

Minnesota Manufacturing Technology Center



Connecting Technological Innovation and
Real-World Manufacturing

Globally
Competitive

Sales
Growth

Increased
Productivity

Applying
Technology



The bottom line

Companies are interested in increasing sales and profits. Most privately-held companies are not in business primarily to advance the use of technology. They're simply out to make a living—a nice living—for company owners and their employees.

Same planet, different worlds?



On the surface, it might seem as if policy-makers—working to enhance U.S. manufacturing competitiveness—and manufacturing companies—working to get their next orders out the door—have different motivations, different goals.

In essence however, everyone is striving for the same thing—manufacturing success.

So, how do you bridge the gap between available technology and real-world manufacturing? In part, through the Minnesota Manufacturing Technology Center (MnMTC).

We're making technology real for companies by tying technological innovation to their bottom lines.



The MnMTC—getting real...

Adopting appropriate technologies is not a policy decision, nor even a production decision—it's a business decision.

Interested in assisting companies through technology deployment? OK, first work to assist companies in making their payroll on Friday—and then next Friday. And then every Friday after that.

Electronic commerce? Great. But first assist a company in better using its computer systems—or in some cases, in buying that first personal computer—to reduce operating costs.

These are the things that establish credibility with companies, and for technology to be useful to industry, “real world” credibility is important.



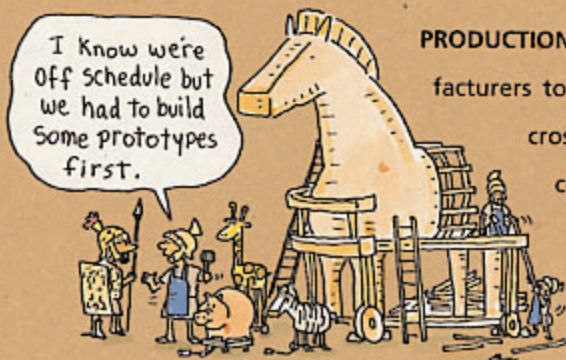
That “real world” credibility is also important for policy-makers. Businesses that make good bottom-line decisions and apply technology are much more likely to grow and create meaningful jobs—and that's the underlying motivation behind government's investment in organizations such as the MnMTC.

"The MnMTC helped us become aware of internal areas we needed to improve, and of existing technologies and resources we could use in our magnetic winding manufacturing operation. It helped us link with an engineering internship at the University of Minnesota, and offered a valuable perspective as we converted to total cell manufacturing and started ISO 9000 certification.

"We've improved in a number of areas, including setup reductions, team participation and reduced costs. We've expanded our threshold of opportunity, and can now compete for jobs that were out of reach before. That's important because we're competing against a lot of players in the global market.

"The MnMTC is allowing us to develop a smarter, more efficient manufacturing infrastructure. It's a valuable sounding board to help us make course corrections along the way, and the persistence of the MnMTC staff helps keep us on track."

—Lyle Shaw, Vice President, Precision Inc., Minneapolis, MN



PRODUCTION AUTOMATION—Customers today are calling for manufacturers to become agile. That requires they build products using cross-functionally trained teams of workers in manufacturing cells that stay flexible to meet the market need.

Yet much of today's shop floor production still features manual processes that are people-intensive and based on trial and error.

We assist companies in applying a broad range of technologies designed to decrease their time to market, and increase their production capacity and quality. For example, we'll work to help a company evolve from a paper-pencil-and-drafting table design process to computer-aided design (CAD) and computer-aided manufacturing (CAM).

Computer aided
manufacturing

Computer
numerical control

Computer
aided design



Drafting table

Small lot size



Setup reduction

Load leveling

Time and motion reductions

Plant layout

LEAN PRODUCTION—Strategic tools of lean pro-

duction include Just-In-Time inventory management, minimizing cost and waste, maximizing customization and using 100 percent of production capacity.

Yet many companies today continue to build large lots of one particular part, then warehouse that production in storage. Companies are also incurring additional costs by holding inventory for original equipment manufacturers. Many companies are using only 50 to 70 percent of their production capacities. And when the time comes to expand, many companies are doing so based on whatever current plant space allows.

They're a result of a marriage between technology and industry.



We work with companies in analyzing where they can make improvements that will increase quality, lower their costs and increase their profits. That assistance can range from plant layout and time/motion studies to setup reduction and producing smaller lot sizes.

"We used to turn out 16 to 20 prototypes a week. Thanks to advanced, rapid prototyping technology and a quality plan we implemented with assistance from the MnMTC, today General Pattern can produce 16 to 20 prototype models A DAY. We've increased our prototyping business 30 percent, and have added 20 jobs paying from \$7 to \$26 an hour. Our new quality program is saving us \$100,000 a year.

