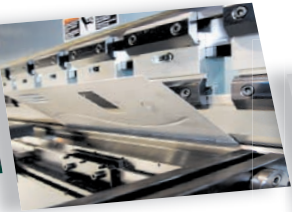
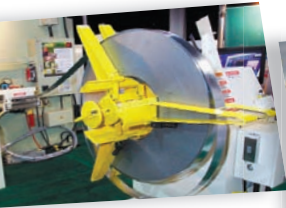


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*North America's Largest Metal Forming,
Fabricating, Welding and Finishing Event*



Manufacturing Outlook 2011 — Challenges and Opportunities

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**Produced for FABTECH 2011 Panel Presentation
State of the Industry, Executive Outlook**

Panel Participants:

Rolf Biekert, President & CEO, TRUMPF
David Lazzeri, President & CEO, DuPont Powder Coatings America
Tim McCaughey, President & CEO, Schuler
John Stropki, President & CEO, Lincoln Electric

Dr. Chris Kuehl, moderator



Manufacturing Outlook 2011 – Challenges and Opportunities

In recent decades the manufacturing sector has undergone a series of transformational periods that have utterly changed the nature of the business. Most of the old manufacturing techniques have been replaced by technology and automation. The products manufactured have changed and become ever more sophisticated as technology advanced. Markets shifted as domestic demand changed and overseas demand increased. There is almost nothing that remains the same as it was ten years ago.


The surprise, to the general public, of the past few years has been the fact that manufacturing has led the way out of the recession. The only real growth in the U.S. economy for the past two to three years has come from manufacturers as they have learned to explore new markets in the fast growing nations of the world. Advances in technology have also meant advances in productivity.

As modern manufacturers look ahead five or more years their questions revolve around what can be expected to change and what lessons learned in the past few years will be applicable going forward. At FABTECH this year a panel was assembled of top leaders from each technology segment of the show – fabrication, stamping, welding and finishing. These leaders shared their insights in a dynamic question and answer format moderated by Dr. Chris Kuehl, economic analyst for the Fabricators & Manufacturers Association. This paper summarizes the issues and some of their opinions gathered in advance of the panel event at FABTECH.

Market Growth and Sector Growth

At the top of the list of future considerations is potential for market expansion created by growth in emerging economies. In the past five to ten years development has been rapid in new markets like China, India and Brazil – no surprise, the stories appear in the media regularly. There are many other countries that have seen remarkable growth numbers although they don't necessarily get the global attention received by the big three; for example, Turkey has been growing at a 6 percent clip, Poland at over 5 percent and Colombia at close to 7 percent. There has been significant growth in many Southeast Asian states as they become part of the Chinese orbit. These and other markets provide opportunities for the U.S. manufacturer.

Tim McCaughey, president and CEO of Schuler Inc. of Canton, Mich., commented that "automotive will continue to invest globally, with a keen focus on the BRIC nations – Brazil, Russia, India and China. These regions of the world have a huge customer base that 'international' companies cannot ignore – so it's not just about low labor costs. It's about growing market share in some of the fastest growing and biggest economies in the world. The automotive industry, for example, is experiencing enormous growth for its products in these regions, primarily in China, and heavy-duty truck manufacturers in cooperation with local joint venture partners can hardly keep up with the demand in Brazil, China and India." He goes on to observe some of the changes taking place in technology.



“Technology will continue to evolve rapidly due to environmental concerns and government regulations,” McCaughey added. “Advanced materials technologies for anything relating to energy conservation, including commercial, residential, automotive, and safety and security applications will exhibit rapid growth. In our Monday-Friday world, this means greater demand for hydroforming, hot forming and servo drive technology. The energy sector should provide significant opportunities due to new CAFÉ standards and environmental regulations.”

Concurrent with growth in emerging markets, U.S. companies have been able to increase their market share of the traditional markets in Europe, Canada and Mexico due, in part, to the weakness of the dollar and additional factors. U.S. companies are far better positioned now than in the days of strong dollar policy and by the looks of the U.S. economy, the weak dollar is here to stay. The opportunity to expand market share has driven much of the strategic thinking of the U.S. manufacturer. One of the most discussed issues has been nearshoring. The subject elicits widely divergent opinions. John Stropki, president and CEO of Lincoln Electric in Cleveland, Ohio is among those who are not seeing a major change as yet.

“In my view, there hasn’t been much of an impact on re-shoring among our customers,” he said. “I think the issue has been overstated and is more of a temporary focus of the media. Many of our customers are expanding and building new facilities in the BRIC countries and other emerging markets. These new facilities are to serve those markets or for export within the BRIC regions. A stronger presence in these markets can also help U.S. companies grow exports from the U.S. into these regions.”

David Lazzeri, president, DuPont Powder Coatings of America has a slightly different view. “The ability to compete on a global scale via productivity, innovation, technology, and added value is paramount for continuing success whether achieved through off-shoring or re-shoring.” He notes that “some industries are not conducive to off-shoring due to local service requirements, lead times, logistics, unique offering, geographical resources, etc. This makes the choice of industry focus critically important to U.S. manufacturers.”

