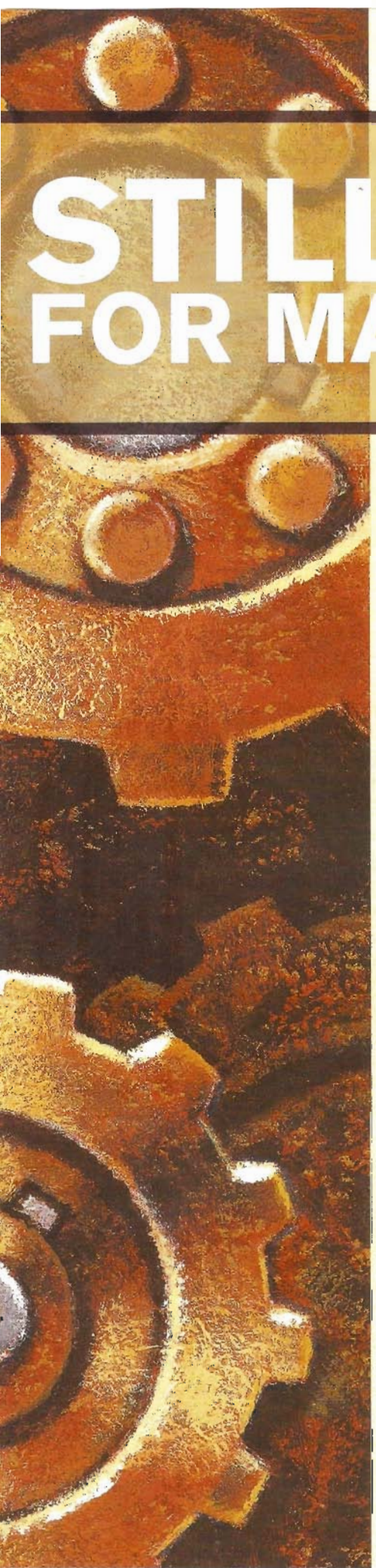


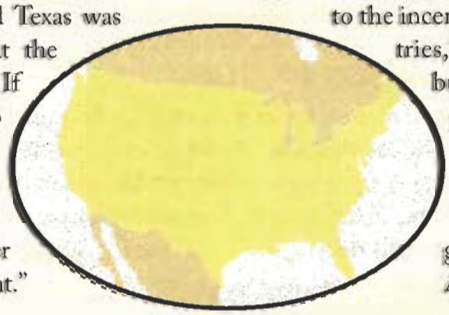
STILL STRONG FOR MANUFACTURING

North America is the new low-cost manufacturing center, with its stable labor costs, proximity to customers and robust supply chain.

By Rob Spiegel, Contributing Editor

WHEN DALLAS-BASED TEXAS INSTRUMENTS INC. (TI) decided in 2003 to build a silicon chip plant, the choice of location came down to Singapore vs. Texas. China was out of the question. Manufacturing at the plant would involve defense technology that was not allowed to migrate to China. The winning location ended up being Richardson, Texas, just a few miles from the company's headquarters. The new site was also only a few miles from another Texas Instruments chip factory, which would offer synergies on parts and consumables.

But there were quite a few other reasons that Texas stacked up favorably against Asia. "When we choose a location, we look at IP (intellectual property) protection, logistics, power, water, earthquakes, even typhoons. We have 50 items on the list," says Kevin Ritchie, senior vice president for TI's Technology & Manufacturing Group. Surprisingly, one of the qualities that favored Texas was labor rates. "We look at the growth of labor rates. If labor in China is going up 10 percent to 15 percent per year and labor in the U.S. is going up 2 percent, the U.S. looks good over the 20-year life of the plant."



TI also received some incentives. The University of Texas kicked in $300 million in the form of a new engineering program, along with a new engineering building to help support the plant. Yet Ritchie insists that incentives were not the decisive factor. "Even with the education support, U.S. incentives are not even close to the incentives from other countries," says Ritchie. "If we build in China, we could get 20 percent off of every dollar. I could get power down to 4 cents per kilowatt and get my water tax-free." A good part of the

decision was based on local engineering talent. Two electronics plants were shutting down nearby, which provided a wealth of talent. When that was combined with the educational incentives, it provided assurance the plant would be well staffed with sufficient engineering expertise. "Experienced talent in China turns over very fast," says Ritchie. "Where would we get people for our start-up team?"

