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In May 2007, this column carried an installment entitled "The Rise & Decline of Auto Manufacturing." It pointed out how the "Big Three" U.S. auto manufacturers seemed to be on the way to repeating the mistakes of the British auto industry and government in the 1970s—something that led to that industry's demise in the 1980s. Now, in light of current economic conditions and discussions of government financial involvement with General Motors, Ford and Chrysler, the U.S. automobile industry finally may be at the point of no return.

Throwing money at any problem without a strategy to make far-reaching change typically does not work. While the Big Three have made 50% gains in manufacturing productivity since 1980, it may not be enough. What happens in 2009 probably will be the ultimate wake-up call for traditional automobile manufacturing in the U.S, including the Big Three and thousands of suppliers to the industry. Will history repeat itself? Will high fixed overhead costs sink one or more of the Big Three? What should we learn from this ordeal?

Profitability issues

Maintenance and reliability initiatives, continuous improvement processes and "lean" are proven methods for improving productivity. Productivity has increased significantly in the U.S. auto industry via many of these proven methods. According to the "2008 Harbour Report" on the North American auto industry, Toyota and Chrysler led the six largest multi-plant automakers in total manufacturing productivity, averaging 30.37 labor hours per vehicle. The difference is that Toyota primarily uses its own employees throughout the manufacturing process while Chrysler outsources many of the subassemblies from suppliers. (GM averages 32.29 hours per vehicle while Ford averages 33.88 hours per vehicle.)

Although productivity gains are essential to a company's success, it is PROFITABILITY that keeps the business going and growing. That's the problem with the Big Three—their profitability. Again, according to the "2008 Harbour Report," Honda and Nissan led the industry, earning

$1641 pretax profits per vehicle produced in North America. Toyota was number two in per-vehicle profit at $922. Sadly, Ford, GM and Chrysler LOST $1467, $729 and $412 respectively. The Harbour Report continues: "This reflects that the Detroit Three still pay more for health care, pensions and sales incentives…and support more dealers relative to their market shares than either Toyota, Honda or Nissan." More dealers require more vehicle inventory waiting to be sold, which ties up cash and leads to sales incentives, which reduces profitability.

What about labor cost? Industry experts estimate that the labor cost accounts for about 10% of the cost of manufacturing and about 5% of the manufacturer's suggested retail sales price (MSRP) of a vehicle. Roughly speaking, here, per industry insiders, are the auto manufacturing cost contributors to MSRP, highest to lowest: The number one cost is materials. Fixed costs (depreciation, R&D, pensions, health care, advertising and overhead) rank second. The third highest cost—dealer markup—is followed by number four—assembly labor and manufacturing costs. Fifth in line is price discounts and promotions. Sixth is transportation and warranty, followed by profit per vehicle at seventh.

Labor cost often is (mistakenly) a big target for reducing costs and improving profitability. We recently have learned of the huge labor-cost gap between U.S.-based foreign auto manufacturers and the Big Three. And, the union-represented labor force receives a total package (wages, benefits and other forms of compensation) nearly three times that of the average private sector employee in the United States.

While the Big Three have negotiated a "two-tier" wage system that pays newer workers lower hourly wages than more established employees, their overall hourly labor cost (including wages, benefits and other compensation) still remains high. When you look at labor cost PLUS the fixed overhead cost that includes significant benefits and perks for all employees, the actual "labor cost" per vehicle can get out of sight.

The real challenges

Despite all the hype, high hourly wages are NOT the big opportunity for improvement in the auto industry—or most other manufacturing industries in America. The biggest opportunities for improvement continue to lay in labor PRODUCTIVITY plus the very high FIXED (or overhead) costs. The Big Three automakers have amassed these huge FIXED "legacy" cost from years of negotiations for job protection, retiree heath care and unemployment benefits. These costs do not affect productivity or manufacturing costs at all. They are a burden that is added to the selling price of each vehicle. If the Big Three are to compete on selling price and profitability, they and their union leaders will have to find a way out from under these extra burdens.

While compensation costs and overhead/fixed costs cannot be changed overnight—even under bankruptcy reorganization—they can be avoided by up-and-coming manufacturers. What is most important about the North American automotive industry is that it HAS improved its productivity because there was a compelling business case to do so. Moreover, there were proven models to adapt, based on the Toyota Production System and, later, "lean manufacturing" and the "lean enterprise." The Harbour Report states: "By comparison, the automakers in North America, on balance, have become very competitive globally, only slightly behind Japan, but ahead of most other regions. Although labor costs remain high, the weak dollar and new labor agreements have made North America a more attractive region for manufacturing." Overall, the U.S. workforce is the most productive in the world because of our innovative use of technology and our individual worker productivity. PRODUCTIVITY, coupled with PROFITABILITY, reflects the real challenges for the Big Three.

Productivity improvements in these capital-intensive businesses depend on reliable, high-performing equipment and maintenance and reliability for capacity assurance—that's OUR niche! We know how to make equipment last longer and run more efficiently, and how to sustain new levels of performance with preventive and predictive maintenance methods. We also know that maintenance alone cannot make equipment reliable. It takes the entire organization from operations and spare parts procurement to engineering and programming, and more.

