A new product safety standard from the International Standards Organization (ISO) is going to have a big impact on all global manufacturers and companies that buy from them.

The “Consumer Product Safety — Guidelines for Suppliers” standard (ISO 10377) allows retailers and OEMs to trace every part and component of a product through the supply chain to determine exactly where a defect or a counterfeit has occurred.

The standard “will affect all suppliers irrespective of their role in the supply chain and all types of products whatever the origin,” says ISO. The standard requires that every item in a product be “traceable and carry a unique identifier that is labeled, marked or tagged at the source,” says the standards group. “This also goes for raw materials, components and sub-assemblies. Suppliers should insist on properly identified products from vendors and be able to trace products back to their direct source and identify the next direct recipient of the product in the supply chain.”

The standard applies to all consumer products except foodstuffs, drugs and cars. It was spurred in part by the recall of unsafe toys containing toxic lead paint made in China and sold to millions of Americans. The standard addresses unsafe and counterfeit cosmetics, electrical appliances, sporting goods, furniture and many other products that have caused fires, choking, lacerations, falls, electrocution, strangulation, entrapment, explosions, suffocation, collapse, poisoning, amputations and drowning.

ISO 10377 intends to build safety and accountability into a product from the design stage by providing guidance “for the identification of hazards, reliable risk assessment and steps to reduce potential product risks,” says ISO. “It serves as a benchmark for eliminating hazards that would be unacceptable during product use, delivering consistency across the board and establishing a culture of trust across all company functions.” The standard is aimed at small and medium-sized enterprises “as well as larger firms and offers risk assessment and management techniques for safer consumer
U.S. Military Is Vulnerable To Cyber Attack

The U.S. defense information technology and communications infrastructure — including the country’s nuclear bomb capability — could easily fall prey to a debilitating attack “from a sophisticated and well-resourced opponent utilizing cyber capabilities in combination with all of their military and intelligence capabilities,” according to the Pentagon’s Defense Science Board (DSB). The conclusion of the DSB board investigation of U.S. vulnerabilities was based on the “success adversaries have had penetrating our networks” and the fact that DOD and its contractors “have already sustained staggering losses of system design information incorporating decades of combat knowledge and experience that provide adversaries insight to technical design and system use,” says DSB.

The cyber threat, it adds, is “insidious” and “serious with potential consequences similar in some ways to the nuclear threat of the Cold War.” It states: “To ensure the President has options beyond a nuclear-only response to a catastrophic cyber attack, the DOD must develop a mix of offensive cyber and high-confidence conventional capabilities. . . Nuclear weapons . . . remain the ultimate response and anchor the deterrence ladder.”

Yet the Defense Department has not yet addressed America’s vulnerabilities. All of the military’s information and communications networks — as well as the country’s civilian IT infrastructure — “are built on inherently insecure architectures that are composed of, and increasingly using, foreign parts,” the DSB reports. “While DOD takes great care to secure the use and operation of the ‘hardware’ of its weapons systems, the same level of resource and attention is not spent on the complex network of information systems that are used to support and operate those weapons or critical IT capabilities embedded within them.”

As such, it is currently “impossible” for DOD “to completely defend against the most sophisticated cyber attacks,” says the DSB. Addressing this danger “is analogous to complex national security and military strategy challenges of the past, such as the counter U-boat strategy in WW-II and nuclear deterrence in the Cold War.”

Although the United States never eliminated these threats, it did mitigate them. The same needs to happen with cyber.

A new strategy that involves a refocused intelligence capability and improved cyber defenses must be adopted in order for the United States to survive “a catastrophic attack,” says the DSB. The country must focus on essential assets — such as its nuclear arms complex — and not try to protect “all of our military systems from the most advanced cyber threats,” it adds. Trying to protect all of the country’s military systems “is neither feasible nor affordable.”

DOD needs to lead in cyber offensive capabilities so that it can adequately fight a cyber war waged against the United States. “Preparing for full-scale force-on-force cyber battle is not well understood,” says the DSB. “Challenges range from the scale of numbers of expected sorties to uncertainty of triggering mechanisms, trust and capability recovery timelines and potential blowbacks of attacks all happening within the fog of war. To prepare, DOD must first begin to understand the full complexities of cyber war.”

DOD has a lot to figure out, such as who would be in charge of offensive cyber attacks. “DOD needs to significantly increase the number of qualified ‘cyber warriors’ and enlarge the offensive cyber infrastructure commensurate with the size of the threat,” says the DSB, which says it is “especially concerned” with developing top-tier individuals who can be certified to perform at the elite or extreme cyber-conflict level. “The United States needs such world-class performers in substantial numbers — some of whom may not be eligible for security clearances.” DSB concludes: “It will take time to build the capabilities necessary to prepare and protect our country from the cyber threat. We must start now!”


