



# China Has Lost Its Cost Advantage In Die Casting

## Part 2

Since 2006, TCG has tracked the impact on US die casters of the changing currency exchange rate between the US dollar and the Chinese renminbi. In February of 2007, at NADCA's annual Executive Conference in Hawaii, Technology Consulting Group (TCG) reported on the results of a year-long study for NADCA regarding buyers' opinions on the American die casting industry. The report remains available through NADCA as, "Die-Casting In The US - The Buyers Perspective 2007." In that report, TCG predicted that within five years, American die casters serving the American market would be cost-competitive with Chinese sources.

Since then, we have tracked this prediction in a series of articles for NADCA LINKS:

- June 2008: "[Will China Lose Its Cost Advantage In Die-Casting?](#)"
- October 2009: "[Has China Lost Its Cost Advantage In Die-Casting?](#)"
- June 2012: "[China Has Lost Its Cost Advantage In Die Casting - Part 1 Of 2](#)"
- August 2012: "[China Has Lost Its Cost Advantage In Die Casting - Part 2 Of 2](#)"

Please log in to LINKS online at [www.diecasting.org/links](http://www.diecasting.org/links) to view these previous articles.

In the NADCA LINKS article of June 2012, we reported on the theoretical analysis of exchange rates and inflation. This second article reports our findings from current field interviews with OEM buyers. The quotations throughout this article are taken from these interviews.

To summarize the June article, when we did our interviews with US OEM buyers in 2006, the deck was stacked against American die casters competing with Chinese suppliers. As one of our OEM interviews said:

*"For a manufacturer, buying parts in China is like going into a store and finding it is having a 40% off sale on everything. We cannot afford not to buy from China. But at the same time, the whole country is pursuing predatory pricing against the United States. If a company here in the US were to do what the Chinese do to us, it would be illegal: the Federal Trade Commission would come after them. This cannot last - so, it wont."*

Now, in 2012, our interviews with OEM buyers tell a different story:

*"For a while, our prices in dollars held steady even as the*

*Chinese currency increased in value. I knew from our vendors that they were struggling to keep their prices down - but over the last year or so they have started catching up. So, rather than seeing a steady increase in price, we have seen a dramatic increase over the last year - maybe 20 percent. It is not just one vendor - it is across the board. I would not place a new part in China now, even if I got a good price, because I think there will be very little or no cost advantage in another year or so."*

The reason for this is that the exchange rate is no longer as favorable to China as it was five years ago. Also, China has experienced more inflation than the United States during that same period. The result is that US die casters are no longer systematically non-competitive. For the details of this analysis, please see the NADCA LINKS article of June 2012.

Although the theoretical analysis is compelling, we wanted to learn what OEM buyers are actually experiencing. We found that the buyers we interviewed are well aware of the changing competitiveness of die cast parts, machined parts and complete assemblies sourced in China. We did not find buyers canceling contracts in China and bringing them home but we did find buyers expect to place more of their contracts in the USA in the future - starting right now.

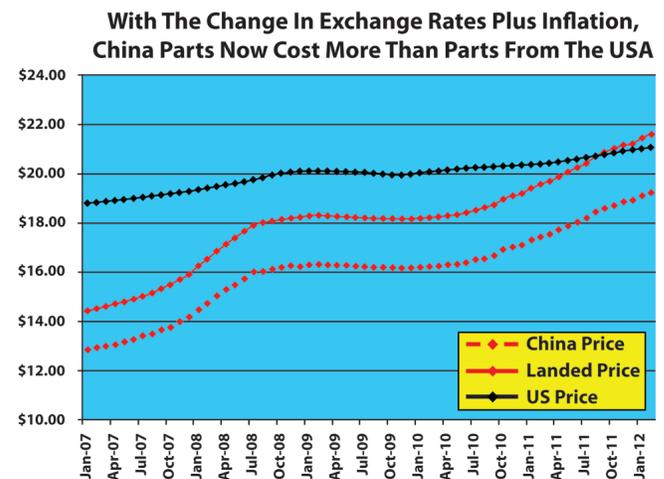


Figure 1 - As TCG Predicted In Late 2006, OEM Buyers Are Now Better Off Buying Die Cast Parts In The USA, Not In China. The result is that US die casters are no longer systematically non-competitive. For the details of this analysis, and the derivation of the figure, please see the previous LINKS article from June 2012.

