

Automating repetitive or error-prone tasks is a good way to boost productivity. For example, one complex engineering process at **Belvac Production Machinery Inc.**, Lynchburg, Va., once took a highly skilled engineer a week to complete. Automation turned it into something any engineer could do in one day. The benefits from streamlining processes have nothing to do with company size. In fact, design-to-manufacturing pain points can arise from complex or simple workflows.

A common myth says in searching for areas to improve, look first at the engineering department. But in many cases, this is incorrect. To get started, map the entire development process from concept to shipping, being sure to involve all departments.

With map in hand, ask department representatives to identify the worst bottlenecks in their area and which one of the many steps holds up their particular process. Also find out where errors requiring rework happen most often.

Many companies fail because instead of automating mundane tasks, they just push employees to perform faster. Often, it is in the gaps between different processes where productivity stalls. Many employees are actually

productive less than 15 min out of every hour. Shortening these delays can up the ante considerably.

Interestingly, statistics show that a mere 4% of a company's manufacturing process can cause 50% of an organization's inefficiencies. Our experience has repeatedly shown it is well worth spending time to identify the few areas causing the most problems. Of course, these vary from company to company.

A surprisingly large amount of a typical engineer's time is filled with nonvalue-adding tasks. In an ideal world, companies would eliminate or replace all of these. In the real world, though, replacing only one or two of the tasks gives a good ROI. For example, find out who performs manual calculations regularly, uses spreadsheets to total costs or quantities, or constantly looks for data in a manual, on a PC, or on the Web. These areas are typically ripe for automation.

For instance, salespeople usually need drawings and BOM information up front for client proposals. Unfortunately, development teams often end up doing twice the work they need to. In a traditional workflow, engineers usually create product mock-ups for sales teams. But after the sale closes, engineering starts all over again to develop

# Streamlining workflows

Process automation can deliver dramatic efficiency gains.



**Stealth personnel say custom-coded RFQ software has slashed tenfold the time it spends from quoting to manufacturing for products such as this antenna-concealment flagpole.**

production drawings. Why not automate the process from the start by having sales people type customer specs and requirements into interactive forms which automatically create documentation needed for sales proposals and presentations? This information can then also drive the engineering process downstream.

A real-world example of automating a repetitive task comes from **Stealth Concealment Inc.**, North Charleston, S.C., which manufactures structures for concealing large antennas for wireless applications such as cell towers. A consulting company comprising experts in design-automation and technology services worked with the firm to create an online quotation-entry tool for the company. The tool uses a simple Web browser interface and walks a

salesperson through a series of questions based on one of 18 product categories. When, for instance, a salesperson is submitting a RFQ for a rooftop structure, the quoting software asks him for the dimensions and materials (brick, stucco, or corrugated) and whether the structure requires ballast or will be fixed to the roof. The software asks different questions when the structure is a flagpole or silo.

Following this decision tree helps sales personnel ask the right questions and the software then builds a detailed and reusable model from the data. "The quoting system has saved us hundreds of man-hours, reducing our time to design tenfold. It also helps us respond more quickly to customers," says Stealth Vice President of Operations Trey Nemeth.

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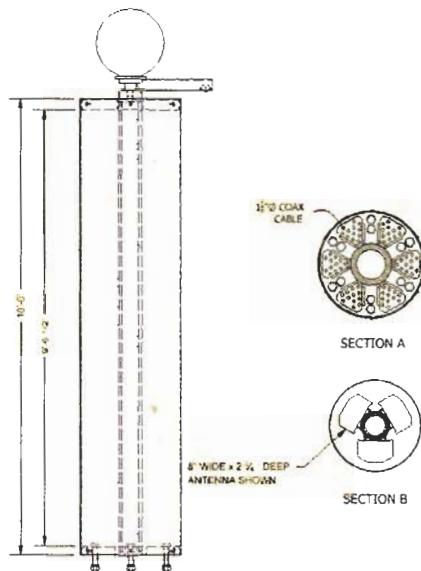
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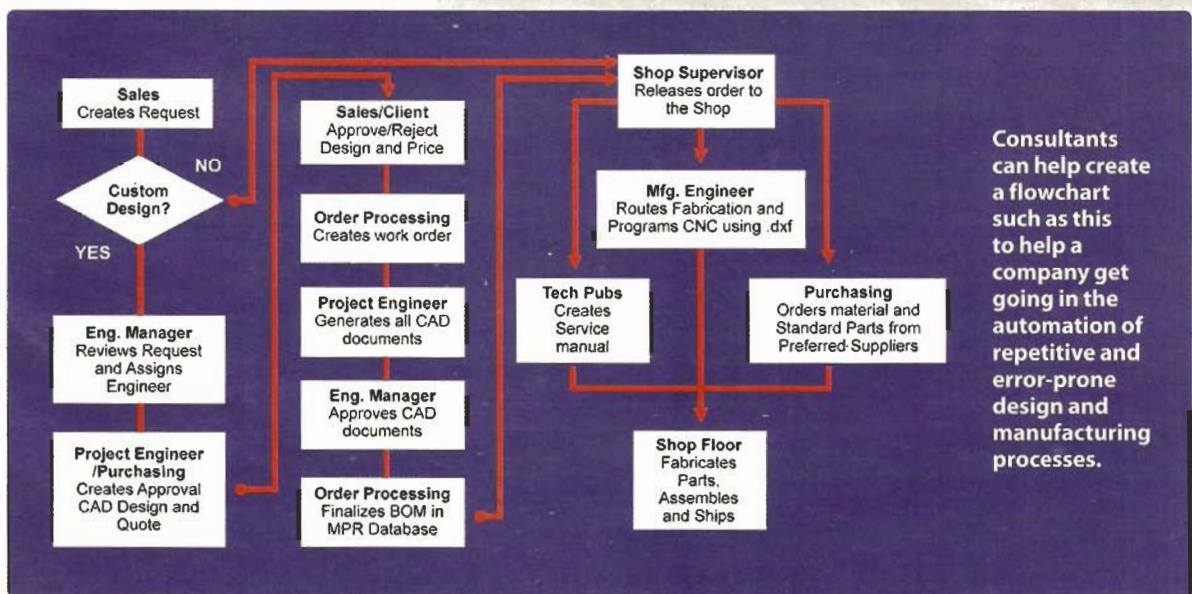
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**Tower Logistics**, [www.tower-logistics.com](http://www.tower-logistics.com)



