

KNOX MACHINE COMPANY

Business Transformation and ERP for Make-to-Order Manufacturing and Machining Company

Knox Machine: Precision, Highest Standards, Exact Specifications



Located in Warren, along the coast of Maine, Knox Machine Company is a make-to-order (MTO) machining operation that provides precision, close-tolerance machined parts, mechanical sub-assemblies, and pre-packaged component kits. The manufacturing and strategic supplier serves numerous industries, including the defense, communications, oil and gas, aircraft/aerospace, power generation, and plastics industries. For more than 40 years, Knox Machine has been providing high-quality, close-tolerance machining.

Among the company’s capabilities are:

- Multi-axis CNC and conventional machining
- Prototype, short-run and production machining
- Inspection and documentation procedures
- Supply chain management, including all secondary outside processes
- Raw materials and/or finished parts inventory, as required



Because of the nature of the industries they serve, Knox Machine customers require the highest quality standards to fit exacting specifications. Robust quality control, stringent inspection processes, and material traceability processes are essential for the ERP solution chosen by this make-to-order manufacturer.

Legacy and Disjointed Systems Cause Headaches for Knox Machine

Before working with Ultra, the company’s processes consisted of an awkward combination of a homegrown legacy software package, Excel for inventory control and reporting functions, and various manual

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- Jon Maxcy, Vice President,
Knox Machine

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processes for material planning and shop floor execution. The company also used a separate accounting software package for financials (general ledger, accounts payable, accounts receivable) with another solution for quoting, order entry, purchasing, shipping and job costing.

The company had outgrown its cobbled-together system and found that data did not easily move from one business process to another, requiring multiple entries of the same data. Lacking was an integrated view of the business and had no true process flow among the stand-alone systems. All manufacturing planning and execution was paper-based, leaving the door open for human error. Furthermore, it simply could not access the data needed for projections and business forecasting. As a pertinent example, employees keyed in the same part numbers multiple times over and over again just to get them entered correctly into the system, causing frustration and inefficiency.

Business Transformation: More Than Just Software

Sensing the need for an integrated all-in-one solution, Knox Machine had initially selected an ERP solution and put a great deal of work into it; however, after laboring over the deployment process for many months, the implementation failed.

Knox Machine ultimately realized that the process of selecting and deploying a successful ERP solution involved more than just dropping in a software package to be implemented by a small core group. It involved significant business transformation from the front office to the back office operations with across the board buy-in by all employees.

Ultra aided the education and buy-in process right from the start. Employees saw how serious Ultra Consultants were about improving the business processes and realized how successful the future state could be.

Project Goals & Business Drivers

To improve productivity and efficiency, Knox Machine looked for a fully integrated ERP system that would help:

- Eliminate error-prone manual paper-based processes and redundancy
- Eliminate data manipulation and reporting that outside the system
- Enable quick and flexible data access for decision-making
- Eliminate reliance on personnel knowledge to ship products
- Add flexibility to handle increases in customer kit production
- Improve scheduling
- Support current business and aid future growth

An integrated, modern make-to-order manufacturing and ERP system would support the company's current business, lay the ground work for future expansion, and resolve challenges inherent in an aging and vulnerable system.

Current State Analysis: First Steps with Knox Machine

Ultra's Current State Analysis for Knox Machine included initial activities:

- Core team workshop
- Facility tour
- Plant floor assessment
- Product line review

Ultra continued with a core process review of business areas, including:

- Sales
- Design engineering
- Shop floor control
- Warehousing

A master data review focused on each type of data, including:

- Item
- BOM
- Routing
- Customer
- Vendor
- CAD/Project file management.

Ultra began work with the team at Knox Machine and showed that their current state was not ideal and wouldn't result in a better business model that would provide a good ROI. In addition to entirely revising the failed plan, Ultra helped Knox Machine recoup some of the costs from the failed ERP implementation.

Jon Maxcy, Vice President at Knox Machine, commented on the difficulty of initially understanding ERP software demonstrations, concepts and terminology, before Ultra's education and process mapping services:

"The first time we went through a vendor demo, it was like watching a foreign movie of two squirrels with no subtitles. You never know what they're doing or where they're going, and you don't understand it."

