



W H I T E P A P E R

Rising Wages, Acknowledgment of Hidden Costs Bring Manufacturing Back to U.S. Shores



North American Die Casting Association

There is a resurgence of manufacturing in the United States as the allure of offshore sourcing begins to fade. Several studies released this year by major consulting firms, and articles in a variety of publications have noted the rise in U.S. production. Examples range from Fortune 500 giant Caterpillar Inc. to toy manufacturer Wham-O Inc., which are either expanding operations here, or bringing back production from offshore suppliers. Die casters are seeing a similar trend, with nearly a quarter of NADCA members reporting they gained new business that had previously been sourced offshore.

There are two primary factors driving the decisions to return manufacturing to the U.S. The first is that the direct cost gap is narrowing, particularly in China as wages rise. The second factor is the realization by business leaders that many of the indirect or hidden costs — ranging from transportation costs to quality and delivery issues — are beginning to outweigh any savings from lower offshore production costs.

This trend is expected to continue as companies examine what they need to do to remain competitive in the global marketplace while providing the service their customers expect. According to an Accenture survey of 287 manufacturing companies, 61 percent reported that they are currently considering shifting their manufacturing operations closer to customers to provide better service and to enable accelerated growth. Among these companies nearly half reported facing issues with cycle or delivery time, and 46 percent have experienced product quality concerns as a result of offshored manufacturing and supply operations.

While the shift is expected to continue, the report notes that increasing onshore production will be highly dependent both on the customers' requirements and on the product itself. For example, customized or engineered products, as well as those with frequently changing demand patterns are more likely to be produced closer to the customer

The Importance of Manufacturing

The shift of manufacturing back to the U.S. is an encouraging sign in light of the overall decline in the segment over

the last several decades. At its peak in the 1980s, manufacturing made up about 25 percent of the U.S. labor force. Now it has fallen to less than half of that due to a variety of factors ranging from improved productivity and automation to globalization that sent jobs to cheaper markets overseas. However, in 2010 manufacturing added workers for the first time since 1997.

Plus, despite the decline from its peak, U.S. manufacturing is still the world's leader. According to the National Manufacturing Association:

- The United States is the world's largest manufacturing economy, producing 21 percent of global manufactured products. China is second at 15 percent and Japan is third at 12 percent.
- U.S. manufacturing produces \$1.6 trillion of value each year, or 11.2 percent of U.S. GDP.
- Manufacturing supports an estimated 18.6 million jobs in the U.S. - about one in six private sector jobs. Nearly 12 million Americans (or 9 percent of the workforce) are employed directly in manufacturing.
- U.S. manufacturers are the most productive workers in the world - twice as productive as workers in the next 10 leading manufacturing economies.
- Taken alone, U.S. manufacturing would be the 9th largest economy in the world.



Factors Influencing Onshoring

Some of the factors influencing the return of production to the U.S., including delivery, quality and communications issues, should come as no surprise to many manufacturers. In 2004, NADCA conducted a study (in conjunction with the U. S. Department of Commerce that concluded that unexpected costs often drive up the final price of die cast products by as much as 20 percent for manufacturers and OEMs that use offshore sourcing.

The “Hidden Costs of Offshore Sourcing” explained that among the reasons for these unexpected costs were miscommunication, long lead times, the price of die failure, legal liabilities and payment for products sight unseen. The study also noted that market share and technology may be put at risk because of unscrupulous offshore die casters passing along trade secrets, specifications and marketing information.

More quantifiable costs, such as ocean shipping and additional ground transportation also needed to be factored into the equation when deciding to use offshore production. However, many companies were willing to overlook both the hidden and direct ancillary costs because of the wage advantages offered by offshore suppliers. The wage gap is now closing, though, according to a May 2011 analysis by The Boston Consulting Group (BCG).

