

# Advanced Manufacturing Newsletter

## MOVE YOUR OPERATIONS TO CHINA? DO SOME LEAN MATH FIRST

This article was written by Jim Womack, well known author and founder of the Lean Enterprise Institute. Womack recently received a phone call from a reporter for The Wall Street Journal with a simple but provocative question: If you are a manufacturer in a high-wage country such as the U.S., can you ever be lean enough that you don't need to relocate your operations to China? The following is a reprint of Womack's answer.

The reporter's reasoning was that China has an enormous labor pool in its coastal development zones, with 300 million additional migrants to these areas expected in the next ten years. So labor costs may stay at their current low levels for decades. He further reasoned that a large fraction of the cost of manufactured goods is ultimately wages (for touch labor plus support staff, managers, and engineers, and the workers designing and making process machinery and extracting and processing raw materials.) He then concluded that no matter how much cost an American or Japanese or German firm removes by getting lean, costs in China (or, if you prefer, India), based on cheap labor, will always be much lower. Hence, Won't you need to relocate?

My answer to this simple question was

also simple: Do some math before you move and make sure it's lean math. Here are the items you need to include in your calculation:

- \* Start with the piece part cost for an item where you are.
- \* Compare this with the piece part cost for the same item in China or India (or Vietnam or Poland or...) (It will almost always be much lower.)
- \* Add the cost of slow freight to get it to your customer.

Note that you have now done all the math that many purchasing departments seem to perform. Let's call this mass production math.

To get to lean math you need to add some additional costs to piece-part plus slow-freight cost to make the calculation more realistic:

- \* The overhead costs allocated to production in the high-wage location, which usually don't disappear when production is transferred. Instead they are re-allocated to remaining products, raising their apparent cost.
- \* The cost of the additional inventory of goods in transit over long distances from the low-wage location to the customer.
- \* The cost of additional safety stocks to ensure uninterrupted supply.
- \* The cost of expensive expedited shipments. (You'll need to be careful

here because the plan for the part in question typically assumes that there aren't any expediting costs, when a bit of casual empiricism will show that there always are.)

- \* The cost of warranty claims if the new facility or supplier has a long learning curve.
- \* The cost of engineer visits or resident engineers to get the process right so the product is made to the correct specification with acceptable quality.
- \* The cost of senior executive visits to set up the operation or to straighten out relationships with managers and suppliers operating in a different business environment. (Note this may include all manner of payments and considerations, depending on local business practices.)
- \* The cost of out-of-stocks and lost sales caused by long lead times to obtain the part.
- \* The cost of remaindered goods or of scrapped stocks, ordered to a long-range forecast and never actually needed.
- \* The potential cost, if you are using a contract manufacturer in the low-cost location, of your supplier soon becoming your competitor.

This is becoming quite a list - and note that these additional costs are hardly ever visible to the folks in senior

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### Chair's Corner

Neftali Ortiz  
Chairman

The greatest gift of all is not money or materialistic items. It is not saying thank you or I am sorry. The greatest gift of all is not paying for your son's or daughter's education. It is not going to the market at three in the morning to get ice cream, pickles, bacon bits, chives, green onions, a Beef Alfredo with steamed broccoli TV dinner and batteries for the remote because your pregnant wife has asked for it. We all have our thoughts on what each of us could give another person that would truly be meaningful.

For me, the greatest gift of all is giving of your time. There are many wonderful things in life and as we all grow older, and hopefully wiser, we tend to become busier taking care of our to do lists. This year, focus on the things that truly matter to you. For me, my

### Manufacturers need Manufacturers

time will be spent making MANT an organization for manufacturers that offers value and an arena to share and solve common issues.

If you would like to contribute any of your time and expertise to making the Manufacturers Association of North Texas the premier go to resource for our industrial community please contact me via neftali.ortiz@lmco.com and share your ideas.

Thanks, and I hope you have a great 2003 and give the greatest gift, your time, to those who need it the most!

