

## Machine tooling drives the economy



### Area Development Site and Facility Planning

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Despite concerns about cheaper Asian goods, lower-cost foreign labor, and a shortage of skilled American workers, the U.S. industry is tooling along.

IF YOU WANT a snapshot of the economic health of the United States, simply look at the nation's precision custom manufacturing industry. Why? Because this one sector makes possible the existence of almost every other manufacturing industry in America.

Vital sectors such as defense, aerospace, automotive, appliance, business machines, electronics, transportation, nuclear, and many others acquire the necessary precision tooling and machining supplies from firms in this increasingly hightech industry. Computer-aided design and manufacturing (CAD/CAM) techniques and computer numerically controlled (CNC) machines are widely and routinely utilized.

More than 14,000 U.S. firms employing 400,000 people constitute the precision custom manufacturing industry. Generating annual sales of \$25 billion, these companies design and manufacture special tools, dies, jigs, molds, special machines, fixtures, gauges, and other items, including those for experimental R&D work.

Of these firms, 3,000 are members of NTMA, the National Tooling & Machining Association headquartered in Fort Washington, Md.; nearly 45 percent are tool and die companies. ("Tooling" refers to dies and molds made to manufacture specific products; "machining" relates to machine tools used to cut or form materials -- mostly metal - to precise shapes and dimensions.) Fifty NTMA chapters and numerous tool centers are located in 42 states.

"I like to think those in this association are the cream of the crop in our industry," asserts James R. Grosman, NTMA regional director. "Most companies in this industry will not be in the Fortune 1000 because most are small to medium-size. About 99 percent of NTMA members are family-owned businesses with an average of

28 employees, although some shops have up to 500 employees." Less than 1 percent are unionized, he adds.

Some of NTMA's most successful members are those who "want to go global. We have people in this industry who are developing partners all over the world for their customers."

### The Asian Crisis and Growth Indicators

While the Asian economic crisis continues to play out, today's good news is that the tool and die industry's health is robust. "All trends are up," says NTMA President Matthew B. Coffey. "Business is good!"

A 1998 survey of NTMA members reveals impressive growth in special machine orders for 1997 - 14 percent over 1996; some companies reported increases of more than 30 percent, as reported in NTMA's spring 1998 Business Forecast newsletter.

Aerospace machining and fabrication increased 20 percent, while "lesser but solid increases" were reported by precision machining (up 10 percent); tools, dies, and fixtures (up 4 percent); and molds (up 2 percent). The survey also reveals that total industry growth for these five major sectors was 8 percent last year, 7 percent in 1996, and 6 percent in 1995. The largest increase of the decade was 14 percent, recorded in 1994.

The newsletter's 1998 forecast for total orders of NTMA companies is a more modest increase of 4 percent. The strongest growth is anticipated for aerospace machining and fabrication (+10 percent predicted), followed by special machines and precision machining (+4 percent); tools, dies, and fixtures (+3 percent); and molds (+2 percent).

Last year's sharp factory production in the United States has been boosted by "rising consumer buying, strong exports, and capital spending of plant and equipment," noted the 1998 NTMA forecast report. Fortunately goods have "moved quickly through supply pipelines, keeping business inventories low relative to sales."

However, the outlook for exports and capital spending is uncertain due to the Asian problem. If export growth is curbed while imports expand, domestic factory orders will be impacted negatively, the association believes. Key NTMA customer industries almost certainly will be seriously affected, even if overall growth in the economy is not adversely impacted.

Asian manufacturers will continue using "fire-sale pricing strategies, attempting to

export their way to recovery," the forecast predicts. "Overall prices of imports to the U.S. from Asia declined 5.8 percent during 1997. The deficit in merchandise trade is expected to increase to \$300 billion."

Furthermore, it is anticipated that China and Japan will increasingly seek worldwide markets -- especially in America - to dump their products at prices quoted in devalued currencies. "We're already seeing a dramatic increase in the number of imports," says NTMA's Coffey. "This will put extreme prices on products manufactured in the United States. Manufacturing will fight pricing pressure, reducing its profitability."