## Holding Back The Tide

There have been reports in the business news media that manufacturing is returning to the USA from China. Perhaps - for certain types of products. For die castings and assemblies using die castings, the OEM buyers we interviewed did not report actually pulling a contract from a vendor in China who had been giving good service. Rather, they are incrementally adjusting sourcing between US and Chinese vendors. As we found in our report from 2007, US buyers seeking die castings for products to be sold in America typically maintain two suppliers: one in China for high volume and low pricing, plus one in the US for protection against supply interruptions and to track short-term swings in demand for their products. Although this may have been in their perceived best interests, it was certainly not an ideal situation for America's die casters. A typical ratio would have been around 80 percent of volume offshore and 20 percent retained here at home.

*"Just as we did in 2006, we maintain tooling and actively buy from US die casters. We rely on our domestic suppliers: they are just as important as our Chinese suppliers. We buy higher volume from China but I tell our US die casters our total buy. They know that they are our contingency plan if anything goes wrong. If something goes wrong with our Chinese supplier, we might ramp up from 50,000 units from our US supplier to 200,000 units. I select my US suppliers based on their ability to turn around quickly. So, I do not buy from large die casters that are already at or near capacity, or running three shifts. I buy from medium-sized, maybe even smaller, die casters who have room to expand within a few months - to add a new shift, or who have an extra machine idle."*

What we find now is that US OEMs are not finding pricing advantageous in China and so, are placing more new parts in the US. Where they maintain an old contract in China, they have increased the US share of the annual buy to 50 percent. And every interview we did with US OEM buyers made it clear that they anticipate placing more new parts here in the US. This is particularly true with raw castings. In fact, OEM buyers universally indicated they could no longer save by purchasing raw castings offshore - and even US machined castings were competitive if sourced from a modern US die caster, offering suitable automation.

*"Have I brought things back from China? I might be different but I have not brought anything back from China to the US. However, I have increased my buys from the US. New products are split 50/50. I might put a new product directly into China with a vendor I am confident in, if the timing fell into place. But the other half I am keeping in the US, particularly if we need some face to face design time or engineering assistance."*

OEM buyers did continue to make savings on assemblies using die castings. However, five years ago, these savings were compelling - and now, with logistics, they are marginal. This is not only a matter of labor rates: it is also a matter of economies of scale.

*"With certain types of products, if you are not assembling them in China, you are not operating at an economy of scale that would make you competitive. Labor costs can be competitive in the US - but even as the cost of labor becomes equal, you have to overcome this bandwidth issue of not having the capability and scale. If you are not operating at Foxconn scale, how are you going to compete?"*

Now, US OEM buyers find quotes in the US and China are nearly the same.

*"By the third quarter of last year, the lines crossed. And by the fourth quarter of 2011, on four out of the five jobs I quoted, the Chicago quotes were beating the China quotes. And that was before I took out the transportation difference! When I included the cost of logistics, the ever-increasing cost of logistics, Chicago won clearly."*

Beyond the obvious impact, that this keeps new procurements in the USA, it has a subtle impact on old contracts. In previous years, Chinese suppliers maintained prices for the life of a purchase order. Now, Chinese suppliers are including language that allows them to adjust pricing with currency fluctuations - but rarely exercise this clause. So, China pricing on old contracts stays constant - but on new parts or when renewing old contracts, OEM buyers know they will see significant price increases. They know that even if China pricing on older contracts still beats US pricing, China's vendors can only hold back the tide a few quarters. It is a powerful incentive to place new procurements here in the United States.

## Labor Costs Skyrocketing

In these articles, we have emphasized the significance of the currency exchange rate in OEM buying decisions. In part one of this article, we also introduced the significant impact of the differential rates of inflation in the US versus China. Nowhere is this differential more apparent than in the rapidly increasing costs of labor in China.

*"For high labor content products, we have been moving some of our production to Cambodia because the labor rates are better. This is true of products that require manual assembly - we just cannot get competitive prices in China anymore."*

As has been widely reported in the business media, Foxconn Technology - maker of Apple's iPhones and iPads - recently doubled monthly salaries for assembly labor to \$290 per month. For Apple, that is insignificant: it raises the cost of assembly from \$8 per unit to \$10 per unit, while the components cost nearly \$200. These rates for low-skill labor remain, of course, trivial in comparison to American rates. But in engineering, die casting, and the machining of die castings, a much higher level of skills is required - and labor rates are much closer to American rates.

