Total Cost of Ownership & the Reshoring Initiative
by Michele Nash-Hoff
President, ElectroFab Sales
A manufacturers rep agency

February 12, 2012
• Transformed themselves into lean enterprises
• Served customers in emerging markets
• Continually reduced costs of manufacturing to keep or increase market share
• Reducing cost is a key factor in decision to outsource to suppliers – domestic or offshore.
• Most companies don’t look beyond quoted unit price to make decision of which vendor to select.

• A company needs to understand concept of Total Cost of Ownership

• What is Total Cost of Ownership (TCO)
  – Estimate of direct and indirect costs and benefits related to purchase of parts
• TCO includes much more than purchase price of goods. For manufactured goods, it should include:
  – Geographical location
  – Transportation alternatives
  – Inventory costs and control
  – Quality controls
  – Reserve capacity
  – Responsiveness
  – Technological depth
Search for low cost areas for manufacturing isn’t new:

— 60 years ago New England companies moved manufacturing to South
— 30 years ago U. S. manufacturers moved high-volume to Hong Kong, Singapore, Philippines, and Mexico
— 15 years ago U. S. manufacturers started offshoring to China.
• Survey by SAP and IW Customer Research published in June 2008 *Industry Week* showed top objectives of conducting business overseas were:
  – Increase overall market share
  – Increase profitability
  – Reduce costs
  – Provide a superior customer experience
  – Increase overall revenue

Companies with >$1 billion revenue met 58-74% of objectives & companies with <$1 billion met only 37-47% of objectives
• Decision to outsource offshore is often based on faulty assumptions, such as:
  – Overseas suppliers have same morals & work ethics
  – Longer lead times won’t affect costs much
  – Overseas laws will protect IP
  – Can teach suppliers to meet quality standards
  – Communication won’t be a problem
- Travel costs won’t add much to cost calculations
- Increase in delivery and quality costs won’t be significant
- Lean manufacturing tools can be taught to suppliers
• Case studies show that these assumptions are far off from reality.

• Problems most often encountered are:
  – Variation – each lot takes weeks more time than anticipated to get to U. S.
  – Methods for producing product have gotten more complex, not less, raising costs
  – Company doesn’t know how many or even most of hidden costs that exist
  – Company loses complete control of quick changes to react to hidden costs
• Accountants measure hard costs but they don’t often measure intangible costs - often called hidden factories because they keep everyone busy generating nothing tangible or of measurable value.

• Hidden factories indirectly produce many forms of “soft” costs, such as
  – Loss of good will
  – Loss of competitiveness
  – Extended warranty costs
  – Legal costs
• Here are some of the hidden costs of outsourcing offshore:
  – Currency fluctuations
  – Managing offshore contract
  – Design changes
  – Quality problems
  – Legal liabilities
  – Travel expenses
  – Time and effort to make transition
  – Poor communication
  – Intellectual Property infringement
  – Cost of inventory
• Once manufacturing moved offshore, it rarely came back, but in past four years some business has been coming back.

• Main problems encountered were:
  – Substitution of materials
  – Inconsistent or poor quality
  – Stretched out deliveries
  – Communication problems
  – Inability to modify designs easily & rapidly
DJO Cold Therapy Unit
Supply Chain Dynamics Changing

• Component/material prices increasing
• Labor rates rising 15-20% year over year in China
• Transportation costs increasing
• Political instability
• Exchange rate variables
• Disruption from natural disasters
• U.S. $ declining
<table>
<thead>
<tr>
<th>Country</th>
<th>2011 Q2</th>
<th>2011 Q3</th>
<th>2011 Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>$39.32</td>
<td>$39.38</td>
<td>$39.65</td>
</tr>
<tr>
<td>Mexico</td>
<td>$11.26</td>
<td>$11.32</td>
<td>$11.46</td>
</tr>
<tr>
<td>S. America</td>
<td>$30.23</td>
<td>$30.80</td>
<td>$31.00</td>
</tr>
<tr>
<td>W. Europe</td>
<td>$92.16</td>
<td>$92.35</td>
<td>$94.00</td>
</tr>
<tr>
<td>E. Europe</td>
<td>$30.34</td>
<td>$30.26</td>
<td>$30.40</td>
</tr>
<tr>
<td>China</td>
<td>$12.00</td>
<td>$12.42</td>
<td>$12.90</td>
</tr>
<tr>
<td>S.E. Asia</td>
<td>$18.21</td>
<td>$18.22</td>
<td>$18.28</td>
</tr>
<tr>
<td>Vietnam</td>
<td>$8.90</td>
<td>$8.90</td>
<td>$8.90</td>
</tr>
<tr>
<td>India</td>
<td>$9.91</td>
<td>$9.93</td>
<td>$9.95</td>
</tr>
</tbody>
</table>
# Box Build Fully Burdened Cost of Labor