NTMA has noted that curtailed U.S. exports to Asia or increased competition from Asian imports has already put the squeeze on the following industries: aircraft, automotive, computer, manufacturing equipment for electronic components, diesel engines, and heavy and agriculture equipment. Coffey predicts his industry faces "an 18- to 24-month crisis while the world economy tries to readjust relationships."

NAFTA: Nifty or Negative?

When adopted in 1994, the North American Free Trade Agreement (NAFTA) created at least 32 new international bodies empowered to set up additional subgroups and committees. It works together with the United Nation's General Agreement on Tariffs and Trade (GATT), the world's first worldwide trading mechanism (enacted in 1934) and a specialized agency of the proglobal governance United Nations.

There is a mixed bag of opinion about how well these "one-world" surveillance treaties have affected American businesses - and Americans. However, in regard to machine tooling, "NAFTA's been good for this industry," asserts Coffey. For example, since the treaty went into effect, the sales of dies "have increased dramatically into Mexico," he says.

The Clinton administration's threeyear evaluation of NAFTA's effects reveals stellar growth in North American trade. Overall, total U.S. exports of goods and services grew from \$602.5 billion in 1993 to \$825.9 billion in 1996. The evaluation also shows outstanding gains for U.S. manufacturing, especially exports from high-technology manufacturing sectors to Mexico. Regarding trade, production, and employment growth, NAFTA appears to be a success so far.

However, conventional wisdom cautions observers to wait a few more years in order to see the full picture. At least one machine-tooling leader casts a cautious eye on NAFTA. He is Ron Siderits, owner of Blue Ash Tool & Die in Cincinnati, a firm focused on building ground-support equipment for the aircraft industry. He is also president of the 60-member Tristate Tooling and Machining Association.

"In the NAFTA scheme, jobs created in the United States are managerial and retail, while labor-intensive manufacturing jobs are generated in Mexico," says Siderits. "Is this a good thing? The industrial revolution is the engine that has made America the world's only superpower. I don't believe it's wise to export our manufacturing base."

It can be argued that NAFTA and other multilateral trade agreements empower international bodies to create an artificial state of economic dependency, effectively slashing away at national sovereignty.

Siderits sees the flight of manufacturers out of the United States because of NAFTA as having the potential to affect national sovereignty, too. "American manufacturers that make toasters today can make military equipment tomorrow [if we go to war]." For example, he cites Henry Ford, the industrialist who transformed his automaking factories into important bomber-making facilities for the U.S. war effort in the 1940s.

As Mexico and Pacific Rim nations continue to develop their own industries, "God bless them," Siderits says. "But U.S. public policy shouldn't make rules that make it easy to transfer our technology overseas - or have the American taxpayer bail out their foreign economies. Can't American lawmakers make laws encouraging investment inside America by removing the onerous tax burden on our citizens and businesses instead of encouraging investment outside our country?"

Harry Moser, president of Charmilles Technologies in Lincolnshire, Ill., thinks NAFTA may be a concern for lower-skilled industries, "but not for higher-skilled ones such as ours." His firm is the world's largest supplier of electrical discharge machines used to make molds and dies for the tooling and machining industries. "The great sucking sound of jobs disappearing over the border hasn't happened - at least not yet," he adds.

### The "Real" Foreign Competition

The Asian die and mold industry is the "real competition" for its U.S. counterpart, according to industry experts. "Asia is a greater threat than Mexico," says Moser, citing that region's higher investment in sophisticated machine tools and larger work force. Although many Asian nations don't produce at America's quality level, they do offer the double-punch appeal of "good delivery and good prices." But these benefits often aren't enough, Moser states.

"Typically a firm will buy a mold from an overseas vendor for those reasons, but end up having an American shop correct its quality problems. After being burned, the next time the company buyer will go to a U.S. shop." It's an "experimentation" cycle

repeated many times by American businesses.

During an industry talk presented last November, Shoichi Kuroda, president of Kuroda Precision Industries of Kawasaki, Japan, asserted that Asian die and mold production is steadily increasing, especially in lower-wage nations such as China, Thailand, and Malaysia - even while the Asian economic flu thrives unabated. As reported in a Society of Manufacturing Engineers newsletter, Kuroda called this situation a sure sign of that continent's economic growth. Besides serving as president of Kuroda Precision Industries, he is also chairman of the Federation of Asian Die and Mold Associations (FADMA), an organization representing 11 countries and 600,000 workers.