### UPCOMING MANT EVENTS

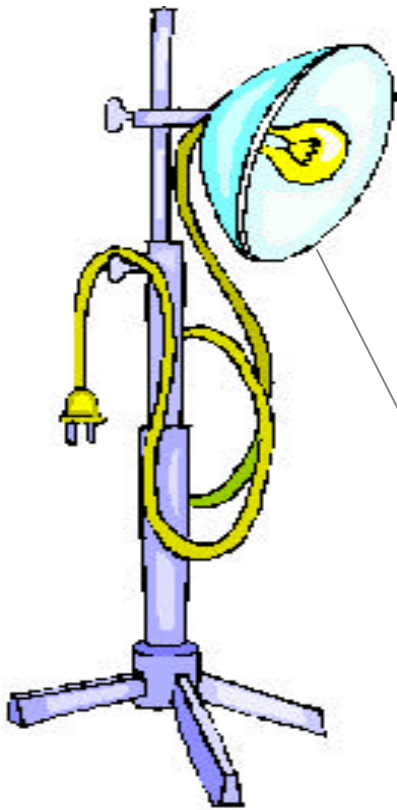
Several MANT members have offered to host tours of their facilities during February/March. Mother Parker's Tea & Coffee has a very state of the art manufacturing/distribution facility in Fort Worth off I-35 near the Miller Brewer at 7800 Will Rogers Blvd., Fort Worth, TX 76140.

Mother Parker's received an industry award for best new plant in 2001. They have implemented significant process automation and have a visual control room that tracks all their materials and production schedules. Mother Parker's, founded in 1912, has developed into one of North America's largest and most successful family owned manufacturers. Parker's customers include many of North America's leading retail grocers, office coffee and vending distributors. This tour is tentatively scheduled for February 27 from 4-6:30 pm. Light snacks will be provided. The tour is free to members and \$15 for non-members - group limited to first 40.

AIRCO d/b/a PhotoEtch manufactures avionics control panels and flight simulator components. They are located in an historic building in South Fort Worth at 1400 Henderson Street. AIRCO has experienced remarkable results since implementing lean techniques in both their manufacturing and administrative processes. AIRCO staff will



# Member in the Spotlight!



FTC Industries is a full turn-key, quality based precision CNC machine shop located in Fort Worth. Markets serviced include aerospace/military, telecom, oil and commercial. Founded in 1997, FTC Industries is known for its quality products, short lead times, and value. We maximize value by developing customer relations that go beyond the engineering aspects of machining. FTC specializes in the production of complex parts having the most exacting tolerances and specifications using the latest technologies and equipment, and are experienced in machining some of the most exotic materials.

At FTC Industries, everything begins and ends with quality. We are ISO 9000 compliant, and apply Statistical Process Controls (SPC) on critical dimensions or as required by customers.

From design engineering to high-capacity manufacturing, FTC delivers the highest value on the most exacting tolerances. We will partner with your engineering department to maximize manufacturability of products. Our world-class equipment and staff continue to

**FTC Industries**

push the limits of time and materials. Bring us your machining problem. We'll solve it.

As a member of the Manufacturers Association of North Texas, FTC has gained valuable insight to market conditions, training opportunities, plant tours, and the latest manufacturing techniques, such as Six Sigma and Lean Manufacturing. We strongly recommend that every manufacturer, regardless of industry, participate and attend the monthly events to gain manufacturing insights that will ultimately impact your bottom line. Manufacturers working together make North Texas the destination of choice for world class manufacturing.

For more information about FTC Industries, call Rick Flores or Pete Sellers at 817-431-1511, or fax your quotes to 817-431-2946.

## World Class Precision CNC Machining

Events continued from page 2

share their recent process improvement experiences with MANT members and guests.

Both of these tours promise to be very informative and fun to boot. It is always eye opening to see what other businesses are doing to solve some of the same issues we all face.

For more information on the tours please contact Rick Flores at 817-431-1511 or Stu Langley at [langley53@charter.net](mailto:langley53@charter.net).

On March 11 we will offer a workshop on minority and women business certification processes. Misty Tippen, Economic Development Specialist with the Womens Business Center will conduct an orientation for business interested in certifying the minority or woman owned status. More to follow next month.

methods can be integrated with Lean tools to reduce process variability, eliminate waste, and improve process speed.

This Roundtable is an executive-level forum for learning and exchanging ideas about the implementation of Lean Six Sigma. The session is small by design. Our goal is to facilitate dialogue and best practice exchange. We are inviting a mixture of companies who are investigating Lean Six Sigma and those who have already implemented LSS.