<table>
<thead>
<tr>
<th>Country</th>
<th>2011 Q2</th>
<th>2011 Q3</th>
<th>2011 Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>$29.82</td>
<td>$29.86</td>
<td>$29.95</td>
</tr>
<tr>
<td>Mexico</td>
<td>$8.48</td>
<td>$8.52</td>
<td>$8.67</td>
</tr>
<tr>
<td>S. America</td>
<td>$21.04</td>
<td>$22.20</td>
<td>$22.30</td>
</tr>
<tr>
<td>W. Europe</td>
<td>$74.30</td>
<td>$74.55</td>
<td>$75.50</td>
</tr>
<tr>
<td>E. Europe</td>
<td>$24.17</td>
<td>$24.19</td>
<td>$24.22</td>
</tr>
<tr>
<td>China</td>
<td>$10.30</td>
<td>$10.54</td>
<td>$10.99</td>
</tr>
<tr>
<td>S.E. Asia</td>
<td>$16.10</td>
<td>$16.15</td>
<td>$16.30</td>
</tr>
<tr>
<td>Vietnam</td>
<td>$6.26</td>
<td>$6.26</td>
<td>$6.26</td>
</tr>
<tr>
<td>India</td>
<td>$6.34</td>
<td>$6.40</td>
<td>$6.50</td>
</tr>
</tbody>
</table>

Source: Charlie Barnhart & Associates LLC
Reshoring Initiative

• The Reshoring Initiative is a way to return manufacturing jobs to the U. S.

• Initiative was founded by Harry Moser, former CEO of GF Agie Charmilles in 2010

Contact:
Harry Moser
847-726-2975

harry.moser@comcast.net
www.reshorenow.org
Reshoring Initiative’s Objectives

• Change the Sourcing Mindset:
  – From: “Offshored is Cheaper” to “Local Reduces the Total Cost of Ownership.”

• Train:
  – OEMs on why to source local and how to use TCO Calculator.
  – Suppliers (and unions) on how to “sell” local sourcing.

• Encourage production near the customer
• Do the best we can on the unlevel field now as partial alternative to protectionism.
The Industry-Led Initiative Provides

• Free Total Cost of Ownership (TCO) Software for companies & suppliers/unions
• Online Library of reshoring articles
• Media coverage of the trend: WSJ, USA Today, Industry Week, CBS, CNBC, etc.
• Regional Initiatives
• Objective tools
• A solution to today’s supply chain problems
• Motivation for skilled manufacturing careers
TCO Estimator Benefits

• Provides a single TCO for each source
• Flexible: values are 100% user selected.
• Broad:
  – 29 cost factors.
  – Via pull down menus you automatically insert:
    • Freight rates for 17 countries
    • Duty rates for parts or tools, e.g. molds
  – Current value and 5 year forecast of TCO.
• Easy to use:
  – Explanations and references to help select values.
• Free
Example: Assumptions on a Part

<table>
<thead>
<tr>
<th>Chinese unit price</th>
<th>$70</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. unit price</td>
<td>$100</td>
</tr>
<tr>
<td># units/year</td>
<td>12,000</td>
</tr>
<tr>
<td>unit weight, lbs</td>
<td>2</td>
</tr>
<tr>
<td>Shipments/year</td>
<td>6</td>
</tr>
<tr>
<td>product life, yrs</td>
<td>5</td>
</tr>
<tr>
<td>Packaging*</td>
<td>1%</td>
</tr>
<tr>
<td>Payment on shipment</td>
<td>Yes</td>
</tr>
<tr>
<td>Quality*</td>
<td>2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product liability risk*</th>
<th>0.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP risk*</td>
<td>1.9%</td>
</tr>
<tr>
<td>Innovation*</td>
<td>0.5%</td>
</tr>
<tr>
<td>Trips/yr</td>
<td>2</td>
</tr>
<tr>
<td>Prototype cost*</td>
<td>$5,000</td>
</tr>
<tr>
<td>Country political instability risk*</td>
<td>0.4%</td>
</tr>
<tr>
<td>Wage inflation, annual*</td>
<td>8%</td>
</tr>
<tr>
<td>Currency appreciation, annual*</td>
<td>5%</td>
</tr>
</tbody>
</table>

* Chinese differential vs. U.S.
TCO Comparison Example: a Moderate Labor Content Part
Cumulative Cost by Category

