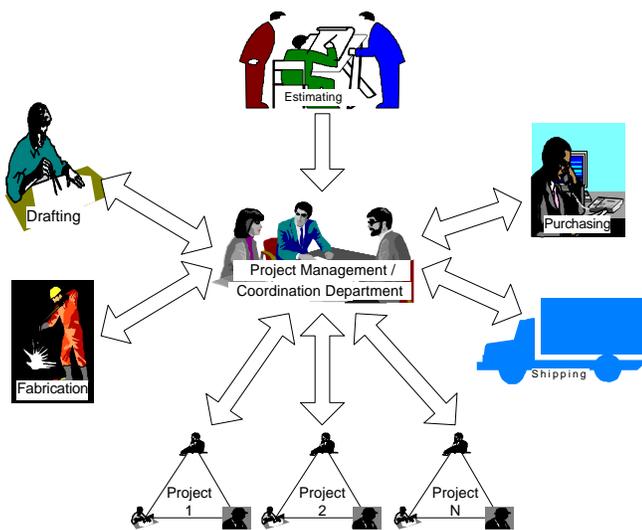


Production Cycle Improvement at PSEG Energy Technologies Company

CTB Consulting analyzes and designs process improvements for clients in many industries. CTB has an excellent track record developing process savings for clients involved in production manufacturing, materials logistics and equipment inspection. In addition, CTB has expertise in workflow management with collaborative groups and mobile computing. On this assignment we helped a manufacturer of Heating, Ventilating & Air Conditioning (HVAC) ductwork through three related engagements over a 2-year period. Their first project established an email communications infrastructure that included connections for remote and mobile users. With this new tool installed, they then asked CTB to perform a “Process Analysis & Mapping” assignment to determine how to leverage the new communication system with a revised project workflow. Finally, CTB has just completed the technical design of an integrated “Warehouse and Material Logistics” system that is based on Windows 2000 “Collaboration & Workflow Management”. You can find more information on CTB’s core competencies on our Web site <http://www.ctbnj.com>

Independent Sheet Metal (ISM) is an Energy Technologies Company owned by Public Service Electric & Gas (PSE&G). ISM analyzes, designs, quotes and installs custom Heating, Ventilating & Air Conditioning (HVAC) systems in the New York Metropolitan area. They provide these services for new and renovation construction projects using the “QuickPen” CAD system. Several ISM teams must work together during the steps and phases of each project.



First, office based estimators and draftsmen design the ductwork system from architectural drawings and specifications. Next, field staff takes measurements at the actual job sites before and during the project. Then, fabrication

teams place parts orders and are followed by technicians constructing the actual ductwork in the ISM manufacturing facilities. Finally mechanical installers install the units on site while accommodating and documenting as built vs. as designed details. All this needs to be completed while architects and clients make changes to specifications in real time.

As the ISM business has grown, it has become more difficult for management to accurately track the schedule and status of change orders and the sub-assembly parts required for each job. After attending a CTB seminar on email systems and their benefits, ISM engaged CTB in a project to install a Microsoft Exchange email system in their offices. This initial project provided an accurate and written format for ISM’s office staff to be able to communicate real time with the various groups involved in a project. It also provided an infrastructure for ISM to include field, office and shop staff with critical information at the same time. ISM then asked CTB to analyze and recommend improvements to several key areas of their production cycle. We proposed an analysis approach that focused on reducing errors and shortening project time.

After careful analysis, CTB pinpointed three areas where significant production cycle improvements could be achieved. The first was a need to structure and route communications between field and office staff. Specifically, information about change orders and status updates were often out of date and sometimes not legible. Second, while job site field changes are common, the associated approval of change orders was laboriously slow because they were made through manual forms. Migrating this approval process to a real-time electronic platform was needed. Third, ISM needed a better audit trail of the documentation and architectural details to substantiate differences between “as designed” and “as built”. These often affected client billing and parts orders with vendors.

With these process improvements pinpointed, CTB recommended several quick fixes that required using the existing people and systems in an adjusted process model. The email system that was installed in the initial technical engagement formed the essential communications backbone for the initial process solution. Microsoft’s Exchange provided real-time communications to both field and office staff and provided the necessary infrastructure for the quick fix recommendations developed in the analysis.

At the conclusion of the analysis and quick fixes, CTB was asked to design a full system to extend these initial quick fix improvements. The design included e_forms and routing as well as integrating the QuickPen sheet metal CAD system. Electronic e_forms were used in several places to replace paper. These automated and sped up the communications and accuracy of data exchanged with field staff.

CTB also designed a solution to improve vendor order-flow



problems by enhancing communication with ISM's suppliers. This was done through an Electronic Document Interchange (EDI) link. The design of the vendor interface also includes an electronic connection to QuickPen. This automates and expedites the transfer of parts order data. By integrating the new e_forms and quick pen application into one system design, information was made available to document the changes for billing clients and ordering from parts suppliers. The final system resulted in an integrated Project Tracking System that will provide the scheduling and tracking status of each step in a bill-of-materials order.

Through the phases outlined above, CTB was able to quickly identify where ISM could save time, money, materials and manpower. The design of the system delivering a full solution included the establishment of a model justifying the

development phase of the project. First, time was saved creating and processing change orders. This increased capacity and customer satisfaction. Second, billing was improved through fewer billing errors and the accurate and timely delivery of change order requests with all the supporting approvals. Third, the electronic link between ISM and their parts suppliers provides the beginnings of a just-in-time inventory system. This results in reduced inventory requirements, more accurate demand predictions, and improved vendor pricing. Aside from the considerable process savings identified by this solution, information will be supplied on a more accurate and timely basis to ISM clients and vendors. ISM expects improved customer satisfaction and revenue beyond the benefits defined in the payback model.