

# Paper or Plastic?

## Choosing to Move Offshore

By Tom Borkes

**Y**our total is \$114.85. Would you like paper or plastic?" Being an engaged citizen who is sensitive to the plight of our planet, you reply, "Plastic, of course," and mentally add another badge to your imaginary green merit sash, signifying the latest tree you saved. You proceed home with your groceries, knowing you have contributed to the solution, and not added to the problem. But, not so fast. Which scenario is better: trees used to make paper vs. oil used to make plastic? This is a very complex question, and most come up with the simple answer, "It depends."



Now imagine you are in charge of a \$100M high-tech electronics circuit board assembly operation. Your CEO tells you that stock prices are languishing. The board of directors wants a plan to improve the bottom line. What can your division contribute?

What's an operations director to do? It's time to play the offshore outsourcing card. A few phone calls and online searches later, and the strategy emerges: Loaded labor costs the company \$23/hr. That offshore concern sells loaded labor at \$0.75/hr. Maybe the company can establish a facility over there. What are the risks? Everybody is doing it. You can fill in the details later. Based on your products' labor content (mostly automated SMT), you can easily reduce product cost on paper by 15%, especially on the high-volume products. You spend the rest of the weekend playing golf and picking out furniture for your new office, which surely will accompany your upcoming promotion.

Oversimplified example? It may be — but not as much as you might think. In his book, *The World is Flat*, Thomas Friedman outlines a technology-enabled world filled with inexpensive manufacturing resources that want to compete for our business. It is the sort of world where communications technology allows us to sit at a giant mixing board,

pulling the right levers to select the cheapest resources from any corner of the globe.

Historically, the production industry is anchored in the early 20<sup>th</sup> Century efficiencies of Henry Ford's division of labor model: divide the labor up over operators so that one person puts the wheels on as the assembly moves past, the next person puts on the lug nuts, etc. In our business, we call it a progressive slide line. This model works great for products that are labor-intensive, such as circuit boards of the past. However, in products that can be machine-built (automated), this system loses its relevance unless we "faux-automate," or pretend to automate.

The cost of a product is simply dollars for materials, plus the dollars for labor (loaded to absorb overhead costs). Without labor, we can't absorb overhead and other indirect costs. We need labor. It pays for management. So, what do we do? We all buy expensive equipment for automation, and staff the operation as Henry Ford would. We have an operator who just operates the equipment; and a set-up person who sets up the equipment (or perhaps several specialists for paste printers, pick-and-place, etc.). We also would have process people develop the right machine settings and write process sheets; an equipment maintenance group fixes the equipment when it breaks; an electrical test group develops in-circuit test (ICT) — allowing us to separate the good boards from the bad boards we build; and we have a group to troubleshoot, repair, and retest bad boards. It is important to note that an electrical engineering department designed the product, and a mechanical engineering department that was less concerned with putting it together, but more concerned with making sure it worked in prototype, also was involved. We also need layers of management and a human resources department. What does this daunting hierarchy, structure, and mentality result in? The result is a lot of indirect costs that must be absorbed, and direct labor to help do it.

This manufacturing model only works when you're the only company on the block, or when everyone on the block does it the same way. It does not work when your competition can cut the labor costs of a product by more than half. How do we cut the labor component of a product's cost? There are two ways: the easy way — find a source that charges less per hour for labor (\$0.75), or the hard way — reduce the labor hours through true automation.

The U.S. management tends to gravitate toward the former, so we moved manufacturing from the industrialized North, to the South, to the deep South, to Mexico, to the Pacific Rim in a quest for the holy grail of lowest labor-hour dollars. It's harder to develop capable, controllable, automated processes to reduce the number of labor hours, especially because of the way we are organized and the paradigm to which we have chained ourselves.

There are two reasons for building in low-labor-cost markets: if you are selling your products into those markets, and if you are not good at automation. Add to this the fact that the true costs of offshore outsourcing are beginning to hit the CFOs' books. The envisioned *Mona Lisa* has turned out to be more like a painting of dogs playing poker.

The experts believe that future volume manufacturing will always be "over there" because we cannot compete in high-volume manufacturing. I thought high-volume manufacturing required less labor per assembly, not more, because fixture cost and set-up time are spread over a large number. Because we pay more for domestic labor, we should be able to compete more effectively when building products domestically with less labor dollars per assembly. If we automate and just let the line run, doesn't the offshore low-cost-labor advantage asymptotically drop to zero? We have three to five years to get our act together. Will we? So... would you like paper or plastic?

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