"Made in Mexico" and elsewhere

Mexico is currently one of the world's major automotive manufacturing nations—as well as part of the North American auto industry. Considering productivity alone, Mexico's plants are very lean and competitive, producing high-quality products with much less automation than in comparable U.S. facilities. I personally have experienced the great results with a Dodge truck I purchased in 1993 (and still drive) and with a 2008 Saturn Vue, both made in Mexico. And I'm not alone. Countless cars and trucks traveling on U.S. roads today, including Ford Fusions and Chrysler PT Cruisers, have been manufactured in Mexico. "Much less automation" in Mexican plants means much less high-tech maintenance and repair expertise is needed to keep those operations reliable. In an era of "skills shortages," this is crucial.

Remember, high-tech alone—much like higher wages alone—is not necessarily the answer to improving productivity. Consider the following case in point.

Roger Smith, the CEO of General Motors from 1981 to 1990, had a vision for technologically revolutionizing auto assembly. His GM-10 plan and his drive for modernization in the mid-1980s that called for nearly 14,000 robots in seven of his North American assembly plants has been characterized as "the biggest catastrophe in American industrial history."

GM simply was not ready for all the new technology it got. After three years—and spending nearly $35 billion on 21st century modernization attempts—the company's highly unreliable robots were mostly removed and assembly reverted to a level of technology that could be sustained.

Mr. Smith summed up the situation quite succinctly:

"Without paying attention to the people and training, all this new technology has allowed us to produce scrap faster."

I was working with GM at the time to develop and implement new skilled trades training programs in two of the seven GM-10 plants. New job responsibilities had to be negotiated to enable union workers to be trained to work on these welding and assembly robots—WEMR, or "welder equipment maintenance and repair." The skills required included a blend of electrical, electronic, mechanical and hydraulic. This was a slow, long, drawn-out process AFTER the equipment was installed! We learned then, and it applies now: New technology alone does not improve plant performance unless is can be operated and maintained to ensure sustained reliability. Without changes in training and job classifications— and sometimes compensation—innovations often fail.

No simple solution

We also have learned from the Big Three's recent pleas for a financial bailout that the solution is not going to be simple. Their problems stem from a combination of complex, long-term strategic errors, traditional industry paradigms and governmental legislation. Because the industry runs as a single system, it is only as strong as its weakest link. Consequently, all parties that have been involved in creating the present situation also must be involved in the development and implementation of a sustainable solution—that means employees, retirees, labor unions, creditors, suppliers, dealers and shareholders.

Let us not forget government's role in this mess, either. State, local and federal government entities all had a hand in getting the Big Three to where they are today. As part of the problem, appropriate government also MUST be part of the solution.

For example, our 1970s energy policy continues to haunt the Big Three, which, year after year had helped fuel America's seemingly insatiable demand for inefficient, gas-guzzling behemoths. The 1975 CAFÉ (Corporate Average Fuel Economy) standards developed to conserve high-priced oil after the 1973-74 Arab Oil Embargo were designed to double the fuel mileage of new cars manufactured for sale in the U.S. by 1985. In addition to Congress setting the annual

fuel mileage standards, the National Highway Traffic Safety Administration (NHTSA) and the Environmental Protection Agency (EPA) were charged with implementation and enforcement. Sounds like a plan, doesn't it? Not really. Since 1983, automakers have paid more than $500 million in civil penalties for NOT meeting the CAFÉ standards. Add to that the expense of lobbying Congress for relaxed standards and you come up with a lot of money spent by the automobile industry for the sake of inefficiency.

Interestingly, Asian manufacturers have consistently met CAFÉ standards over the years and, thus, have not been penalized. But, therein is another issue. While most of the recent debate has focused on bailing out—or NOT bailing out—the Big Three, it's important to remember the thousands of suppliers that provide parts and services to the "Big Six" (GM, Ford, Chrysler, Toyota, Honda, Nissan) and other auto manufacturers in North America (BMW, Mercedes, Kia, Hyundai, Mazda, Mitsubishi, Subaru, Isuzu, VW). They are at risk, too.

Many suppliers perform work for multiple auto companies and would be seriously hurt if one or more of the Big Three are allowed to fail. Over $150 billion of our country's gross domestic product (GDP) per year is related to automotive manufacturing—not to mention billions and billions of GDP dollars associated with transportation engineering, professional-technical, administrative, warehousing, health care and financial services.

What we must do now

Historically, the auto industry has set the stage for manufacturing strategies across many other non-auto businesses. History repeats itself and often tells us why things are the way they are today. Status quo, complacency and ignorance can kill a once thriving business. We can — and we should — learn from history to avoid common pitfalls that have hurt businesses and their workforces.

Successful businesses and workforces help communities and nations thrive. Let's do our part in our businesses, plants, departments and crews to remain competitive and prosperous. Let's also keep the millions of automotive manufacturers' and suppliers' employees in our thoughts and prayers as we begin the New Year. **MT**

Suggested reading

1. *The Rise and Decline of the British Motor Industry, 1995. Roy Church*
2. *The Machine that Changed the World, 1990. Womack, Jones, & Roos (Chapter 2: The*

rise and fall of mass production)

3. *The Harbour Report North America 2008, Harbour Consulting*
4. *Factory Man (publication date: February 2009), James E. Harbour. Society of Manufacturing Engineers (SME)*

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