**After Stealth Concealment's Web-based RFQ tool, built by Avatech, walked a company salesperson through specific questions to ask during a sales call, the software generated documents including this drawing, expediting the manufacturing of a flagpole for concealing a tall antenna.**



**Consultants can help create a flowchart such as this to help a company get going in the automation of repetitive and error-prone design and manufacturing processes.**

Likewise, automating the process of making similar products having custom specifications makes sense. So says head engineer Tom Brown at a **Tower Logistics LCC**, Huntington, W.V. Tower is a supplier of Climb Assist supports for maintenance workers needing to climb long ladders inside wind towers and other tall structures. Brown used to draw the products from scratch. To increase efficiencies, consultants created a table-based solution that lets Brown model new towers in Autodesk Inventor simply by typing-in key dimensions and other variables.

Basically, the code takes the data and passes it to a Master Tower Assembly Inventor template. Inventor applies the new dimensions to the template and generates a complete 3D model of the tower. Brown then places the Climb Assist in the tower to check for interferences and eliminate them. The software produces all necessary drawings, including BOMs and installation documentation. "The automated system reduced our lead time from four weeks to one, for us, a big productivity gain," says Brown.

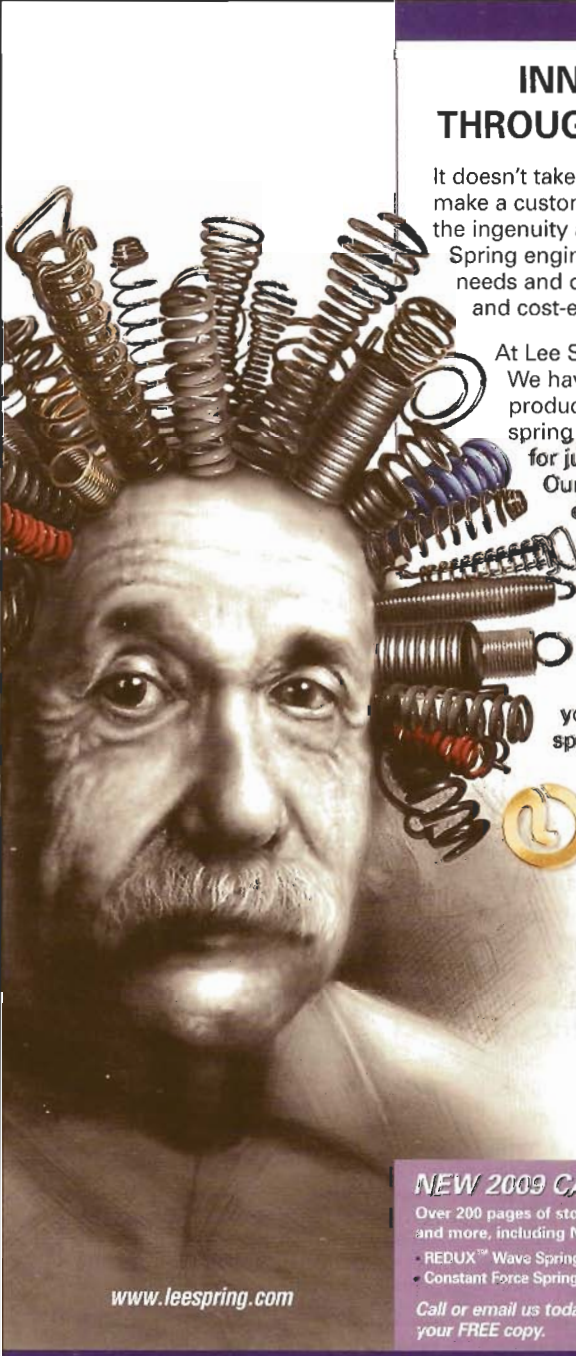
Imagine, for a moment, that your company has unlimited funds to automate its design and manufacturing workflows. After interviewing everyone from information technology, sales, order processing, engineering, and the shop floor, create a document describing how the processes should flow in this perfect world. This approach encourages ideas to flow freely. Then, going back to reality, your company revisits the document with its budget glasses on and prioritizes.

Consultants can help pinpoint areas to change that will bring the biggest bang for the buck. Shaving 15 min from the work of 12 employees daily is going to up productivity more than eliminating an hour a day from one person's duties. To keep things objective, we have built weighting tools that help prioritize where to make changes for immediate, tangible returns.

Next comes creating a master plan for the automation project. It should detail specific tasks, delivery timelines, budget, the exact programming code, and integration tasks.

Don't forget that "feast or famine" applies in manufacturing, too. When

business is hot, companies run full steam just to keep up with orders, with little time for anything else. So, it is a good idea to find and fix problems during a downturn to get ready for a strong comeback when a recession is over. Market share can easily change coming out of a down economy, with progressive companies making large strides forward. Which end of the change will you be on? **MD**



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