A Six-Month Plan: Assess Current State, Educate, and Analyze Future State

Over a six-month period, Ultra Consultants led Knox Machine through their ERP technology identification, selection and business process improvement phases. Integral to this plan were the current state documentation process, education and crafting the future state possibilities and requirements, following Ultra's business transformation roadmap.

The first step was to walk the plant floor, conduct a product review and meet with and listen to the employees. It was important to begin building the foundation from the start and to develop trust with the core team members. The Ultra consultant working onsite developed immediate rapport with the Knox Machine employees on the plant floor. Jon Maxcy, Vice President at Knox Machine, indicated that the employees connected with the Ultra consultant immediately.

The Ultra consultant designed the demo script for the ERP vendors to follow to showcase the features inherent in each solution that matched Knox Machine's identified needs. This was a significant departure from the company's earlier experience with ERP vendor demos.

The Ultra future state analysis included Ultra University sessions. These sessions identify all facets of the potential ERP vendors and what is possible with make-to-order manufacturing and ERP, all related to Knox Machine's project goals.

Ultra's unbiased and independent relationship with the community of ERP technology vendors, coupled with the experience in negotiating technology and service contracts with several hundred clients, is unprecedented. Ultra knows the best practices to satisfy each client's best interests. All too often, vendors are squeezed so tight in negotiation activities that they end up compromising the project with junior level resources or end up focusing on too narrow a scope of services.



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With Ultra, clients are assured that the vendor is accountable to the project success and that resources are vetted ahead of time so the right competencies and capabilities are brought to the table every step of the way.

Following the education phase, Ultra developed the future state strategic plan, working directly with the company's core team. This group built integrated process flows, created a future state systems context, and defined the sources for master data and how these would align with legacy data.

The ERP Selection

Following vendor demos, Knox Machine selected Infor Visual Enterprise ERP. The order-driven functionality targeted and matched Knox's goals. Mr. Maxcy stated that, as a job shop that moves hundreds of jobs through the plant each week, the team found the solution easy to use. They appreciated the consistency of information displayed across screens, as well as the way the engineering masters and work orders are built and presented on-screen.

Results and Recommendations

With their make-to-order manufacturing and ERP system in place, Knox Machine has experienced positive results:

- 40 percent improvement in reporting.
- Elimination of data manipulation within the shop.
- Reduction of hours required per order from two hours to two minutes. Knox Machine required system flexibility to handle their customer kitting business.
- Improved shipping execution, no longer having to rely on internal, personnel-based knowledge to ship their products.
- Automated planning and scheduling replaced manual systems.

The Knox Machine team felt that Ultra had fulfilled its role as a trusted advisor throughout the entire project. Budget constraints meant Knox was not able to continue working with Ultra upon implementation following the ERP selection process. However, the Ultra continued informal dialogue with Knox providing pointers and answering questions.

Knox Machine continues to transform its business as it works with the software solution. Data transparency has given the company better knowledge of areas needing improvement where they can increase profitability. Mr. Maxcy offered this endorsement of Ultra Consultants and the company's positive return on investment:

"Ultra prepared us very well for the ERP selection and implementation of the ERP project, from a current state, education, and future state standpoint. It was well worth our investment in Ultra, in their content and processes, for the long-term at Knox Machine."

About Ultra Consultants

Ultra Consultants is the leading independent consulting firm for the manufacturing and distribution industries. We are a valued partner to our customers because of our focus on each customer's industry objectives, our deep industry experience, in-depth enterprise technology insight, and our independent thinking.

Since 1994 we have helped manufacturers and distributors — in North America and those with global operations — reduce their effort, resources and cost in their enterprise software projects. Our services help our customers realize increases in productivity, better information timeliness and accuracy, improved customer satisfaction and business performance. Ultra's guidance brings our customers faster and greater ROI on their projects, and long-term business value.

With Ultra in your corner, your journey is one of continuous improvement. Our mission is to successfully lead you through business process improvement strategies and tactics that drive your business performance improvement. You will work smarter with Ultra, through our effective and efficient processes.