Please join us at UTA campus in Ft. Worth for this executive forum, and a chance to learn more about this highly successful approach to enterprise improvement. This complimentary session will begin with breakfast at 7:30 a.m. and conclude by noon, respecting the busy schedules of all participants. To reserve space in this session, please contact Ms. Lisa Baldwin at 817-272-5909 or email [lbaldwin@arri.uta.edu](mailto:lbaldwin@arri.uta.edu).



## Save the Date!

April 27-29  
Houston, Texas

The Applied Manufacturing Conference has been organized by the Texas Manufacturing Assistance Center to educate manufacturers in applying the latest and safest techniques to their operating and production issues. We invite you to participate in this conference to share and gain valuable knowledge in the applications of productivity improvement techniques to your manufacturing problems. Please visit [www.tmac.org/AMC](http://www.tmac.org/AMC) for information on how to participate. Lets keep Texas at the forefront of America's manufacturing strength!

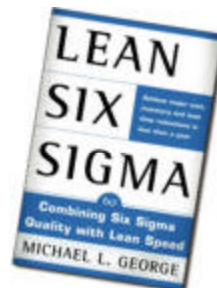
On March 14, 2003 attend an exciting day of learning and networking for budding entrepreneurs and those who want their small businesses to grow. Participate in the TMAC sponsored seminar on how to optimize your purchasing and supplier relationships to get the best value. From 7 am to 6 pm at the Fort Worth Convention Center. Exhibitors, seminars, millionaire raffle and great networking.

Rep. Kay Granger and a host of VIPs also plans to participate! Don't miss it! [www.entrepreneurexpo.org](http://www.entrepreneurexpo.org).



## Manufacturing Executive Roundtable Scheduled for March 6

Were you aware that the average worker in China is paid wages that are 2.5% of workers in equivalent manufacturing jobs in the United States? MANT and the University of Texas at Arlington is concerned about the loss of jobs in the manufacturing sector, and the threat from foreign companies to our competitive position. To maintain our status as a leading manufacturing power, the U. S. must improve the technical knowledge and upgrade the skills of our workforce. Lean Six Sigma provides the tools and approach for firms to improve their competitive capabilities in the 21<sup>st</sup> century.



UTA is pleased to announce to MANT members and manufacturers in the North Texas area a Lean Six Sigma Executive Roundtable, to be held on Thursday, March 6<sup>th</sup> at UTA's Automation & Robotics Research Institute in Ft. Worth. Speakers for this forum include Chris Cool, Vice President of Quality and Lean at Northrop Grumman, who will describe lessons learned and results achieved from two years of full-scale implementation of Six Sigma and Lean initiatives, and Michael L. George, author of Lean Six Sigma, who will speak on how Six Sigma quality

# Ö Business Plans

Linda C. Lummus, M.B.A.

Owner and Marketing & Management Specialist  
Consulting Services International  
Marketing Chair/MANT

Ignoring The Basics Is A Costly Mistake

- ✓ MARKETING VS SALES
- Ö MARKETING/BUSINESS PLAN
- ✓ YOUR OBJECTIVES
- ✓ YOUR PRODUCTS & SERVICES
- ✓ YOUR CUSTOMER(S)
- ✓ WHAT THOSE TARGETS WANT
- ✓ WHO ARE YOU
- ✓ WHO IS YOUR COMPETITION
- ✓ HOW DO YOU COMPETE
- ✓ YOUR DISTRIBUTION
- ✓ YOUR MARKETING BUDGET
- ✓ YOUR PROMOTION MIX
- ✓ EXECUTION
- ✓ MANAGEMENT

Business/Marketing Plans, every company needs one. The tendency in small to medium size companies is to go directly to advertising or sales without formal planning or analysis.

Last month we talked about Marketing vs. Sales. If you have done the due diligence we outlined, you are well on your way to being able to produce a written business plan. Marketing is just a part of this plan.

You should start with your company's prioritized goals for 1, 3 and 5 years out. Items to consider that may characterize your goals include:

- Sales
- Profitability
- Number/Type of Personnel
- Location(s)
- Equity
- Product Lines (Numbers/Types)
- Market Share
- Number Of Owners
- Organizational design

To begin your analysis, you need to match this information with financial data per year of operation at the total company level and at the product line level.

Next you want to examine capacity and efficiency (cost, time, resources) by producing a work-flow diagram for each product line indicating steps, duration, personnel and other resources involved.

