"What's Next?" …… EM/ES

Since the Industrial Revolution, manufacturers who have grown economies all over the world have been engineering-based, and none of these companies stood on their laurels.

These manufacturers always have to answer the existential question from their customers, which is, "WHAT'S NEXT?". And that question is usually answered by engineering.

Over the last 5+ decades the software industry has taken the concept of MRP and expanded it to MRP II and then to ERP, and all during that time there have been engineering "solutions" which have complemented, supplemented, and otherwise "surrounded" ERP offerings.

This article will discuss the _Engineered Manufacturing Enterprise Solution_ (EM/ES) for engineered-based manufacturers.

Let's start with some concepts that apply to all companies, but especially to engineered manufacturers.

Customer Acquisition Cost and the principle of "What's Next?"

In most Engineered Manufacturing (EM) environments that use a traditional ERP application, there are many unaccounted for and hidden costs both before, during, and after a sale, and many of these tasks concern the role of engineering.
From the minute a potential or existing customer crosses the line from suspect to prospect, a formal, comprehensive, and integrated methodology needs to be triggered so that ALL the needed steps and costs are monitored, and more importantly, that triggered alerts are created to enable course corrections.
It is critical that this methodology be present and integrated into the ERP system

Specifically, the traditional ERP application must have integration with Computer Aided Design (CAD) and Enterprise Communication Management (ECM).

1. _Computer-Aided Design (CAD)_ tools are used during the engineering process to efficiently create a drawing, define material requirements, and provide other key product data. CAD can also facilitate the manufacturing process when detailed diagrams of a product's materials, processes, tolerances, and dimensions can be shared with ERP. In most EM companies, CAD is used to varying degrees but is normally "off to the side" of the ERP system. It is extremely problematic to have an environment where decisions that affect customer satisfaction, production efficiency, and product cost, are made "off to the side".

   In an EM/ES environment, CAD tools are integrated with ERP so that the engineering process is exposed to the sales, production, and financial staff. Preliminary designs during the capture phase of an order as well as product information which can be costed are shared, and feedback through the communication chain up to and including the customer is more efficient and accurate.

   An example: A customer engages with sales and design engineering on the first revision of a custom product using CAD. The Bill of Material is processed electronically from the CAD tool to the ERP Estimate, and a preliminary cost and profit margin is developed. In addition, and RFQ for several new purchased components is sent out to potential suppliers, again electronically. It is determined that the cost of some of the material can be drastically reduced if a substitute item sourced from a different supplier is selected, and engineering is alerted and reacts by initiating the change of material.

Another important EM/ES feature is the inclusion of engineering in the lead time of the product life cycle. The ERP application's Operational Routing for either a new product or any existing product needing modification should have each engineering task as a planned operation, and ERP must have an easy to use, portable method for an engineer to enter the status of each task, either on their phone or tablet. The exposure of the true status of each order can be shared across the enterprise, and if a critical task is late or over budget, an alert can be issued via email or SMS.

In summary, by getting engineering "inside the ropes" rather than "off to the side", then sales, customer service, production, and finance will be better informed, and all do a better job.

2. ***Enterprise Communication Management (ECM)*** puts the "E" in ERP. Any relevant and competitive ERP application will have an integrated CRM function. Many EM companies, however, either do not use CRM, or if they do use it, are merely tracking meetings and logging emails.

In an EM/ES implementation, CRM broadens its reach to engineering, production, and finance. All activities involved in the acquisition and retention of a customer are tracked in CRM. The initial opportunity is defined with all necessary sales AND engineering steps. Everyone involved in the capture of business is calendar-ized.

Once the Estimate is approved, and while an agreement is being negotiated, each activity is tracked and costed by CRM.

True communication is achieved from Lead to Shipment and beyond if service/warranty work is needed.

And finally, regarding ECM, what better solution to help engineering answer the "What's Next" question? Continuous monitoring of customer feedback and surveying customers for new product ideas can truly be a differentiator in building customer loyalty and adding a positive impact to the bottom line for every engineered manufacturer.

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