Global companies are starting to take a new look at manufacturing in the United States. GlobalFoundaries, a spinoff of chip-maker Advanced Micro Devices Inc. (AMD), recently broke ground on a $4.2 billion facility in upstate New York. Like TI, GlobalFoundaries faced some restrictions on location due to technology, but another incentive for staying in the United States was New York State's $1.2 billion incentive. NCR Corp. has also decided the United States looks good. The company opened a facility in Columbus, Ga., this fall in a move to consolidate its production of automated teller machines (ATMs). It wanted to be near its customers and close to its supply chain (see sidebar). These are just a small sample of a growing number of manufacturers who are returning their manufacturing to North America after becoming disenchanted with outsourcing to Asia.

> "When you go to Asia, the value is in cost, not supply chain. If your supply chain is valuable, the Americas look more attractive."

Contrary to common wisdom, manufacturing is not shrinking in the United States—it's actually growing, though not as quickly as it used to. According to a "Business Week" analysis of U.S. Federal Reserve Bank data, U.S. manufacturing capacity surged by 44 percent during the boom years of 1994 to 1999, while the economy expanded by 26 percent. Recent years haven't seen the same increase. Yet manufacturing is still growing. From 2002 to 2007, capacity rose 5 percent while the economy expanded 17 percent. During those years, China's investment in manufacturing exploded. According to the United Nations, in 2007, the United States still commanded 20 percent of world manufacturing, compared with China's 12 percent.

China disenchantment

The move to China manufacturing came with a hornets' nest of problems. While China justifiably touts its shiny-new, world-class plants, there have also been significant quality problems that have led to costly recalls and tarnished brands. Logistics can be a problem when your research and development and your customer are both 6,000 miles away. Emerging labor unions and steady wage increases are eroding cheap labor costs. Finally, knock-offs and stolen IP have broken the promise of selling to China's massive indigenous market.

On the Web: For more on NCR's decision to manufacture in Columbus, Ga., listen to Managing Editor Wes Iversen's podcast interview with NCR Senior Vice President Peter Dorsman, at www.automationworld.com/podcast-62111

Peter Dorsman, Senior Vice President, NCR Corp.

Consequently, North American manufacturing is looking better by the minute. Like Texas Instruments, many multinational companies are giving the United States, Canada and especially Mexico new consideration. Though hard to believe, the United States may be the new low-cost manufacturing center. Labor rates are stable, quality's not a problem, IP is safe and the plant is close to a robust supply chain and a large customer base. Most of all, U.S. manufacturing productivity is still world-class.

One of the few downsides to U.S. manufacturing is the lack of a coordinated federal incentive program. While the states have been aggressive in trying to lure manufacturing, the federal government has been a no-show. "The feds don't seem to care about manufacturing, and they keep raising taxes. It's not just benign neglect—it seems they distrust manufacturing," says Dennis Brandl, a manufacturing expert at BR&L Consulting, in Cary, N.C. "The feds don't seem to realize that plants are clean, brightly lit and they're making good money."

One recent shift in the manufacturing community is the desire to be closer to the customer. So instead of going automatically to China to save costs, global manufacturers are eyeing Eastern European locations to serve European customers and Mexico to serve North America. In a growing number of cases, the United States itself becomes the most attractive location to serve North America. "Manufacturers are asking, 'How do I get close to my customers?'" says Chuck Delph, senior vice president of sales at Avnet Electronics Marketing Americas, a division of Phoenix-based Avnet Inc. "When you go to Asia, the value is in cost, not supply chain. If your supply chain is valuable, the Americas look more attractive."

Some see a new surge in U.S. manufacturing, as companies move to produce their goods closer to the end customer. "Worldwide, manufacturers now want to produce to the local demand, especially in electronics," says Simon Jacobson, research director at AMR

Research Inc., in Boston. "For shipping, logistics and final inspection, they want to be close to the market. Because of this trend, U.S. manufacturing is growing."