With Chinese wages rising at about 17 percent per year and the value of the yuan continuing to increase, the gap between U.S. and Chinese wages is narrowing rapidly. The consulting firm expected net labor costs for manufacturing in China and the U.S. to converge by around 2015.

After adjustments are made to account for American workers’ relatively higher productivity, wage rates in Chinese cities such as Shanghai and Tianjin are expected to be about only 30 percent cheaper than rates in low-cost U.S. states. And since wage rates account for 20 to 30 percent of a product’s total cost, manufacturing in China will be only 10 to 15 percent cheaper than in the U.S.

Rising energy costs are also impacting offshore production in a couple of ways. In the last four years, shipping costs have risen 71percent because of higher oil prices, as well as cutbacks in ships and containers, according to IHS Global Insight. The costs for logistics and transportation had the second highest percentage increase between 2007 and 2010 among the production variables examined in the Accenture study. Increased transportation costs were reported by 57 percent of the respondents, trailing only the increase in material and supplier costs, cited by 73 percent of those surveyed.

Also, energy demands in emerging markets are taxing their infrastructure and contributing to rising costs, according to an article in the June 29, 2011 issue of Fortune. For example rolling blackouts are now frequent in China, and average electricity costs have soared to 11.6 cents per kilowatt hour from 6.1 cents in 2001. By comparison, U.S. prices have risen to 6.7 cents per kilowatt hour from 4.73 over the same time frame. The blackouts interrupt production, further complicating delivery schedules, and at some point the more expensive energy costs must be factored into production costs.

Hidden Costs Continue

The so-called hidden costs of doing business offshore continue confound manufacturers, and in many cases become the tipping point for bringing work back to the U.S. Twenty five percent of the respondents in the Accenture study noted that the cost of quality had increased between 2007 and 2010.

Fortune cites the experience of Sleek Audio, a small business making in-ear headphones for iPods and other audio devices. When the company launched their first product in 2007 they contracted with a factory in Guangdong province, which underbid U.S. suppliers. But last year, they moved production back here after a ruined shipment of 10,000 sets of earphones cost the company millions and nearly put it out of business. The ruined shipment was the last straw after several years of too much travel, communications problems, shipping delays and rising costs. Company officials note, "Now we control the quality of the product. No more waiting for production has been a wonderful thing."

The problems faced by Sleek Audio show how companies often fail to evaluate the "Total Cost of Ownership," for outsourcing manufacturing. The term, originated by the Gartner Group several years ago, includes much more than the purchase price of the goods paid to the supplier. Other factors include:

