable option for companies needing solid, long-term industry specific solutions that could deliver strong ROI.

Radius Solutions has been at the forefront of this change in the market place, as mid-size and large packaging and printing organizations continue to turn to us and rely on PECAS Vision to run their organizations. With an exclusive focus on solutions for packaging and printing organizations, and a highly referenceable customer base of industry leaders Radius Solutions is pleased to be the provider of choice for packaging and printing companies wanting to streamline their business operations, respond more rapidly to customer needs and gain access to critical business information across all of their operations.

For additional information about Radius Solutions or PECAS Vision, please visit:
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