

# White Paper

## Tool Shop Optimization: Why Technology is Not Enough

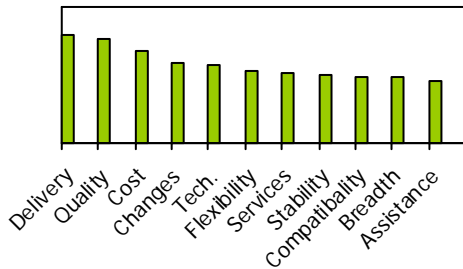
Prepared by Cimatron Technologies, Inc.

## Tooling Industry Pains

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Like many manufacturing sectors, the tooling industry continues to experience mounting global competition, placing ongoing business and operational challenges on tool shop across the industry. Those that thought these challenges were temporary in nature have either gone out of business or realized that “change is here to stay”.

Tool Makers Challenges



**Delivery, Quality, and Cost** are the top three challenges facing tooling companies, according to a recent survey conducted by CIMdata, a premier industry research firm.

These findings prompted Cimatron, a leading provider of CAD/CAM solutions for the tooling industry, to take action. The company established a task force to dig deeper into the causes and identify new approaches that would help tool shops eliminate or minimize these pains.

This White Paper describes the results of this work. It outlines a description of a framework for operational optimization adopted and refined by Cimatron and the tool shops it engaged with, including a specific eight-step template that other organizations can follow.

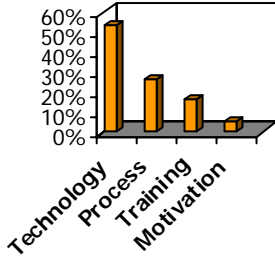
While portions of the framework can apply to any manufacturing organization seeking to improve operational efficiency, many of the suggested action items are specific to the tooling industry.

As with any practical framework, this is work-in-process. It is continuously used and honed as more tool shops are engaging in this effort. Any feedback that can help improve this body of knowledge will benefit the tooling industry and is gratefully welcome.

## A Common Pitfall

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Areas for Improvement



In talking with tool shop executives, it became apparent that many do not take the time to analyze their business processes. Working in a highly competitive environment, firefighting has become the standard mode of operations at most shops. When faced with a challenge, the common reaction is to grab for the most immediate solution — be it purchasing a new machine, extending business hours, outsourcing, or adding a new, detached software solution. As a result, many of these solutions fail to address the root causes of the problem at hand.

More than 50% of tool shops polled in the CIMdata survey indicated that their first priority was to implement advanced technology. The Cimatron analysis revealed that many of these implementations failed to solve the problems for which they were acquired, as the following examples show:

Facing the need to expedite delivery times, a tool shop invested a significant amount of money to purchase additional machines. While the investment helped speed up machining, it created new bottlenecks throughout the process and ultimately fell short of reducing overall delivery times.

Another tool shop that had trouble meeting delivery times began outsourcing their design work. Not only did the outsourcing increase their cost, the need for greater communication between parties negated any improvement in delivery times.

Investment in technology alone failed to deliver the expected results. It became clear that tool shops needed to look for other ways to improve operational results and examine the entire business processes.

## Tool Shop Optimization

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The starting point in any improvement is a clear understanding of the business goals. In its analysis process, the Cimatron team has come across a set of goals that have been close to universal across the companies interviewed: increase productivity, shorten delivery times, reduce costs, and increase customer satisfaction as well as employee motivation.

The more difficult question was how to get there. To help tool shops with this undertaking, Cimatron developed an **eight-step methodology** that has proven to produce positive results:

### **1. Identify the best process and flow**

All too often, companies invest in new technology or software, but oftentimes this merely moves bottlenecks from one area to another or creates other burdens in translation, as seen in the case studies above. The first step is to establish a streamlined process that covers all deliverables and milestones – from the initial price quote to the finished product. Inputs and outputs for each step in the process must be clearly identified, along with quality expectations and the value added to the finished product. Only once the entire process has been laid out can specific technologies and methods be considered for individual tasks; these would be evaluated based on their impact on the entire process, not just the task at hand.

### **2. Streamline internal and external communications**

Direct data transfer with the customer and among the design team, shop floor and purchasing not only saves time by minimizing the need for multiple data translations, it also increases data reliability, reduces errors and repeat work and minimizes engineering changes. To get started, minimize the use of printed documents, with the eventual goal of operating as a paperless company.

### **3. Implement 3-D design and manufacturing**

Striving towards concurrent processes, implementation of 3-D data minimizes downtime and eliminates the level of redundancy caused by manually entering data into the machines, as is the case with 2-D design work.