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**DSB’s Estimated Investment Requirements For Cyber Security**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>ROM</th>
<th>Timeframe</th>
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<tbody>
<tr>
<td>1 &amp; 2: Protect the Nuclear Strike as a Deterrent (for existing nuclear armed states and existential cyber attack).</td>
<td>$$$$$</td>
<td>36-60 mo.</td>
</tr>
<tr>
<td>3: Determine the Mix of Cyber, Protected-Conventional, and Nuclear Capabilities Necessary for Assured Operation in the Face of a Full-Spectrum Adversary.</td>
<td>$</td>
<td>12-24 mo.</td>
</tr>
<tr>
<td>4: Refocus Intelligence Collection and Analysis to Understand Adversarial Cyber Capabilities, Plans and Intentions, and to Enable Counterstrategies.</td>
<td>$</td>
<td>12-24 mo.</td>
</tr>
<tr>
<td>5: Build and Maintain World-Class Cyber Offensive Capabilities (with appropriate authorities).</td>
<td>$</td>
<td>6-18 mo.</td>
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<tr>
<td>6: Enhance Defenses to Protect Against Low and Mid-Tier Threats.</td>
<td>$</td>
<td>12-24 mo.</td>
</tr>
<tr>
<td>7: Change DOD’s Culture Regarding Cyber and Cyber Security.</td>
<td>$</td>
<td>12-24 mo.</td>
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ROM Costs: $<500/yr, $500-$1000/yr, $1000-$5000/yr, $5000-$10000/yr.
There is a large and growing market for lithium-ion batteries, with more than 10 billion units of the 18650 cell (18 mm in diameter and 65 mm in length) being manufactured worldwide in 2010. Almost all of those batteries are made in Asia, with the United States importing almost one-third of that output.

"Because these highly automated processes require more highly skilled personnel, the substantially lower wages paid to unskilled workers in China are not a major competitive factor in the siting of these production plants," says the study’s conclusion.

Comparing costs of battery cell production in the United States and China "indicates that highly automated production processes can make U.S.-based advanced battery manufacturing cost competitive with Chinese production and suggests that large-scale production of advanced batteries may be economically feasible in the United States."

The United States has some advantages. Land costs are significantly lower in much of the United States, ranging from $20 to $80 per square meter in Alabama and from $14 to $50 per square meter in Tennessee and North Carolina. In China, average land costs have risen to $110 per square meter and, while manufacturers can find lower-cost land in the interior of China, "the savings in real estate costs must be weighed against higher transportation costs and more limited infrastructure," says the study.

Construction costs average $805 per square meter in the interior section of China, compared to $1,700 per square meter in the United States. So for a facility that would produce 35 million lithium-ion batteries per year, construction costs would be $54 million in the United States and $33 million in China.

Equipment and material costs are identical in the United States and China, whereas liability costs are higher in America. Utility costs are rising fast in China, up to between $0.12 to $0.18 per kWh, compared to an average of $0.065 per kWh for industrial customers in the United States. For a factory that produces 350 million cells, a plant in the United States would spend $1.5 million less per year on electricity compared to one in China.

The American Trucking Association says moving goods in the United States cost $1.75 per mile, a figure that includes driver salaries, truck leases, insurance, tolls and fuel. Trucking costs in China range from $2.50 to $3.00 per mile, due mainly to high road tolls and fees. Transportation costs do not include freight and customs costs associated with shipping a product from China to the United States, which adds about 4.5 percent to the unit price of a 18650 lithium-ion cell.

Nor do the costs of production in China include sending executives from the United States to China to oversee operations. As for labor costs, they amount to 3 percent in a fully automated, 350 million cell-per-year production plant in China, versus 12.5 percent of the total cost in the United States.

In developing a model that takes into account all of these cost differentials, the researchers find that China can produce batteries at a smaller facility (one that produces 35 million cells per year) at a cost that is nearly 25 cents lower than a U.S. competitor. "For a plant of this size, China remains the most cost-effective site at the present time," say the researchers. "However, the gap in costs between China and the United States narrows to about 7 cents per unit for plants producing 350 million cells per year. This difference decreases slightly when comparing U.S.-produced cells with those made in Chinese plants that comply with manufacturing standards.

