Seradex White Paper

A Discussion of High Performance Manufacturing Issues

ERP for Engineer to Order

Congratulations - you finally landed the big contract. But there's no time for a long celebration. You've got tons of work to do to meet the deadlines and the projected margins.

You realize the effort required to generate bills of materials (BOMs) and assembly routings, generate and track AutoCAD drawings and double enter the order into your billing system. These inefficient, time-consuming procedures are extremely costly and hopefully won't result in too much rework – this time. The last job's expensive warranty and after sale field service killed your margins and pushed out accounts receivables ruining your cash flow. Hopefully this time you won't have to sit through long meetings where purchasing and production blame each other for the project's problems.

If this sounds familiar imagine what a fully integrated system can do for you? A solution that streamlines selling processes and dynamically generates quotes and CAD drawings. A system that quickly references past projects for part lists and subassemblies. Search through online parts catalogs and eliminate all the frustrating voicemails with one click RFQs and POs. A system that will seamlessly integrates your sales, production, and accounting departments.

Seradex helps you manage every aspect of your Engineer to Order (ETO) project from business development, estimating, engineering and project set-up to procurement, production, shipping, installation, service and warranty.

Seradex keeps you in control by managing deliverables, milestones, progress billings, budgets, percent complete and any other user-defined events, according to the terms and conditions of your contracts. Powerful interactive analysis screens detail the exact status of all project activities across your enterprise so you never have to guess.

Let's walk through a typical job in more detail to see how Seradex ERP deals with ETO environments.

Estimating, Quoting and Proposal Generation

Seradex makes it simple to quickly create accurate quotations. You can easily locate old jobs and use the actual costs to build a new estimate The ability to quickly and accurately estimate costs is a critical business process for an ETO company. Developing accurate cost estimates is a fundamental tool for negotiating profitable contracts.

Seradex addresses Estimating issues by supporting several estimating scenarios.

A. Rule of Thumb Estimating

Estimating approaches used in repetitive manufacturing environment will not work in an ETO environment. In some cases you can establish rules of thumb for quickly generating cost estimates. For example a company that fabricates cement plants can use tons/hr as a metric to generate cost budgeting. A tool and die shop can use parameters based on the weight of steel to be machined. Your first estimate may be a rolled up summary of large groupings of labor time and material dollars. By organizing these cost groupings and labor estimates you can derive an accurate cost. By overlaying administrative overhead expenses, sub contracts, sales commissions, installation, freight a profitable selling price can be calculated.

A formal customer proposal can quickly be generated using Microsoft Word and a boilerplate template. This proposal can then be fine tuned to meet your customer's unique needs.

When the contract is received, engineering for detailed bills of material (BOM) and labor will begin.

The difficulty most ERP software has is comparing the detailed costs compiled after engineering with the rule of thumb estimate you are comparing apples to oranges. Seradex employs Job Cost Categories for this comparison. Further, Seradex allows you to compare actual costs to both estimated and engineered costs.

B. Detailed Estimating

Many industries cannot use the rule of thumb approach. For example in the printing industry a very detailed BOM and routing is compiled for each quote. You may be required to copy from previous jobs and incorporate revisions. A multi-level bill of material and detailed labor cost is required. Setup costs and vendor quantity breaks may need to be incorporated in up to ten production quantities. A formal customer quotation can be generated using Microsoft Word and a boilerplate template. This proposal can then be customized.

Once the quote is in Seradex you can track open quotes, close ratios by Sales Rep, loss statistics by reason code and other useful information. You can link quotes to your GoldMine Microsoft or ACCPAC CRM system for further tracking by your sales force.

You can perform "what if" analysis for Estimates so you can project delivery dates for new orders based on current jobs and material lead times.

New Orders

In the ETO market, integrating engineering with manufacturing and purchasing is a key requirement. Unlike conventional ERP systems, Seradex integrates engineering activities directly into the job.

A common issue with many ETO companies is for the BOM to evolve as the project progresses. For example the first revision of the bill of material may contain just the long lead items for purchasing to get started on. As the project progresses the BOM will be flushed out in increasing level of detail.

Customers or staff may issue change orders modifying the design. Items may be added and deleted throughout the job.

All these changes notify purchasing by automatically creating material requisitions. All BOM changes are tracked via the audit trail created with the BOM Change Report.

CAD: Improve Engineering Productivity

CAD drawings are a key element in ETO companies. Seradex CADLink integrates AutoCAD engineering drawings with production orders. It is a simple process to import a bill of material from the drawing. Seradex tracks revision level control on all drawings. CADLink reduces non-value activities like the re-keying of data from one system to another thereby increasing engineering productivity.