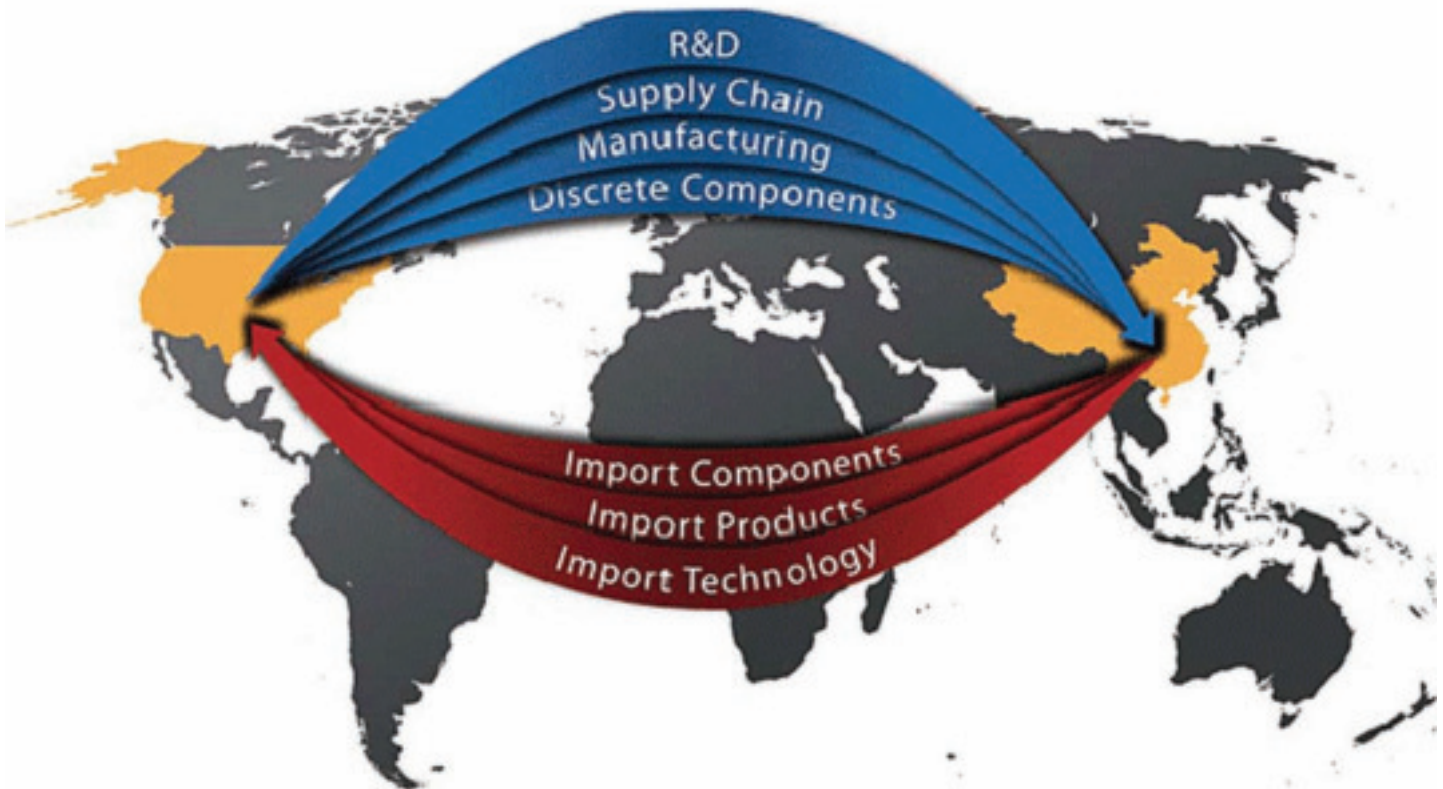
- **Geographical location**
- **Transportation alternatives**
- **Inventory costs and control**
- **Quality controls**

- **Reserve capacity**
- **Responsiveness**
- **Technological depth**

Even companies that specialize in outsourcing recommend caution when considering offshore production. In their paper "Establishing a Manufacturing Presence in Asia: The Decision Process," East-West Associates explains that establishing a new manufacturing entity and executing a product transfer are daunting undertakings in the best of circumstances. However, doing so 12,000 miles from home, in a foreign country with very different cultural norms, in an emerging economy with vestiges of a third world mentality, under a Communist government (that still exercises varying levels of societal controls) and with a somewhat rudimentary (but evolving) legal system really presents a challenge.

In a webinar conducted with Grant-Thornton, "China Sourcing - Executing a Successful China Sourcing Strategy," East-West noted other potential issues in a Chinese supplier company:

- **Corruption**
- **Job Hopping**
- **Fire fighting mentality**
- **Power shortages**
- **"Minimalist" attitudes of staff**
- **Job Protection**
- **Conflict of Interest**



Operating in a familiar environment with skilled workers is another big factor in bring manufacturing back to the U.S. The BCG report noted that the U.S. has highly skilled workers in many states. By contrast, in the lower-cost regions in China it's actually very hard to find the skilled workers you need to run an effective plant.

Impact on Die Casting

It's no surprise that die casters are part of the revival of domestic manufacturing. Typically, die casters are supplying component parts to OEMs, so quality and delivery are vitally important. Die casters also have a history of working closely with endusers on highly engineered components where communication during the design process and protection of intellectual property are critical factors.