(Continued on page four)
EPI: Tallying World Trade By Value Added Is A ‘Flawed’ Approach

The World Trade Organization and the OECD’s effort to start tallying global trade based on value added is “fundamentally flawed,” according to Economic Policy Institute analyst Robert Scott. The WTO has spent years developing its “Made in the World” data series that, it claims, would reduce the U.S. trade deficit with China by up to 25 percent, based on the fact that many of the components in Chinese goods are produced in other nations. The WTO says if the world adopted a value-added measure for trade, it would mollify protectionists who argue that China and others are involved in unfair trade practices.

But the value-added measure of trade “fails to account for rapid technological change and the fact that China is rapidly moving up the value chain and increasing the domestic content of its exports,” says Scott. It also depends on “flawed Chinese data on its own trade flows and should not be used in anti-dumping or other types of fair-trade cases.”

China has under-reported its global trade surplus by between 117 percent and 250 percent between 2005 and 2009, and the WTO-OECD estimates do not accurately reflect the flow of Chinese exports coming into the United States through third countries,” says Scott. The United States “absorbed $54.2 billion to $77.9 billion per year in additional, indirect imports originating in China and imported from the rest of the world between 2005 and 2009 that were not reflected in the OECD estimates,” writes Scott. “When indirect imports are included, U.S. value-added trade with China exceeds conventional measures of the gross bilateral trade deficit in this period.”

http://www.epi.org/blog/added-trade-implications-trade-policy/

Americans Start Spending Again

American households are back to spending money, and a lot of it, according to a survey done by Scott Baker, a data scientist at software company Intuit. Total household spending has increased by 9 percent over what it was in 2009, with the average household monthly spending at $4,220, up from $3,870.

Spending on groceries is up by 17 percent, only because Americans are spending more than all of that extra money at premium grocery stores like Whole Foods Market. Spending at premium grocers is up by 20 percent in four years, while it is down by 3 percent at general grocery stores. Spending at restaurants is up by 11 percent. Spending on gasoline is up from $110 a month in 2009 to $198 a month in 2013.

Monthly household spending on healthcare is up by 30 percent, with people aged between 41 and 55 spending $300 each month and younger people (26-31) spending $252 per month (up from $179 per month in 2009).

"Men consistently spend $600 to $700 more a month than women," writes Baker. "In the first three months of 2013, men spent more on alcohol (37 percent), entertainment (27 percent), eating out (29 percent), gas (19 percent) and overall shopping (6 percent). However, women spend 21 percent more on clothing and apparel."

Battery Cost Structure...(Continued from three)

U.S. operating practices.”

This cost differential, they conclude, “is not significant enough to influence a siting decision, especially given the number of potential drivers of cost increases in China, including but not limited to: fluctuations in exchange rates; increases in prevailing Chinese wages; limited availability of highly skilled labor especially at the supervisory and management levels; disparities in quality; and unexpected supply chain disruptions. [It] is extremely important both for the individual manufacturer and for the U.S. economy as a whole that these siting decisions be based on updated, thoroughly researched, industry-specific information. The authors believe that, looking toward the future, U.S. manufacturers will find it increasingly attractive and profitable to build highly automated advanced battery manufacturing facilities in the United States, nearer their R&D facilities and closer to their ultimate customers.”

The paper, “Cost Comparison of Producing High-Performance Li-ion Batteries in the U.S. and in China,” appeared in the Journal of Power Sources. Brodd can be reached via e-mail, rbrodd@gmail.com.
Commercial Real Estate Association Doesn’t Expect Much Of Reshoring Trend

The mass exodus of manufacturing from the United States has come to an end, but the reshoring trend will not create demand for any net new space devoted to manufacturing over the next seven years, according to Commercial Real Estate Development Association. Industrial real estate “will remain stable in terms of the inventory — and that is important because it is not going to continue to decrease,” says Nicolas Ronderos, New York Director of the Regional Plan Association, which conducted the forecast for the Commercial Real Estate Development Association. “But our analysis is sobering in that it shows that we expect a stabilization, and not, as others have reported, growth” in the U.S. manufacturing sector.

Over the short term, reshoring might slightly increase the amount of real estate needed by the industrial sector. “But we have lost 6 million manufacturing jobs over the last decade, significantly more than the 300,000 to 500,000 manufacturing jobs that have been created” since 2010, Ronderos notes. “Over the long horizon, it doesn’t get us back to where we were.”

The Commercial Real Estate Development Association projects that the U.S. industrial sector will lose an additional 52 million square feet of space between 2006 and 2013, to a total of 10.2 billion square feet devoted to manufacturing.

Some industries are expected to increase the amount of space they need, including fabricated metals, plastics, wood, nonmetallic minerals and furniture products, says the forecast. “The industries projected to decrease their use of manufacturing space are computer and electronic products, chemical products, apparel, electrical products and textiles,” says the forecast.