Seradex provides the capability for all users to view the latest drawing revisions even without AutoCAD. This ensures that engineering maintains control but provides real time visibility to the whole organization.

Production Scheduling: Ship on Time

The Seradex Scheduling module ensures your shop runs smoothly, jobs ship on time and materials are synchronized to production. The schedule takes into account constraints such as capacity, materials, tooling and labor pool to determine the "best" possible schedule. All late jobs are identified so you can take corrective action. You can run simulation mode, to see the effect of various scenarios before committing the production plan. Easily spot and control bottlenecks and use drag-and-drop features to regenerate a better schedule.

Shop Floor Control: Real Time Status

Seradex can track labor (both direct and indirect), material and scrap. Immediate and complete visibility of job status tells you if your project is scheduled to ship on time at the targeted profit. The sooner management receives feedback from the shop floor, the faster it can respond to any unexpected deviation.

The Seradex Shop Floor Data Collection system allows operators to rapidly input real time labor and material status.

Purchasing: - Will love this system!

Seradex controls all purchasing activity including the purchase of direct and indirect materials, MRO and services. The Purchase Order management provides multiple ways to create a PO. Orders can be entered manually or created as a result of Job requirements. Purchase Orders can be for stock or directly for a project. On receipt, the material goes directly to Work-in-Progress (WIP) and the cost goes to the job.

Any BOM changes and revisions made by engineering are immediately communicated to Purchasing.

Vendor Performance ranks suppliers based on delivery, quality and price. If designated, a PO line item can be received directly into Inspection for quality verification and, if necessary, returned to the vendor. The system supports material requisitions. Material requisitions can be consolidated into a Request for Quotation (RFQ) and easily converted to a Purchase Order (PO).

Inventory: Get Control

By specifying items as stocked or non-stocked, the system will manage your inventory accurately. Complete lot and serial tracking, multiple inventory locations, multiple cost types, cycle counting and physical inventory are all supported. Seradex stock inventory replenishment can be driven by simplified min/max and reorder point logic or you can replenish the item through the MRP demand planning.

Field Service

Seradex controls the off-site installation of complex jobs while capturing all outside expenses. Seradex allows you to easily structure an installation job that requires many different tasks. Seradex sets up these steps as a job and reports progress and labor against it, just as if it were an internal operation. By structuring installation jobs as part of the project, the installation costs and revenues roll up to the parent project. Crews installing equipment record their on-site time to be entered into Seradex.

Shipping: More Automation

Once the production of the end product is finished and testing complete, the equipment is usually broken down for shipment and re-assembled at the customer's site. You may also be shipping free issue components to sub contractors who will either ship items back to you or else to the job site.

Seradex can automatically generate packing slips, bills of lading, customs documents and shipping labels for all the above scenarios. This gives you real time tracking of all job components.

Actual Job Costing

Traditional MRP systems utilize a standard costing approach and frequently do not support actual costing. Companies producing customized products need actual costing in real time. Seradex tracks actual material costs by

- Committed (Open PO's)
- Accrued (Received PO's)
- Invoiced (Vendor Invoiced)

Actual labor costs are also real time. Job costs can be viewed by project, category, summary and detail levels. Costing for change orders can also be isolated.

The actual Job Costs can be compared to Estimated Costs and/or Engineered Costs to analyze variances.

Seradex concurrently compiles five different cost types: actual, average, standard, FIFO and LIFO. This tremendous flexibility makes it easy for you to get all the information you need. And if you work with the government Seradex has the flexibility to accommodate the different contract and invoicing types required.

Seradex allows you to view every aspect of your project at any time and get up-to-the-minute information you need any way you want it from start to finish. As a result, Seradex helps you track variances and stay within your budget. Plus, it lets you add alerts and rules into system and when you do vary, the system will automatically let you know the moment it happens.

Revenue Recognition

Project based organizations have unique revenue recognition and work in process requirements dictated by GAAP. Seradex offers easy to use functionally to fully comply with GAAP. This eliminates time consuming month end activities in your accounting department.

Seradex automates this activity by calculating the percentage complete. Flexible user defined thresholds are used to determine whether or not revenue can be recognized. If the percentage complete falls within the defined threshold, the allowable dollar value is calculated for your review and then posted to the appropriate revenue accounts.

Progress Billing

Project based companies need to produce invoices based on contract milestones. Seradex offers the ability to track deposits and payments in unearned revenue and convert these on a GAAP basis to revenue. This eliminates a time consuming error prone process. With the Sarbanes-Oxley act, internal controls, audit trails and proper backup for these calculations is becoming more important.

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