Pair with the work-flow diagram, an organizational wiring diagram that shows chain of command and roles/responsibilities as you are currently operating. Be sure to account for where every employee fits.

Now you are ready to begin a market assessment/competitive analysis. You want to quantify:

## Business Plans cont...

- The Total Market Size that is applicable to you in each Product Line (how much is out there!)
- The amount of Sales Growth you could expect to achieve in that Product Line vs. the amount of effort (\$, time, etc.) expended
- Your major competitors in the Product Line
- Your strengths vs. competitors
- Your weakness vs. competitors
- Resulting strategies you have been using/could use

The sum of this market assessment/competitive analysis gives you the information you need to project sales vs. time and revenue (collections) vs. time. It also provides the information needed to develop a plan for how to reach these projections.

Whew! Looks like a lot of work. You are right. Will it pay off, you bet!

Next month we'll take a look at your objectives. Stay tuned! You may contact Linda at [llummus@flash.net](mailto:llummus@flash.net).



The Fort Worth International Center, the city's one-stop-shop for international trade assistance, home of The Fort Worth Office of International Affairs, Fort Worth Sister Cities International, Tarrant County College International Trade Center, World Affairs Council of Greater Fort Worth, The Tarrant County Asian American Chamber of Commerce and The Chiapas World Trade Commission would like to invite you to join them. If you are a for-profit business involved in some aspect of International Trade and would like to benefit from the momentum generated from the Fort Worth International Center, our doors are wide open to you. Fort Worth is fast becoming a key international player; be a part of it. For more information, contact Sigi Frias at (817) 212-2660 or via email at [sigi.frias@fortworthgov.org](mailto:sigi.frias@fortworthgov.org).



### SAN ANTONIO COURT UPHOLDS EMPLOYER'S MAXIMUM ABSENCE POLICY

If you have been wondering whether that company leave policy of yours needs some tweaking to start off the new year, then *Polansky v. Southwest Airlines, Co.*, 75 S.W.3d 99 (Tex. App. San Antonio 2002, no pet. h.), a recent San Antonio court of appeal decision, may offer the guidance you're looking for.

In *Polansky*, a group of Southwest Airlines employees sued their employer for discriminatory termination under § 451 of the Texas Labor Code. That section prohibits an employer from firing an employee in retaliation for filing a workers' compensation claim. The employees belonged to the Union of International Machinists and Aerospace Workers, who had a collective bargaining agreement with Southwest. That agreement provided that if an employee were absent from work for more than 36 months for any reason, he or she would be terminated and would forfeit all seniority rights.

The five plaintiffs in this lawsuit left work at the Southwest telephone reservations office for various medical reasons, but they did not return for over 36 months. The one potential problem: In the interim, each had filed a workers' compensation claim against Southwest, and their claims were found to be compensable. To win their retaliation lawsuit, the employees had to prove that filing their workers' comp claims was at least a determining factor in their termination. But Southwest could win if it showed a legitimate, non-discriminatory reason for the discharge,

and if the plaintiffs failed to rebut that reason with evidence of a retaliatory motive.

Southwest did win, and the victorious proof, you ask? an affidavit of a telephone reservations employee, stating that in 18 years of his employment with Southwest, he never knew any employee who had been absent from work for more than 36 months who had not been fired, regardless of the reason for his or her absence.

The trial court and court of appeal both held that proof of a uniform enforcement of the leave policy was sufficient to show a legitimate, non-discriminatory reason for the discharge. Since the employees couldn't muster enough proof to show a retaliatory motive, Southwest carried the day.

Although this decision does not give employers a complete tool kit to handle workers' compensation claims, it does provide some insight as to where Texas courts might lean when a termination decision must be made based on the leave policy. As employers across North Texas usher in 2003 and a new work year, maintaining a consistent approach to the leave policy or developing a leave policy may be a strategy worth considering.