Real estate devoted to manufacturing has been in sharp decline. “Of the 21 manufacturing industries surveyed, only three — food products, beverage and tobacco products, and transportation equipment products — saw growth in their use of square feet between 1998 and 2006,” notes the Commercial Real Estate Development Association assessment. “The remaining 18 industries used less space in 2006 than they did in 1998 and quite a few of these industries experienced significant declines, especially electrical equipment, appliances and components, machinery, primary metals and textile mills. This decrease in space usage between 1998 and 2006 amounted to 20 percent of the total manufacturing space used in 1998.”

By far the biggest decline occurred in electrical equipment, appliances and components, which fell from more than 1.3 billion square feet of space in 1998 to only 300 million square feet of space in 2006. The amount of real estate space needed by the chemical industry declined from more than 1.2 billion square feet to just over 600 million square feet of space.

Over the next six years, the amount of space needed by some industries will shrink considerably. Computer and electronic manufacturing is expected to lose 35.5 million square feet; chemical manufacturing could experience a loss of 30.3 million square feet; apparel manufacturing could be down by 22.2 million square feet; textile mills (a loss of 19.4 million square feet); paper manufacturing (a loss of 19 million square feet); and printing (a loss of 14 million square feet).

Other industries are projected to experience an increase in their real estate needs: fabricated metal manufacturing (an increase of 86.5 million square feet); plastics and rubber manufacturing (up 61.5 million square feet); food product manufacturing (an increase of 45 million square feet); nonmetallic mineral production manufacturing (an increase of 33 million square feet); and furniture manufacturing (an increase of 26 million square feet).

Nonetheless, the net amount of square feet needed by the manufacturing sector will decline by 36.5 million square feet by 2020, according to the forecast.

Over the next decade, industries that do reshore production will likely move it near metropolitan areas so that companies “can decrease transportation costs that have risen steadily during the years,” says the forecast. “Manufacturers want to be closer to population centers so their finished products are closer to consumers and they have access to both skilled and cheap labor.”

The commercial real estate trade group predicts an increase of new manufacturing space requirements in the Southeast and Far West for the wood products and transportation equipment industries. The Great Lakes and Southeast regions will see demand for new space from the nonmetallic mineral products, metal products, fabricated metal products, furniture, food, and plastics and rubber products industries. The forecast predicts that no new manufacturing space will be added in the Northeast.
will go off at BLS and it will go on on our site,” says van Ark. A few of the BLS staff will make the transition to The Conference Board and continue to run the data series, which provides an apples-to-apples comparison of workers’ wages from all over the world. It was the only program in the world that compared wages of American manufacturing workers to those in China, India and Mexico, as well as high-cost countries in Europe and Asia. The latest research indicates that manufacturing workers in China earn only 5 percent of what an American manufacturing worker earns, while a Mexican manufacturing worker earns a scant 6 percent. Private-sector consultants have made claims that Chinese wages are quickly catching up to American wages, but the BLS data indicate otherwise.

The Obama administration has for three years tried to eliminate the program, and was able to do so this year by using the rationalization of budget “sequestration.”

Even Eric Molina, acting chief of the Division of Management Systems at BLS said the database is essential. In a Federal Register “Action Notice” describing the program’s demise dated June 25, 2013, he wrote: “ILC data were used to assess United States economic performance relative to other countries, as well as to evaluate the competitive position of the United States in international markets.”

Had The Conference Board not stepped in, the data series, which includes manufacturing productivity, unit labor costs, consumer prices, wage rate and employment and unemployment statistics for up to 32 countries, would have disappeared, along with the methodologies for gathering and interpreting the data. The Conference Board will continue to run the program as a public service at no cost.

The Conference Board took over the U.S. leading Economic Index program from the U.S. Department of Commerce in 1996, but that was after the Commerce Department put it out for tender. This time, nobody showed any interest in the ILC program, save for The Conference Board. “We are one of the few organizations that has the mission and resources to take a public database like this,” says van Ark. “We were not surprised that they weren’t queuing up at the BLS to take it over. We were the only ones as far as I know.”

But it’s isn’t cheap — and The Conference Board will seek foundation support to keep the program alive. “We need to find a sustainable financial model for this, given the fact that this is largely public information, and that is a challenge.”

Manufacturers are far ahead of service companies in using quality management systems. According to a survey conducted of almost 2,000 organizations in 22 countries, ASQ found that 78 percent of manufacturing companies use ISO as a quality framework, versus 52 percent of service-based organizations. “Internationally, Finland has the lowest percentage of organizations that use ISO as a quality framework, 56 percent,” says ASQ. The Czech Republic was the leader — at 83 percent of organizations using ISO. In the United States, 60 percent of organizations use ISO as a quality framework.