In a recent survey of 252 NADCA members, 23 percent reported they gained business from offshore competitors last year. And while the tide has not completely turned – 13 percent of the respondents reported they lost business and 63 percent were unable to determine any change – the upturn in work is encouraging.

The amount of work returning to the U.S. varied widely among the respondents. Among the key results:

- Die casters reporting gains had volume increases averaging nearly 10 percent.
- Average dollar volume of new orders was about \$500,000, with a low of \$20,000 to a high of \$12 million.
- The weight of additional castings ranged from 10,000 to 500,000 lbs.

Not surprisingly, given the high volume of offshore business that was sent to China, that country accounted for the bulk of die casting business coming back onshore. Only six percent of the business that returned to the U.S. came from countries outside of Asia. (See Figure 1)

The reasons for the return of business were similar to those affecting general manufacturers: quality, service, delivery and price. Quality, delivery and lead time and cost each were cited by about 25 percent of the survey respondents. (Figure 2)

One of the companies that has benefitted from the return of business illustrates why more customers are bringing work back to the U.S. Rangers Die Casting, a precision aluminum die caster in Lynwood, CA, has a customer that continues to use China as their primary source. However, the customer keeps a second set of tools at the Rangers' facility in order to continue on-time production in the face of shipping delays or other interruptions. Several times a year Rangers produces the large spring retainer casting for this truck manufacturer. They receive their parts in a day so that they can continue assembly.

Despite the recognition that other factors should be considered when sourcing business, cost continued to be the primary reason die casters lost business. Sixty four percent of the survey respondents reported cost as the key factor in

Die Casting Business Gained (2011)

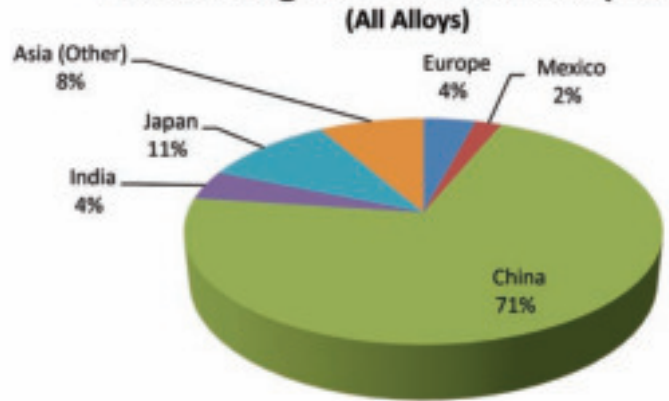


Figure 1

Why Die Casting Business Gained (2011)

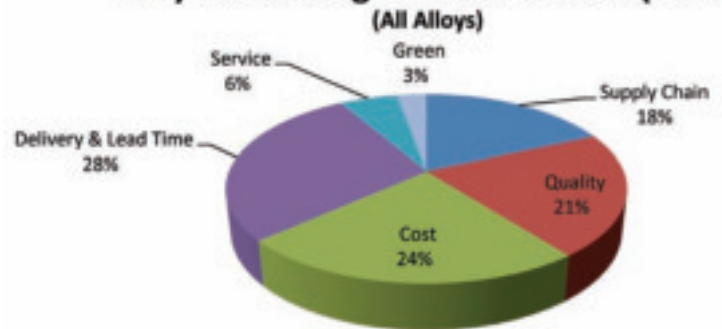


Figure 2

Why Die Casting Business Loss (2011)

