The Right Tool for Your Shop Floor

ERP Myth

"In the ongoing saga of ERP benefits realization, we find IT groups are increasingly mandated to use their ERP system wherever possible, often without regard for functional fit. For manufacturing execution, this is a naïve, risky, and costly proposition. Users are better served by establishing well-defined points of integration between ERP and systems of production."

"ERP Myths Boost MES Realities," Managing Automation [1]

The above quote is especially true for complex discrete manufacturing and for highly regulated industries like Aerospace, Defense, Nuclear Products and Medical Devices.

Can you get by with ERP software for your shop floor? This question was recently addressed by Alison Smith of AMR Research in "Differentiating ERP and MES". [2] In this brief article, Alison points out that complex manufacturing would find a specialized application, like MES, more suited to the job. To answer the question, you have to look at all your process requirements which might include management of: engineering changes, parts and material used, quality issues on each assembly, and resolution documentation. You will find that ERP solutions do not go very deep into these areas of manufacturing, do not have the data structures for the detail data, or force users to navigate through too many screens to accomplish tasks which are routine for your shop. Manufacturers of simple products that do not change the product mix very often should look to their ERP solutions first. On the other hand, manufacturers with more complex requirements should look at off-the-shelf operations management or MES solutions instead of spending millions customizing a solution around an ERP system.

Shop Floor Reality

A recent article from Managing Automation, "Wanted: Plant Floor Data Visibility", states that MES, process execution and control, and manufacturing data acquisition software are the most cited areas of increased investment among manufacturers of all sizes. The article explains that a key reason behind the resurgence of plant management software is the need for better visibility into production operations in the new demand-driven manufacturing arena. [3]

Operations management software has long been a secret weapon used by large top-tier manufacturers to tame the complexities of manufacturing highly engineered products with deep levels of assemblies. Specialized plant management software is no longer a secret and no longer a luxury item; it is now becoming an essential ingredient in the recipe for success of many second- and third-tier suppliers in regulated industries like Aerospace and Defense.

What functionality should we expect from a specialized manufacturing application? We should expect to replace all the paperwork on the shop floor with an efficient management process. Look around your shop and see how many forms are used on a daily basis to (a) track engineering changes, (b) track installation of serialized parts or lot-tracked material, (c) document nonconformance, (d) track component swapping, and (e) document rework and repairs. Then take a look at how many systems or spreadsheets are used to log these forms and track other support functions for the shop floor, like tooling manufacturing and calibration status. All of these tasks can be managed by a single operations management solution designed for your specific industry.

Solumina®, an Operations Process Management solution developed by iBASEt, includes functionality required by Production Supervisors, Mechanics, Inspectors, Manufacturing Engineers, Quality Engineers and Production Control personnel. The software replaces the old paper-based processes with new streamlined online processes that eliminate many wasteful steps and enable more agile and responsive support functions for the production floor.

Easy Integration

Integration of ERP and MES will typically include 8 to 16 touch points, including work order creation, parts lists, routing changes, work order status and schedule updates. This may sound like a lot of integration, but current integration technology makes it very practical and more efficient than trying to redevelop the functionality required for comprehensive operations management around an ERP solution.

In "SAP Discovers the Plant Floor," ARC explains how SAP has been one of the first ERP companies to state that one application cannot fit every type of manufacturing and to embrace third-party manufacturing applications through XML integration technology, industry supported standards, and a comprehensive partner program. [4]

"The industry has gotten into this situation with the lack of integration in part because the parties involved tacitly agreed to distribute or to divide the world into disjoint sets of vendors — this is the Automation vendor, this is the MES vendor, and this is the ERP vendor. I think viewing things with this old model has brought many things to a halt, due to the question of where is the line between MES and ERP. The answer is that there is no one line. We have a lot of customers that use SAP functionality to tie directly into the low-level shop floor systems. We have customers that use it, customers that are happy. We also have customers that use it, and at the same time—at another facility, at another operation—they use our systems in conjunction with an MES system."

Stefan Schaffer, Senior VP, Application Solutions, BSG,
Manufacturing Industries, SAP AG.

Leveraging XML technology and industry standards like OAGIS or ISA-S95 further reduces the cost to integrate ERP and MES applications to less than half of the current typical costs, and delivers in a fraction of the time. This is the goal of a current initiative sponsored by SAP and ARC, and embraced by many MES vendors and manufacturers in the discrete manufacturing space. Greg Gorbach explains the initiative in the article "Discrete Manufacturing Interoperability Pilot Takes Off." [5] The initiative is championed by several Aerospace and Defense companies. The integration technology between the SAP ERP and Solumina MES applications will be demonstrated live at SAP Tech Ed 2005 in Boston.

Realized Benefits

Are these investments in plant management software paying off? If you ask Julie Fraser of Industry Solutions she would say "Yes." Her report "Best of the Best Plants use MES" studied the top 100 manufacturers identified by Industry Week magazine for four years and concluded that the ones that used MES software realized 70% greater productivity improvement, 34% greater cost reduction, 37% greater cycle time reduction, and 15% greater improvements in yield. [6] Results like these explain why investments in plant management software are on the top of many manufacturers wish list.

Contact Information

For more information on these topics contact the following:
Conrad Leiva
VP Product Marketing, iBASEt
Email: cleiva@ibaset.com
Phone: 949-598-5200
Website: www.solumina.com

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