The survey found that all companies generating more than $10 billion a year in revenue provide quality training to staff working on quality related activities, including lean, Six Sigma, ISO, auditing and quality management. Compared to service organizations, manufacturers provide twice as much training in the areas of Six Sigma and lean, and one-third more training in the areas of auditing and ISO. In Germany, 77 percent of the organizations provide ISO training and 82 percent provide general quality management training — the highest of any group of organizations. The “ASQ Global State of Quality Research: Discoveries 2013,” is located at www.globalstateofquality.org.

The solar industry has not saved the world from burning fossil fuels. In fact, since 2000, the electricity needed to produce solar panels has exceeded the electricity that has been generated by solar panels. “With continued technological advances, the global PV industry is poised to pay off its debt of energy as early as 2015 and no later than 2020,” according to Stanford University researcher Michael Dale. “Despite its fantastically fast growth rate, PV is producing — or just about to start producing — a net energy benefit to society.”

The amount of energy required to produce solar panels “is intense,” says Dale. Silica rock must be melted at 3,000 degrees F using electricity commonly generated in coal plants. “The PV industry ran an energy deficit from 2000 to now, consuming 75 percent more energy than it produced just five years ago,” says the research.

But new panels are using less silicon and more thin-film technologies that require less materials like copper, zinc tin and carbon. If the current rapid growth rate of solar installations continues, then by 2020 about 10 percent of the world’s electricity could be produced using photovoltaics. “At today’s energy payback rate, producing and installing the new PV modules would consume around 9 percent of global electricity,” says the study. “However if the energy intensity of PV systems continues to drop at its current learning rate, then by 2020, less than 2 percent of global electricity will be needed to sustain growth of the industry.”
America’s Offshoring Debacle: Accounting For What Happened

When it comes to the reshoring debate, numbers help separate emotion from fact. Evidence is mounting from surveys and direct statements by leading manufacturers such as General Electric and Ford that the flow of U.S. production overseas is leveling off and that domestic production is on the rise. There is a lot of emotion being generated about this, as there was when companies departed from American shores. There is also some mystery and uncertainty about why this trend is actually happening and if it can be sustained.

Manufacturers are reinvesting in the United States as a means to more efficiently serve the world’s largest free market. That’s why they are back. They are not returning on an impulse or because of public pressure. But unlike when they left, this time they are measuring why they should return.

Most manufacturing companies that left the United States — with a goal of shipping products back — did not do much accounting. They based their decisions largely on favorable piece-part costs (from low-detail bids) and on cheap, unburdened foreign-labor rates. What they encountered offshore was an indirect labor burden of five-to-one; constant turnover of staff, training costs and wage hikes; escalating shipping fees; and an impaired asset base back home. Travel and other expenses were hidden in corporate budgets and were never placed on foreign soil. Once their overheads started to skyrocket and operating profits plunged, however, those companies felt the “real” math like a stomach virus.

The lesson: even if a company chooses not to practice total cost of ownership (TCO), it will live or die by it anyway. So better do TCO with the joy of playing a favorite board game, or watch profits tumble and competitors step ahead.

How can you measure the right things now and create a sustainable path? If your company is still silo based with design and procurement on opposite ends, then freely available TCO spreadsheet approaches, such as those championed by Harry Moser from the Reshoring Initiative will allow you to be directionally correct in more of your forward assumptions. The next step is to build an integrated team that drills down into key operational data and periodically reline and refresh the analysis.

My company, Viatran, which is a worldwide maker of pressure and level transmitters for oil and gas services, steel production, injection molding, die casting and chemical production industries, is using TCO aggressively. For us, total cost of ownership is the sum of the piece part, associated logistics and all of the soft costs inclusive of the decision to source an item into a specific geography. (In our growing markets, that means Malaysia, China and the U.S., equally.) We never debate “offshoring” against “reshoring” or “inshoring,” although we quantify and act on geographic risk when protecting our intellectual property. We are numbers-driven. What we are doing — because the numbers generally point us in this direction — is adopting a Build-Where-You-Sell model for our business.

Build Where You Sell is what is increasingly happening in America and elsewhere. This is the essence of reshoring. Seen in this light, it will be much easier to accept the new math of TCO, whether you are a company or a nation setting policy.

Our company is expanding its definition of TCO to include not only the physical length of the ultimate supply-to-demand fulfillment line, but also the associated lead times of the entire process. That’s order-to-cash complete, full explosion of the bill of materials (and suppliers’ BOMs) in order to understand the total amount of time it takes to respond to a demand signal and the total amount of material liability within the supply pipeline.