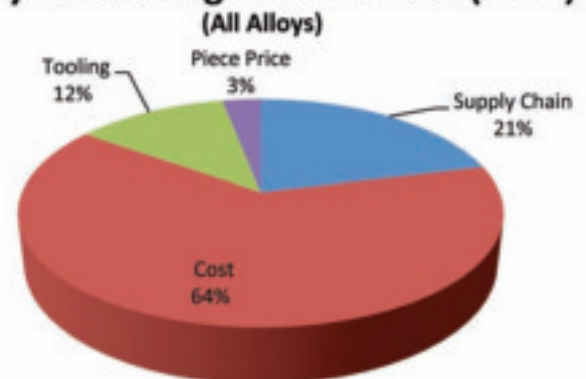


Figure 3



losing business, with supply chain issues a distant second at 21 percent. (Figure 3)

Domestic Manufacturing's Future

The resurgence of manufacturing in the U.S. as companies experience the downsides of offshore production is encouraging. However, the globalization of the world's economies will continue to change existing business models and traditional views on export/import practices.

As emerging markets continue to develop, there will be economic incentives to move production closer to the customer. That may reduce U.S. production of some items, while at the same time leading to increased manufacturing for other segments. The Accenture report offers several examples of large foreign multinational firms that are driving a growing "insourcing" trend. For example, BMW, which has sold more than 157,000 vehicles in the United States in 2010 and wants to remain the leading European luxury carmaker in the US market, invested \$250 million to develop its headquarters in New Jersey and create two new regional distribution centers. Additionally, Siemens Energy began investing in the US wind turbine market in 2005, and has continued to expand every year since with a new plant breaking ground in 2010 in North Carolina. Also, Nissan recently announced that it is planning to shift production from Japan to localized manufacturing in Tennessee, stating the reason for the move as a serious concern

about the strength of the yen. In yet another example, European appliance manufacturer Electrolux recently announced the location of its new cooking products factory also to Tennessee.

These are welcome developments, but in order for U.S. based companies to maintain their manufacturing leadership the country will need to develop a more coherent manufacturing strategy and remove some of the competitive barriers affecting domestic operations.

Currently, our country often approaches manufacturing policy in a haphazard way, according to the NAM. A lagging sector might get a temporary fix to the tax code, and federal grants might boost one industry or another. Acting with what is assumed to be the best of intentions to support manufacturing, lawmakers propose measures that actually add costs and regulatory burdens.

In order to mitigate these problems, NAM has proposed a comprehensive U.S. manufacturing strategy with aggressive goals to succeed in the face of global competition:

The United States will be the best country in the world in which to headquarter a company, or to attract direct foreign investment. The United States will be the best country in the world to innovate, performing the bulk of a company's global research and development. The United States will be the best place to manufacture, both to meet the needs of the American market and serve as an export platform for the rest of the world.

Likewise, NADCA has an aggressive Government Affairs

program to address the die casting industry's priority issues, which are Climate Change / EPA regulations, Regulatory Reform and Health Care, and Tax & Trade.

For example, NADCA supports a federal tax policy that lowers the tax burden on die casters as a means of promoting investment, development, and business expansion. U.S. manufacturers already face higher tax costs than the majority of our foreign competitors. In fact, the corporate tax rate in America is the second highest among developed nations.

The U.S. tax code should strengthen the economy and provide manufacturers relief from burdensome and confusing tax rules and regulations. Predictability and consistency in the tax code allows for long-term planning and investments that enable domestic manufacturers to remain competitive. NADCA also advocates holding China and other countries accountable for currency manipulation, which puts Ameri-

can manufacturers at an unfair disadvantage. Manipulating the currency markets to keep the U.S. dollar artificially high, and their own currencies artificially low, allows a number of our trading partners to keep prices of their goods artificially low. By exploiting the world currency markets, countries like China and Japan effectively subsidize their exports to the U.S., and place a tariff on U.S. shipments to them. By some estimates, China's yuan is undervalued by as much as 40 percent in comparison to the U.S. dollar.

Resolving the many issues affecting U.S. manufacturing and domestic production is a difficult problem affected by many economic, political and even social factors. The complexity of the issue precludes any quick fixes. But the recent trend to onshore production indicates that many business leaders are beginning to more fully understand all of the ramifications of moving business offshore.

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