#### **4. Re-examine outsourcing**

Including your outsourced activities in your process design may reveal opportunities to bring work back in-house and reduce costs, eliminate communication obstacles, and speed up delivery times in order to be more competitive. If certain activities must be outsourced, focus on improving the communication process with these partners and better integrating them into the overall process.

#### **5. Plan for success**

A solid implementation plan is the key to the success of the entire process. The implementation plan should consider all factors and constraints and include a contingency plan for unplanned events such as fluctuations in the shop's workload. To shield customers from any negative impact during the implementation, maintaining and even improving delivery times throughout the transition should be a priority.

#### **6. Acknowledge the cost of change**

The cost of change must also be acknowledged and quantified: What will be the loss of productivity during the initial implementation? When is it gained back? At what point does productivity surpass previous levels through the optimization?

#### **7. Get buy-in**

The optimization plan results in a more streamlined operational approach, usually with fewer steps in the tool making process. Resistance to change is natural, so getting all parties involved in the process early on is crucial to its success.

## 8. Measure results

Measuring success is an important part of the optimization process. Using this approach, Cimatron has been able to help tool shops achieve tangible and measurable results, with over 30% increase in productivity and up to 50% design cost reduction.

## Case Study I: PTA Corporation

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With facilities in Connecticut and Colorado, PTA Corporation is a leader in plastic injection molding, providing a complete set of services from design to tooling, manufacturing, and assembly. PTA has always been known for speed-to-market; nonetheless, to maintain its leadership position, it has had to adapt to changes in customer demands, including lead time reduction.

Until recently, PTA was using different applications for each department, forcing extensive need for translating geometry back and forth between different platforms, which made the process very time-consuming and non-cohesive.

Implementing a unified process and software platform across different departments and offices has enhanced PTA's design capabilities and improved overall communications. With everything done in the same software – design, NC, and electrodes – operations are streamlined, resulting in shorter delivery time of higher quality products.

In addition to improving communication between departments, PTA has also improved their external communications. They are able to work more efficiently with their customers in the design process and provide them with better feedback.

Quoting is another area that PTA identified for process improvement. The company's project managers simulate a split of how a part will fit into the tool to analyze drafts before going to the designers.

Working on a recent project provided a concrete example of how valuable 3D capabilities are to PTA. The project comprised a package of over twenty tools. The majority of parts were overmolded, building one mold for a solid substrate and another to overmold an elastomer on top of that substrate. Working in solids provides 3D visualizations which helped the moldmakers plan out their job much faster than they were able to in the past.

Any conversion to a new system can be disruptive. With the help of Cimatron's technical support resources, PTA was able to go through a smooth implementation process with a brief learning period, and quickly realize the benefits of the transition.

For additional details about the PTA case study, visit [www.cimatrontech.com](http://www.cimatrontech.com).

## **Case Study II: Cam Tool & Engineering**

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Cam Tool & Engineering is a small tool and die shop that promises its customers fast delivery times, competitive prices, and reliable service. Facing increased competition from larger tool shops and overseas manufacturers, Cam Tool knew that in order to remain successful, they would have to remove all bottlenecks from their operations by streamlining their processes and employing the latest technologies.

Craig Mog, founder and co-owner of Cam Tool, launched an effort to improve operations in his shop. He upgraded both his equipment and software, including a Makino vertical machining center and the CimatronE software solution.

These new capabilities have enabled Cam Tool to operate more efficiently. For example, a job which previously required 90% burning could be done without any electrodes—*everything* was cut—generating significant time and cost savings.

Similar process improvements have been realized on the design side, where a project that took 177 hours now takes about 55 hours to complete. These savings translate to faster delivery times that give the company an advantage over overseas manufacturers.

Streamlining the entire process, which owner Craig Mog refers to as "*Screen to Machine*" brings Cam Tool additional benefits. The ability to read customers' files and do the design, NC, and electrodes all within the same software means there is nothing lost in translation, which makes the entire process extremely efficient and cost effective.

As a result, Cam Tool has reduced the number of steps involved in their tool making processes, allowing them to cut costs and reduce delivery times while improving accuracy and expanding their product offerings.

For additional details about the Cam Tool & Engineering case study, visit [www.cimatrontech.com](http://www.cimatrontech.com).

## **Time to Act: Have You Evaluated Your Process?**

The lessons are clear. Tool shops looking to improve business performance need not start with the solution. Instead, they must first examine the entire process from quoting to delivery and figure out how to make it work better.

For more information about tool shop optimization, visit [www.cimatrontech.com](http://www.cimatrontech.com) or contact [info@ciamatrontech.com](mailto:info@ciamatrontech.com).