BY JOHN BIAGIONI

Viatran believes that, just as we try to shorten the demand-fulfillment chain, we should also shorten the overall lead-time of the supply fulfillment chain. This will result in more operating profit. It will also lead to better management of that operating profit because we won’t have to invest as much in inventory Why? Because lead time is a component of ALL replenishment systems, whether it is safety stock, min-max, Kanban or e-Kanban.

If all this sounds like a regionalization “reshoring” pitch — it is. Currently, regional manufacturing and distribution is the quickest way to fulfill demand while minimizing risk. We are always striving to get closer to the customer — and in many of our instrumentation markets speed of delivery is the order winner.

Our goal is to be the most responsive business within the most cyclical markets, and to deliver the exact price and quality the market needs. This takes a concerted effort to reduce size count, “right-tolerance,” select commercial off-the-shelf (COTS) materials and components when they perfectly match requirements, lean the organization, do TCO, and more!

What is the secret sauce to ending the silos between design and procurement? TCO gives a company hard insight into the lifecycle of costs. There is a ledger that starts and ends with decision-enriching numbers. It helps one see the organization as a whole. But what is even more startling is the impact that robust product design has on operating profit and efficiency in every upstream department. Like the hidden costs that damaged the offshore movement, there are hidden efficiencies from a numbers-driven design effort that ignite cascading and far-reaching benefits.

Our teams benchmark the Viatran business process using TCO, and we benchmark the product creation process using design for manufacture and assembly (DFMA). Consideration of total cost of ownership is said to go back to Napoleon and his concern for durability in cannons. TCO is mentioned in American business literature from the 1940s on.

The Boothroyd Dewhurst product simplification and early costing tools

(Continued on page eight)
products,” says ISO. “Safer products reduce liability.”

The new standard has four “pillars.” The first is in promoting a product-safety culture across organizations by requiring record management and document control, creating product monitoring and traceability processes and promoting corporate cultures that embrace continuous improvement. The second involves improving the design of products by requiring that manufacturers provide end users with any warnings and instructions concerning any risks. The third involves safety in the production of a product by promoting basic safety principles across supply chains through design validation of prototypes, materials and tooling, and controlling product specifications and component assemblies, testing samples and auditing production runs. And, finally, the standard “specifies the responsibilities incumbent on the importer, distributor and retailer to ensure that the product ordered continues to meet all the safety requirements,” says ISO. “This is done through pre-purchase assessments and ongoing data collection once the product reaches its users to identify any product hazards that were missed during earlier assessments.”

The standard allows suppliers to “insist” that their vendors provide them the ability to track products back to their direct source, as well as clearly identify “the next direct recipient of the product in the supply chain,” says ISO. “ISO 10377 asserts that traceability will meet business needs, such as regulatory compliance and product safety evaluations and will improve the control, efficiency and cost of a product recall, if required.”

Companies will be required to keep all of a product’s documentation, including those related to its design, production and management in the market. “A document retention program might specify how long users need to hold on to a document, but it should also state what product documents to keep,” says ISO. “Suppliers should be able to recognize a product’s development through its documentation and trace its design, risk assessment, hazard analysis and testing decision back to its conception.”

The new standard intends to align product recall practices worldwide by providing “one global language for product recall communication,” says ISO. The standard includes what companies must do when there is a recall, such as providing refunds, retrofits, repairs, replacements and disposal of products that are defective, along with requirements on how to notify the public when there is a recall.

“From the beginning, the primary motivating factor was global consumer protection,” says ISO. “We were well aware of the expansion of local businesses into the global marketplace, and the significant competitive advantage that compliance with international standards can offer entrepreneurs. We need international guidelines that every type of business in every country can implement and follow.”

The new standard means that OEMs will have more involvement in their product’s development — “be it at the raw materials, components, sub-assembly preparation, design, manufacturing or distribution stage,” says ISO. “Creating a prototype and checking its production readiness reduces the likelihood of defective products during a production run. Hazard analysis then points out any remaining hazards that might warrant a warning and instructions to the end user.”

China leads the world with the number of unsafe products that have been recalled, with 2,124 recalls. The United States has had 685 major product recalls, followed by Taiwan at 299, Mexico at 106 and Hong Kong at 91, according to the Consumer Product Safety Commission.

The new standard does not address the use of unsafe chemicals in products, but ISO says that it will be working with the International Conference on Chemicals Management (ICCM) on a program to identify “actions to improve access to information on chemicals contained in products,” says ISO.