"We've also helped establish a business incubator for high-tech startups, which has already produced a graduate—a \$13 million company that located its 56 jobs—and its need for prototyping services—across the street from us.

"The MnMTC provided the forum for us to link with advanced prototyping technology. None of this would have happened without that forum."

—Dennis Reiland, President, General Pattern Co., Inc. Minneapolis, MN

...getting out there...

We're credible to companies because we get "out there" with them every day. We work with CEOs, general managers and shop floor workers alike to ensure that the technologies companies apply are appropriate to the company and the need, and that the workforce—an integral part of any modernization effort—is involved in planning and implementing any new technology.



It's a business-based approach to modernization. By working with client companies on their immediate needs, we have their attention later when we show them how far they can go—and where they need to go to become more productive and to grow.

Our highly motivated staff comes from private industry. We have a firm grasp of the real-time, real world challenges our client companies face. We also understand the foundations of technology application, and the urgency with which companies need to innovate in order to keep pace with the global marketplace.

This way we can cut waste and increase sales.



...and going beyond

Companies suspect there are technologies out there to help them do things better, faster and cheaper. It's just that they seldom have the time to look for them. Most companies also have few resources they can devote to modernizing. Sometimes,

they overlook the myriad of improvement technologies available commercially through vendors, educators, consulting companies and other large companies.

At the same time, we recognize that there are a host of advanced, technology-based business solutions available from sources that aren't always accustomed to dealing with industry.

Our goal is to help build bridges between these technology sources and small and medium-sized manufacturing companies.



Our approach

We point-out the value that technology-based change offers companies that want to grow. Once a company buys into this value, we assist the company in finding appropriate resources to apply to its specific situation, then act as project managers and mentors throughout the change process, serving as sounding boards for ideas.



"We make equipment that uses laser technology to measure threaded fasteners. The MnMTC introduced us to the Machine Tool Partnership, which allowed us to tap experts and resources at a federal laboratory free of charge.

"Experts from Oak Ridge National Laboratory visited our plant, spoke with our engineers, studied our operation, and came back with some concrete ways they could assist us. They're helping us in verifying our quality, in determining ways to improve on our current sensor technology, and in finding the next generation of measuring technology—all of this with virtually no paperwork.

"In a small company, where everyone has to wear 18 hats, and consulting budgets are virtually non-existent, it's extremely valuable to find a way to have someone focus in on particular areas. Throughout the process, the MnMTC is there to answer our questions as they arise. Until the MnMTC, we didn't know this type of resource was available."

—Carolyn Castore, Director of Marketing, Apeiron, Minneapolis, MN



INFORMATION SYSTEMS—Key features for the future include electronic data interchange (EDI), a "paperless" business environment, "electronic commerce" and "virtual companies."

Yet many of today's manufacturers are still manually collecting data, or are collecting only financial data and not production data. Most fall somewhere within a broad

computerization spectrum ranging from no computers or stand alone PCs, to local area and cross-departmental networks.

We work with companies to integrate computer application into all aspects of a business—including production information—for greater flexibility, sales and profit. The tools are education, awareness, planning, and implementation that focuses on quality, quantity and cost. The goal is to gain more control over products and processes.



Electronic commerce

Electronic data interchange

Manufacturing resource planning

Business and accounting needs

Production operations

Strategic

"The MnMTC assisted us in designing our power supply manufacturing operation, trimming three months off that process and helping us save about \$20,000. More importantly, the availability of the MnMTC, and the ongoing opportunity to work with it on projects aimed at improving manufacturability, quality and reducing costs, helped us secure a contract to build power supplies for a company doing research and development on an electric vehicle (EV). That could place us in strong position to tap into a growing industry of the future.

"In one year, we went from almost scaling back our power supply venture to establishing and starting up a manufacturing facility in Duluth, hiring seven additional people and placing three products into production. There's no doubt in my mind that the MnMTC played a definite role in that. It's a powerful asset for the region."

—Ken Nicholls, Vice President, Schott Power Systems Inc., Duluth, MN



COMPETING IN NEW WORLD MARKETS—Competitive strategy calls for International Certification and Standards (including the ISO 9000 series, metric conversion and export requirements), collaboration and partnerships with other companies, market diversification to ensure that no more than 20 percent of a company's business is tied to any one

source, and modifying existing products for longer product life.

We're working with companies on these issues using consortiums, supplier relations, educational events, connections with other resources and outside experts, individual competitiveness strategies and workforce development to enhance their competitiveness.



Minnesota
Technology 
Partnerships for Competitiveness

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