By Kuroda's estimate, the worldwide die and mold sector is a \$65 billion industry. Asian nations, he says, are responsible for 39 percent of world production, while the United States and Japan each produce \$15 billion a 23 percent market share for each country. In China alone, there are 400,000 workers employed by 6,000 state-owned die and mold shops, according to the China Die and Mold Industry Association.

Yet, even when offering lower costs, Kuroda admits that Asian shops can't compete at the "high-grade" worldwide level until they develop more highly skilled work forces.

#### Worker Shortage Relief: Image Building, Certification, and Legislation

As it is in Asia, the lack of skilled workers is the number-one challenge facing the American machine tool industry. There are currently 20,000 unfilled, high-paying, secure jobs available in the United States that do not require a four-year degree.

Why the shortage? One reason is that the industry has "an image problem," says Richard Steinhelper, managing director of the Michigan Tooling Association that represents 800 primarily tool and die companies. "We have to do a better job of selling ourselves to parents, teachers, students, and guidance counselors," he says.

Specifically, NTMA and related industry groups want the public to know the following:

The industry pays well: At just age 26, a precision machinist or toolmaker typically earns \$41,000 a year. Earnings of experienced workers range from \$40,000 to \$60,000 annually.

Entry-level toolmakers can average \$27,000 a year during a four-year training program.

High technology -- including the latest in computers and software programs - has replaced the gloomy rooms and greasy machines of the past.

Precision machining provides a practical basis for a four-year engineering or business degree.

Many toolmakers eventually own their own shops - a plus in today's business environment.

Adding salt to the American worker-shortage wound is the national "dumbing down" of academic standards in science and math that Siderits has observed.

"We're just looking for the basics: reading, writing, and arithmetic. In the early 1980s, we gave a test on math and blueprint reading and only hired those who got 80 percent or better. Now we have to hire students who get 30 percent or better. The same test blows away young people of this generation: They have no grasp of the material."

A partial solution has come in the form of the National Institute for Metalworking Skills (NIMS), a nonprofit organization that is a voluntary partnership among business, education, and government. Created by NTMA and other industry partners, its primary mission is to support the development of a skilled work force for the metalworking industry.

An industry-shaking - and popular - NIMS program has been the creation of skill standards for various metalworking categories. By credentialing the skills of people against NIMS performance and knowledge-based standards, the industry gains a more "professionalized" work force whose members are able to access nationwide job opportunities.

Moreover, NIMS certifies training and education programs that teach its standards and help states, schools, and companies form partnerships to implement them. So far, 15 of the anticipated 24 standards have been published.

One major legislative boost for the industry will be the passage of H.R. 3110, the Skilled Workforce Enhancement Act introduced by Rep. James Talent (R-MO). This "revenue neutral" bill would give companies with 400 employees or less a tax credit for training workers on site in a four-year, 8,000-hour apprentice program.

"A tax credit means a company gets one dollar on the dollar, versus 34 cents on the dollar from a tax deduction," explains Moser, who recently conducted a congressional briefing on the bill on behalf of the NTMA. "We hope to have it passed in 1999."

The credit amounts to 80 percent of the wages paid to an apprentice during the program - up to \$100,000 - and would be applied in 20 percent increments beginning in the sixth year. The employer receives the credit after the employee is a certified journeyman and has worked one year on the job. "We hope that if we can offset costs, smaller companies will start training," says Moser, explaining that it can cost up to \$200,000 to put someone through an industry apprentice program.

### The "Bounce-Back" Industry

"Historically, throughout [America's] business cycles, we have almost never gotten to the point where our industry was underutilized," maintains Moser. That's good to remember in the coming months as crippled Asian nations continue to export goods to our shores and concern grows about how this affects manufacturers and the machine tool industry.

Fortunately, U.S. manufacturing has so far been robust in 1998. If retail sales continue to be active, they should kick in stronger tooling and machining orders for this venerable industry showcasing American ingenuity. M

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