CUMULATIVE COST BY CATEGORY, YEAR 0: PARTS

CUMULATIVE COST, U.S. $
Sourcing Moving Home Slowly

• 20% of companies brought sourcing closer in 2009

• Of which 59% reshored

Source: Supply Chain Solutions, Grant Thornton, Jan. 2010 survey. 312 responses.
Freeman Schwabe Machinery: hydraulic die cutting presses

From Taiwan to Cincinnati, OH
Ability to Control Own Destiny
Warranty Reduced by 90% on Custom Presses
Improved Speed to Market – at Least 30 days
Thus Far Created 17 Jobs
Builds Employee Skills & Morale
Restoring Long-Term
“Made in USA”
Heritage for Schwabe
Presses
Bailey Hydropower - hydraulic cylinders

- Had 100,000 sq. ft. in Chennai, India
- Reshored to 60,000 sq. ft. in Knoxville, TN
- Reasons:
  - Fast delivery vs. 5 wks on the water
  - Fewer supply chain problems
  - If a quality problem, no more bad units in route

Source: Knoxvillebiz.com Ed Marcum 8/7/10
ATMs

• Returned from China, India and Brazil to Columbus, GA
• 350,000 sq. ft. factory
• 900 employees
• Reasons:
  – Slow response from contract suppliers, esp. lower tiers
  – Chinese wages up
  – Eliminate silos by having mfg. near engineering and customers

Source: 1/27/10 Strategy-Business.com Manufacturing: Backshoring on the rise
• A 2010 survey of North American manufacturing executives by Accenture found:
  – 61% are considering shifting from offshore to closer to centers of demand
  – 59% intend to pursue new supply options
  – 67% ranked proximity to customers’ markets top factor
  – 57% noted increased cost of logistics & transportation costs
A November 2011 survey conducted by Cook Associates Executive Search found:

- 85% of C-level & VP-level executives see certain operations returning to U. S.
- 37% cited overseas costs increasing
- 19% cited logistic concerns
- 36% cited other reasons including
  - Quality and safety concerns
  - Economic/political issues
  - Patriotism
  - Overseas skills shortages
• There is a growing realization that when it comes to quality and location, location may be best guarantee of all
• It’s hard, very hard, to outsource quality
• A growing number of manufacturers are realizing that “you get what you pay for”
• Applying good quality principles takes money, education, and experience, which are in short supply in low-wage countries.
Top 10 Supply Chain Predictions 2011

# 5. “In the context of taking a broader view of total cost, supply chain organizations will gain a new appreciation for shortening lead times through profitable proximity sourcing strategies.”

Reasons:

● Improve overall service levels
● Retain key customers
● Focus on the “costs” of long lead times
● More balanced approach to global sourcing

Source: Simon Ellis, Supply Chain Strategies, with IDC Manufacturing Insights 2/2/11
Manufacturing Is Expected to Return to America

• “We expect net labor costs for manufacturing in China and the U.S. to converge by around 2015”
• “take a hard look at the total costs”
• Labor cost 20-30% of unit costs and will be only 30% below U.S. level. 10% savings exceeded by other offshoring costs.

Source: Boston Consulting Group press release 5/5/11
Reshoring is fastest & most efficient way to strengthen the U.S. economy

- Reshoring breaks out of:
  - The economic zero-sum-game of tax/borrow and spend.
  - The increases in consumer prices of relying solely on currency changes.
  - The waiting-for-policy-decisions problem.

- Assures that the pie grows, to the advantage of all Americans.

- Grows the pie by taking back what we earlier lost.

- Focuses on the manufacturing sector which has suffered so many job losses for decades.

- More efficient than exporting, stimulus programs or tax reductions.
Potential benefits

• For the U.S.:
  – Eliminate trade deficit ~ $600B/year
  – Create 3 million manufacturing jobs
  – 9 million total jobs ► 4% unemployment
  – Budget deficit impacts: more than is likely from debt limit plan

• For U.S. companies:
  – Stronger home market
  – Reduced chance of protectionism hurting world sales
  – Increased sales as “Made in USA”
Outsourcing will Continue

• Offshore outsourcing will continue for next 5-10 years, especially for multinational companies that have products to sell within that country

• Growing interest in outsourcing of engineering, software development, marketing, sales, and procurement

• "Desirable" locations for outsourcing will change over time
Contact: Michele Nash-Hoff
Email: michele@savingusmanufacturing.com
Phone: 619-265-7607
Author of Can American Manufacturing Be Saved? Why we Should and How we Can
www.savingusmanufacturing.com