The ICCM “has mandated the United Nations Environmental Program to lead a project aimed at facilitating and guiding the provision, availability and access to relevant chemicals-in-product information throughout the product life cycle,” says ISO. A proposal with regard to the labeling and tracking of chemicals will be presented in 2015. Pilot projects will commence in product sectors such as toys, building materials, textiles and electronics, says ISO.

Accounting For Reshoring... (From seven) defined the concurrent engineering movement of the late 1980s. Each is a proven business method in its area. Each is low-risk. Both need to be institutional for global companies.

What we have learned from DFMA is to simplify everything that shows a measured benefit, including our TCO. The vice presidents, product managers, operations personnel, engineers and supply-chain personnel all meet as an integrated group to score designs (ours and competitors’ products) with DFMA and look past the BOM and ERP readouts to see detailed estimates for manufacturing: tool-wear rates and material waste, process times and labor impact — and everything else that is missed from offshore bids.

Part consolidation oils the gears of our Lean and value-engineering programs. Fewer parts, easier manufacture, fewer and shorter supply lines equals more money. When you have part-count reduction as a mantra, you don’t have to chase after cheap labor. You can build where you sell. Human overhead is more a knowledge asset in a world where metrics matter and teams see excellence and cost avoidance as everyone’s work.

Our future steps will be to fully understand the role that design plays in generating business profits. I strongly believe that, given the problems encountered in the last decade or so by U.S. manufacturing, there will be a new emphasis on the numbers that count.

— John Biagioni is General Manager of Viatran, a Dynisco Company
Innovation And Manufacturing: You Can’t Have One Without The Other

BY RALPH GOMORY

Manufacturing was once widely recognized as the outstanding strength of America and the basis of its prosperity, but manufacturing has a more recent history of being almost a pariah. This newer view equated computer chips with potato chips, asserted that manufacturing is better left to others, and suggested that the United States is actually fortunate to be losing manufacturing, replacing it with design, research and services.

But many Americans, witness to the loss of jobs and the devastation of what had been major industrial centers, have not been converted to this new perspective. Polls have clearly shown that most Americans still think that manufacturing matters, and these polls had an impact last year at election time. Politicians of every stripe suddenly rediscovered manufacturing, with high-ranking government officials quickly writing respectable economic studies that cast a more favorable light on manufacturing.

With the 2012 elections over, the public discussion about manufacturing has changed course, with the loss of manufacturing being addressed in a different way. Since Americans can’t be persuaded that manufacturing doesn’t matter, they hear instead: “Don’t worry, manufacturing is coming back.” There has been a steady stream of articles and studies announcing — on the flimsiest evidence — that manufacturing is returning to America. But the claims are closer to fiction than they are to fact.

Innovation, in contrast with manufacturing, is immune to the ups and downs. Day in and day out, innovation is everybody’s favorite economic subject, with constant claims that America must innovate to survive; that America must innovate to compete in the global economy; and that Americans can do it because Americans are inherently innovative.

This discussion of innovation is backwards. It does not make sense to talk about innovation as if innovation is an end in itself. The country can innovate until the cows come home, but if it can’t translate that innovation into something substantial — something that adds to the economic output of the United States — it

(Continued on page 10)

NIST Steps Up To U.S. Industrial Competitiveness Plate

The National Institute of Standards and Technology is getting ready to establish two new research and development centers aimed at boosting the competitiveness of American industry. The first will be a new Center for Advanced Communications in Boulder, Colo., that will focus on boosting U.S. leadership in wireless innovation. The center will create test beds for the measurement and performance of advanced communications technologies; it will conduct research and test digital and quantum communications systems; and it will work with international standards organizations “to help ensure compatibility of U.S. advanced communications efforts with the global marketplace,” says NIST.

The standards agency has also opened a grant competition to create an “Advanced Materials Center of Excellence” aimed at accelerating the discovery and development of advanced materials “through innovations in measurement science and in new modeling, simulation, data and informatics tools,” says NIST. The center will be funded at $5 million per year for five years, with the possibility of renewed funding for another five years. The competition is open to institutions of higher education and nonprofit organizations. Proposals must include a consortium of companies and state and local governments.

The materials center will work on high-performance alloys, ceramics, polymers, glasses, nanocomposites and biomaterials — “a key factor in global competitiveness,” says NIST. These new materials will “drive the development of new products and new technical capabilities, and can create whole new industries. However, currently, the average time from laboratory discovery of a new material to its first commercial use can take up to 20 years.” The goal is to reduce that time by half by substituting trial and error with new research tools, such as massive materials databases, computer models and computer simulations.