*"A mid-level design engineer can cost anywhere from \$2500 to \$3000 per month, depending on language skills. I have many engineers over \$3000 per month and a handful at*

*“\$4000 per month. My senior guys cost a hell of a lot more than that – basically an American salary. My Chinese regional manager, with bonuses, is making more money than most Americans, I assure you.”*

This rapid rate of increase is likely to continue - one more reason that savvy OEM buyers are sourcing parts in the USA now.

*“Based on the cost of living, there is still a lot of pressure for Chinese salaries to go up. Salary increases have not really caught up yet with the cost of food and shelter. Foxconn’s pledge will lead to Chinese wage hikes. When you have 1,000,000 employees worldwide, it affects the national picture. Manufacturers in China are desperate to hire really good people and this puts upward pressure on wages. The inflation rate in the cost of living in China these last few years has been really insane!”*

## The Impact Of Logistics

The increasing value of the renminbi affects more than just the cost of a part. Logistics costs have also been increasing,

and increasing rapidly. In 2006, OEM buyers were aware of logistics costs but did not automatically factor them into buying decisions. Typically, then, they were analyzed ad hoc by adding 10 percent to the cost of an offshore part. Now, OEM buyers report that their Enterprise Resource Planning (ERP) software inevitably includes analysis of the cost of shipping. On Less-Than-Container-Load (LCL) shipments, our OEM interviews indicate that these costs can easily add 20 percent.

There is another subtle effect of logistics costs. China is not one, homogenous country. Rather, to an OEM buyer, there is coastal China and there is western China. Labor rates have been skyrocketing in coastal China, but quotes on parts remain enticing in Western China.

*“Socially and economically coastal China and western China are so, so different. The cost of living in Shanghai is comparable to any major first-world city. But if you go west, you find poverty. It is two different worlds. The Chinese government has a lot of incentives and initiatives to move manufacturing deeper in country. We have moved some of our contract manufacturing deeper in country. Like Chongqing – it is a big city, real big – a population above 30,000,000! There is a huge amount of labor*



Figure 2 – It can take 2 weeks to bring a container from Chongqing to Shanghai.

*available there, at apparently attractive rates. Also, there are a lot of incentives from the Chinese government to use that labor. But there is a problem. Getting things out of western China or even central China to the coast takes an extra one or two weeks of transportation, and the extra cost of that transportation to get a container down the river, destroys any labor advantage.”*

## Tooling From China

We heard mixed reports on the cost advantages of procuring tooling in China. Some of our OEM buyers continue to report significant savings - but not all:

*“Your price for that tool may not be so different from down the street in Michigan.”*

Some of our OEM buyers continue to report better pricing and increasing quality with Chinese tools:

*“China’s machine shops use the same machine tools, the exact same machine tools in the higher end shops, and the metals are supplied by the same companies. I can get a chunk of Finkl steel faster in South China than in South Chicago. If you are all working off the same database, theoretically it does not matter if you are jobbing out the tool two miles down the road or 2000 miles away.”*

The difference in the perception of cost may be in logistics. Procuring a Chinese tool for use in China offers considerable savings to an OEM making a new part - but bringing a large-scale, assembled tool from China to the US will add considerably to the cost of that tool. Our interviews reported that, in some cases, it may make sense to have some components of the final tool made in China but assembled here in the US. This requires a case-by-case analysis.

*“When you bring an entire tool, assembled, the transportation costs are extreme. You are hedging the massive shipping cost for a finished tool, against the savings of machining in China. If it is a big tool, flying that thing costs a lot. And that is if you can fly it - if you cannot, you are tying up the tool on the water for more than a month. But if you have a Chinese tool builder, with the capability to do a lot of inserts, maybe not the entire core and cavity inserts, but the slides, you can fly in smaller components of the tool, procure the mold base locally, and it may make sense to do the final tool assembly locally.”*

But one thing has not changed since our report in 2006 - the need for in-country quality control:

*“I have a QC team on the ground there, and they have the tools to do the testing on-site. They are not just leveraging laboratories: there are enough tools now to verify things on the fly, in the shop, at random. If you do not have that level of QC capability, you are taking a chance. We are driving quality inspections as far forward as we can, right to the shop floor. We ensure that the geometry and the material properties are in compliance. We did not create the system we have now out of thin air - it came from the school of hard knocks. Of course, you can have the same*

*problems in the USA also. But once you have a tool air lifted across the ocean, it can be hell shipping it back and trying to get your money back!”*

## Now What?

The theoretical analysis of exchange rates and inflation, plus our interviews with OEM buyers, strongly suggest that China no longer has a compelling advantage for sourcing raw, or even machined, die castings. There may still be some advantage to sourcing assembled products that use die castings in China - yet the inflation in labor costs is likely to continue, and with the rising cost of logistics, OEM buyers find US die casters much more attractive now than they did five years ago. So, it is now a safe bet that US OEMs are much more positively inclined to keep a part here, rather than place it overseas. That is quite a change from 2007, and validates Technology Consulting Group’s forecast in 2007 of approximate price parity by 2012. What can we do today to encourage US OEMs to keep a die casting in America?