Surprisingly, the United States is looking like a low-cost manufacturing region to many manufacturers. The recession has helped keep costs down. As companies closed plants to tighten their capacity, cheap facilities have come onto the market. Plus, the low dollar makes the United States more competitive than Europe. "The low dollar is making the United States a cheaper place to manufacture," says Ed Goldman, senior vice president at QinetiQ North American Technology Solutions Group, a security technology firm in Fairfax, Va. "You can't always keep chasing the lowest cost. China's going up in cost. So where do you go? Viet Nam? So manufacturers are starting to say, 'Let's stay in the U.S. and automate the heck out of it.' Plus, automation increases quality."

Part of the renewed attraction in U.S. manufacturing is the productivity of U.S. plants. Years of increased automation have delivered increased output at decreasing prices. "We've seen 3 percent to 5 percent productivity gains here, and after 150 years, you get some real value," says Brandl from BR&L Consulting. "I was working for Texas Instruments in a plant with 1,300 employees, and in a few years, we were down to 600 employees and we were making twice as much."

Safety lacking

Outsourced manufacturing—especially to China—has been fraught with problems in quality, safety and protected IP. "Manufacturers are horrified by the lack of safety in Asia," says Sal Spada, director of research at ARC Advisory Group Inc., in Dedham, Mass. "Here in the United States, we're going through a renaissance in safety. And safety improves productivity." Spada also notes that China lags far behind the United States in plant expertise. "For China to be regarded as a top manufacturer, they would have to move up in expertise. They're still too low in expertise for most manufacturing, with the exception of automotive and semiconductors."

Some portions of U.S. manufacturing were never slated for Asian outsourcing. By law, much of U.S. military technology must stay in the United States. For some high-complexity, low volume goods such as medical equipment, outsourcing has never been practical unless it is outsourced to a local specialty manufacturer. And there is some manufacturing that is not likely to return to the United States. Textiles and inexpensive electronics products such as cell phones and laptops are not likely to come home.

"The biggest industries that will not move their manufacturing are industrial, medical and mil-aero (military and aerospace)," says Charlie Barnhart, principal at Charlie Barnhart & Associates LLC, a Kihei, Hawaii firm that studies outsourcing. "In some cases, like mil-aero, it has to be done domestically by law. In other cases, like medical and industrial, the products are too heavy and fragile to ship around."

While outsourcing is far from over, the automatic rush to China is ebbing. Low-cost manufacturing comes with a number of hidden costs: quality problems, difficulty in finding highly experienced engineers, stolen IP, distance from the customer and pricy logistics. The cheap dollar and highly automated U.S. plants that are close to the market are making North America a new low-cost manufacturing center.

BRINGING MANUFACTURING Back Home To Georgia

One U.S. manufacturer has completely switched gears in its outsourcing strategy, bringing its manufacturing back in-house and back to the United States. NCR Corp, a major automated teller machine (ATM) producer in Duluth, Ga., spent a couple of decades developing a hybrid model that included some outsourcing overseas, some domestic contract manufacturing and some in-house production.

As of this year, NCR brought all of its ATM production in-house at a revamped facility in Columbus, Ga. "To really achieve innovative outcomes, it was important to keep our manufacturing close to our major customers and supply base," says Peter Dorsman, NCR senior vice president of operations. "We also wanted to be close to our innovation center in Duluth and close to universities that are good on supply chain management." NCR has partnered with two nearby universities—Georgia Institute of Technology and Clayton State University.

> "Georgia offers access to the interstate, access to the port of Savannah, access to our supply chain, and access to universities and customers where we have working relationships to develop and innovate."

While NCR received support from the state of Georgia, incentives were not a decisive factor in the plant's location. "We looked at 12 states and any of them would include incentives, but incentives were not the driver," says Dorsman. "Georgia offers access to the interstate, access to the port of Savannah, access to our supply chain, and access to universities and customers where we have working relationships to develop and innovate."

Once the decision was made to bring production back home, NCR moved quickly. Papers were signed to purchase a 350,000-square-foot former Panasonic battery facility in April 2009, the retrofit began in May and the ribbon was cut for the plant's opening in October. "We did it in less than five months, and that included the retrofits and hiring a contractor," says Dorsman. "We worked with Georgia Power on the environmental design."

A good part of the decision came from the difficulty of customizing products and getting them to market quickly while using overseas contract manufacturers. "In our business, innovation is everything," says Dorsman. "The hybrid model was difficult when you're talking about speed to market and proximity to market."