“The new center will provide mechanisms to merge NIST expertise and resources in materials science, materials characterization, reference data and standards with leading research capabilities in industry and academia for designing, producing and processing advanced materials,” says the agency. The center is part of the Materials Genome Initiative (http://www.whitehouse.gov/mgi) announced in 2011. Information on the solicitation is located at www.grants.gov under funding opportunity number 2013-NIST-ADV-MAT-COE-01. The closing date is August 12, 2013.
Innovation Needs Mfg....

(Continued from previous page)

does little for America. If the U.S. strategy is to generate new ideas that other countries acquire as the foundation of new industries or to gain an advantage in old ones, then Americans will incur the expense and glory of being innovators, but other nations will reap the economic benefits. And this is exactly what is happening now.

In this era of globalization and of worldwide profit seeking, global corporations are strongly motivated to move their manufacturing abroad where there is cheap labor for labor-intensive industries and where there are government subsidies for industries that are not dependent on cheap labor. Manufacturing innovation goes abroad with manufacturing.

Innovation in manufacturing matters: Innovation in manufacturing is what turns ideas into things that change the world. It took the steam engine 150 years of steady improvement to evolve from being something that barely worked into a machine powerful enough to create the industrial revolution. Sixty years of continuous miniaturization of the transistor has produced a cell phone that can be carried in a shirt pocket with computing power that once required several large rooms to hold.

In a less spectacular way, the manufacture of steel, paper, glass or automobile tires follow the same path. There are ideas and then innovation in the manufacturing process steadily improves them. Much of the progress and the competition in manufacturing is based on incremental innovation whose cumulative effect is enormous. But manufacturing’s steady improvement also means that once a country loses an industry it’s hard to get it back. Workers’ skills are out of date and the underlying networks of suppliers have gone out of business.

This picture of innovation — tied to manufacturing and incremental in nature — is very different from the popular picture of a few dedicated young programmers putting together a startup company that sweeps the world. But it is this popular picture of innovation that dominates many discussions on how to increase innovation in America.

Why can’t we just stick to this attractive startup picture? Do we really need the hard work of manufacturing and manufacturing innovation in America? We know we do need manufactured goods that are a part of daily life, but isn’t there some other way to get the manufactured goods we need?

There are three ways to get them: produce them in America; trade something else we produce for them; or buy them with dollars that don’t get spent on American goods but simply remain in foreign hands as future claims on our economy. Today the third option is increasingly what we do.

The Chinese government, alone, now has more than $2 trillion generated by America’s trade deficits, and this amount grows daily. China has an enormous resource available whenever needed to buy promising or even full-grown technology and companies. Is there anyone who believes that in today’s world a buyer with $2 trillion to spend cannot wield major economic and even political power?

Despite this, many policymakers, economists, financiers, executives with multinational companies and the lobbyists and PR people they hire in Washington still proclaim that free trade benefits everyone. The proof is lower prices for imported Asian products. But lower prices are not low if you lose your job to get them, and the mutual gains predicted by free-trade theory do not in fact materialize in a world where well thought out subsidies and controls of foreign governments create persistent trade deficits for the United States.

Americans continue to allow manufacturing — the great innovation engine that turns ideas into reality — to vanish quietly from the country’s shores. Global corporations may be benefitting from this, but most Americans are not.

It is time for the steady wasting away of manufacturing and the consequences of that wasting away to become a matter for national debate and for it to remain a matter for national debate until the problem is resolved. A strong response should be considered with a full understanding of the enormous importance of what is really happening to the U.S. economy. Action is needed.

— Ralph Gomory became Director of Research for IBM in 1970 and served as IBM Senior Vice President for Science and Technology until retiring from IBM in 1988. He became President of the Alfred P. Sloan Foundation and served there until December 2007 to become a Research Professor at New York University’s Stern School of Business.

EIA: Low Gas Prices Benefit Industry

U.S. industry is increasingly burning natural gas, with its use up by more than 600 million cubic feet per day (or 3 percent) during the first five months of 2013, according to the Energy Information Administration. Industrial customers are using gas to fire boilers for steam; for cogeneration of steam and electricity to run factories (instead of buying electricity off the grid); and for direct heating for melting, baking or drying commodities such as in paper, steel, glass and food.

“In recent years, the electric sector has overtaken the industrial sector as the largest natural-gas consuming sector,” says EIA. “However, there has been modest but consistent annual growth in industrial gas use following the sharp economic decline during 2008 and 2009.”

The price of natural gas is low — less than $4 per million British thermal units, far below the $8 level reached in 2005. “If natural gas prices remain low, the industrial sector is poised to grow, and existing industrial natural gas consumers stand to become increasingly competitive both here and abroad,” says EIA: http://www.eia.gov/todayinenergy/detail.cfm?id=11771.