First, American die casters should not hesitate to discuss the cost benefits of US sourcing with American OEMs. We are on the cusp of change: even if it is not entirely clear today that it is beneficial to keep a part in the States, the OEM buyers we spoke with are all thoughtful about reducing their buy in China. At today’s exchange rate, it is already doubtful that buying die cast parts in China make sense - and there is good reason to believe that the cost of Chinese parts will continue to escalate.

As discussed in part one of this article, the International Monetary Fund, based on purchasing power parity analysis, suggests that the renminbi will continue to increase in value and that an appropriate exchange rate is on the order of 4.0 renminbi per US dollar. The government of China, in its most recent five-year plan, declared a goal of internationalizing the renminbi. This will inevitably require that the renminbi abandon its peg to the US dollar and become a floating currency. China is reducing its purchases of US treasuries - a sign that there will be less future intervention in exchange rates. As discussed above, there is also good reason to believe that labor rates in China will continue to increase rapidly. All of these factors will raise the cost of parts from China and thus, increase the competitiveness of American parts. We want to encourage American buyers to think ahead and recognize that once they have placed a part offshore, it will be expensive to bring it home even if China costs increase.

Second, we can advise our customers to accurately and honestly evaluate the cost of logistics in sourcing parts in China. All of the sophisticated OEM buyers we spoke with explicitly account for landed cost in their cost accounting - yet they are still tempted by the low quotes from inland China. Remind them that central China is not coastal China and that having an additional two week delay in transportation adds to work-in-process costs, shipping

costs, and the risk of supply chain interruptions. Remind them, too, that logistics costs will escalate with rising labor costs and the increasing value of the renminbi - and expect that they are already worrying about these increases.

Third, we can develop relationships with Chinese tool builders and die casters. No doubt that seems paradoxical - but there are many situations where it is in fact beneficial to US OEM buyers to maintain a presence in China. Larger US OEMs typically have sales in China and do in-country die casting and assembly to serve their China market. Procuring complete smaller tools from China remains cost-effective and components of larger tools may be beneficially sourced in China. We want our customers to look to us for expertise in sourcing all of their die castings - here and offshore. We can play a valuable role with our US OEM customers by helping them with offshore sourcing and logistics management - and charging for this service. Technology Consulting Group maintains relationships with various Chinese tool builders and vendors; if desired, we would be pleased to help you establish beneficial connections in China.

*"The rate of change is not slowing down - it is increasing. I know so many people who are still stuck in the paradigm that the only place they will do a consumer product is in China. That is no longer true."*



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### About the Author

*Bill Downey is president of Technology Consulting Group (TCG), a firm well-known in the die casting industry. In 1984, TCG performed the first die casting industry market segmentation study for ADCI (a predecessor of NADCA), accurately predicting the critical importance of imports and technology in the die casting industry. In 1997, TCG again published a market segmentation study, forecasting the U.S. die casting market. Five years later, these forecasts proved accurate within 2.5%. In 2000, TCG examined, "Future Directions in Die Casting" for NADCA, forecasting that only 287 U.S. custom die casters would remain by 2008. In 2003, NADCA again called on TCG to peer into the future. TCG's report, "The United States Die Casting Industry - A Global Future," examined the impact of globalization on the U.S. die casting industry. In 2006, TCG examined The Buyer's Perspective on the U.S. die casting industry and suggested strategies for U.S. die casters to compete in the global market. In 2008, TCG performed the NADCA die casting industry census and found 285 U.S. custom die casters - a count less than 1% under the forecast from 2000. Downey holds master's degrees in both engineering and industrial management, has published books and articles on renewable energy, die casting and marketing strategy, and has completed assignments in Europe, Pakistan, India, South Africa, Brazil and the U.S. Your comments and questions are welcomed: he may be reached at [wtdowney@verizon.net](mailto:wtdowney@verizon.net).*