#### LEGAL DISCLAIMER

This article does not constitute legal advice, nor does it create an attorney-client relationship between Burford & Ryburn, L.L.P. and the reader. This article is intended to inform the reader about certain recent developments in the law that may affect them. The information conveyed in this article should not be relied upon in answering a specific legal question, as all cases are different. The reader should seek the advice of a licensed attorney to address specific legal problems. [www.brlaw.com](http://www.brlaw.com)

The Texas Commission on Environmental Quality and the Texas Manufacturing Assistance Center have partnered together to provide low cost training on Environmental Management Systems (EMS). Through a grant from TCEQ, small to medium size businesses may attend either a 1/2 workshop or a more comprehensive 3-day workshop series. Companies who implement EMS(s) normally receive regulatory incentives, better bond & insurance ratings, reduced penalties, better TCEQ Compliance History ratings in addition to realizing short term ROI, costs savings and increased efficiency in materials, people and processes.

Cost for the program is \$25 for



the 1/2 day workshop on March 11, 2003 and \$125 for the series running April 16-18. The workshops will be held at the UTA/FW campus at the Automation & Robotics Research Institute located at 7300 Jack Newell Blvd. South, Forth Worth, 76118.

Typical results from implementing EMS(s) include reductions in water and wastewater usage, reduced material costs, increased facility floor space, reduced electricity costs and overall company-wide cost reductions. For complete information please visit [www.abouttexasems.org](http://www.abouttexasems.org) or contact TMAC at 817-272-5922



## Did Ya Know?

For every 10 percent increase in U.S. foreign direct investment in China, there is a 6.3 percent increase in the level of imports from China to the U.S. with no statistically significant effect on the level of exports from the U.S. to China.

Kate Bronfenbrenner, Director of Labor Education Research at Cornell University's School of Industrial and Labor Relations

### Manufacturing related web links:

Lean Manufacturing: Learning From The Leaders  
<http://www.manufacturingnews.com/LeanMachines/LM.html>

Manufacturing Trade Exchanges  
<http://www.manufacturingnews.com/portals.html>



### LEAN MANUFACTURING

Curious what all the buzz is about Lean? If you want to get in the know and find out what training opportunities are available to you please visit [www.tmac.org](http://www.tmac.org) and click on product offerings lean enterprise scroll down and click on course descriptions . Open enrollment and customized training is available. Call for your complimentary consultation about TMAC's Lean Training. 817-272-5922. Ask about your MANT discount!.

## Moving to China Continued from Page 1

\* Currency risks - which can strike quite suddenly when the currency of either the supplying or receiving country shifts.

\* Country risks - which can also emerge very suddenly when the shipping country encounters political instabilities or when there is a political reaction in the receiving country as trade deficits and unemployment emerge as political issues.

\* Connectivity costs of many sorts in managing product hand-offs and information flows in highly complex supply chains across long distances in countries with different business practices.

These latter costs are harder to estimate but are sometimes very large. The only thing a manager can know for sure is that they are very low or zero if products are sourced close to the customer rather than across the globe.

If you do the lean math, will it always mean that you don't need to relocate? Absolutely not. For example, if you are planning to sell within high-growth, low-wage markets like China or India you will almost certainly need to locate most or all of your production for those markets within those markets. This is simply because lean math works in the opposite direction as well. Transport, inventory and connectivity costs and country and currency risks are much lower if you produce within the market of sale.

However, in my experience a hard look at the true cost situation will suggest that relocation is not the first line of defense for producers in high-wage countries. Rather it's to get truly serious about a lean transformation through the entire value stream for the product in question.

If you find that you do need to relocate, even after doing lean math and applying the full complement of lean methods, my experience is that moving all of the steps in the value stream for a product to an adjacent location in a low-wage country within the region of sale - Mexico for the U.S., Poland for Germany, and, yes, China for Japan - is likely to provide the lowest total cost.

To learn more about the Lean Enterprise Institute please visit [www.lean.org](http://www.lean.org).



## Energy Saving Tips from



### PRICING

For many companies, electricity bills account for a significant portion of overall operating expenses. Your business electricity bills includes costs for:

- Energy
- Transmission and distribution
- Taxes

These energy components can account for over 75% of your total electricity bill and is one of the most price volatile commodities in the market - 10 times more volatile than interest rates and gold prices.

### Manage Your Energy Costs

It is important for your business to manage its electricity costs due to the extreme volatility in energy prices. Reliant Energy can:

- Minimize your exposure to market volatility
- Secure your electricity supply at a competitive price
- Recommend the product and pricing structure that best meets your business power needs.

Please contact MANT member Sandi Gaines at their North Texas office at 1-866-880-0468

Be an informed consumer and learn how to minimize the impact to your bottom line from fluctuating electricity prices.