What industry sectors are poised for the most growth according to these CEOs? Lazzeri sees health, nutrition, food, alternative energy, mining, oil & gas exploration/distribution, and communications leading the way. Rolf Biekert, president and CEO of TRUMPF in Farmington, Conn. added agricultural equipment and medical equipment to the list, and McCaughey noted infrastructure and commercial construction.

Skilled Labor vs. Low-cost Labor

Technology gains have been dramatic in the past few years. The integration of computer technology with machine tool processes has allowed companies to gain and keep a competitive edge against those that have been able to grab market position on the basis of cheap labor. A study from the Boston Consulting Group asserts that the Chinese will lose their competitive advantage over the U.S. as early as 2015 due to the technological advances the U.S. has been able to implement. It is the high productivity that technology affords that has created an equalizer in global manufacturing. The panelists were asked about their view of the skilled labor shortage as well as how they see their role in helping their customers overcome the dilemma of producing better product with fewer high skill workers.

Stropki describes the Lincoln Electric approach. "In our own manufacturing processes, we have implemented systems and programs to help our employees become more efficient and productive. This includes our Six Sigma program as well as reconfiguring some of our manufacturing processes. We have also made significant improvements and innovations in our products which make them more energy efficient and help our customers and end users become more productive and successful."

"There is a shortage of skilled labor for manufacturing, Stropki continued, "and specifically, a shortage of qualified welders. We are partnering with a number of organizations, including the National Association of Manufacturers and the AWS to encourage more young people to pursue careers in manufacturing. Lincoln is providing a trailer equipped with our latest innovation, VRTEX 360, the virtual welding system, which will travel to educational and training conferences and meetings to promote careers in welding and manufacturing."

Tim McCaughey echoes Stropki in his belief that suppliers have a responsibility to create products that make their customers more productive. But he expressed concern with the skilled labor shortage, "Although our new and updated manufacturing equipment can eliminate the need for many workers, there is an increased need for highly specialized workers. We actually have a greater and more urgent need for skilled production and maintenance workers in our plants than ever before. Employees no longer do one task or job, they have more responsibility and, especially in our plants, they are asked to perform a greater variety of jobs.

Biekert commented that the most difficult employees to find are those that have strong technical skills combined with interpersonal/customer relation skills. Lazzeri expressed concern about the shortage of recent science graduates, particularly with degrees in engineering, chemistry and biology.

The growth of the manufacturing sector has been almost entirely organic – driven by decisions made by each company to explore new market opportunities and invest in the technology and machinery that will allow them to expand. Long-term, the defense of this competitive strategy will require engagement from other entities outside of the company.

The threats to the U.S. sector come from regions that will strive to catch up with the technological advances that have been implemented in the U.S. European manufacturers have been competing

in exactly the same way as the U.S. manufacturers and will remain a formidable threat. The Chinese, Indians and Brazilians are seeking to catch up but it will be hard for them to replace the cheap workers they have relied upon with technology. The governments in these nations do not want to see too many people replaced by machines.

Partnering to Educate Future Workforce

For the U.S. to maintain its competitive position in the world there is a need for both the government and industry associations to support the manufacturer in a very basic way. The limitation for many companies when it comes to growth is the lack of appropriate labor. The skills shortage is already at a crucial stage and if nothing changes, the future is cloudy. The average age of a fully certified welder is now 63 which means that much of this workforce is on the edge of retirement. The average age of a factory worker is 57. Currently, there are simply too few people with the skills needed and the educational system has not even begun to address the need to replace these skilled, retiring baby boomers. This is not something that individual companies can do much about. They must partner with institutions such as AWS, FMA, CCAI, PMA and SME to help meet that demand as well as to react what is coming down the road.

These comments from Tim McCaughey illustrate the issue: "We are struggling to find qualified workers, and America is facing a serious shortage of qualified employees, especially in the following areas: program controllers, skilled maintenance workers, automation program and machine tool repair experts, trouble shooters and material engineers. The high unemployment rate is primarily in the area of unskilled workers. Skilled contract workers also are hard to find. We do receive resumes, but out of about 100 maybe only three are really qualified."

Large numbers of manufacturing's technically skilled people are older and are leaving the workforce. The younger generation is not gravitating toward the manufacturing sector. This is an issue. Lack of understanding about the manufacturing professions leads to misconceptions. Some see manufacturing as a downhill profession and that the sector has lost its competitive edge. We need to fix that image.

The skill level of workers has increased and we have a greater need for workers who have technical skills. McCaughey cites the following skills in short supply: math skills, aptitude for computers, statistical process control skills, problem-solving and trouble-shooting skills, critical thinking, quality control, program controller. A survey conducted by the Fabricators & Manufacturers Association (FMA) late last year asked employers to rank the hardest skills to find when hiring. Surprisingly, while many of the technical skills mentioned here were on that list, the most difficult skill noted as lacking was "leadership". It was defined not in the traditional sense of leading at the top of an organization, but rather as a trait desired at every level of a company that combines self-motivation and willingness to accept responsibility for one's actions. It also encompasses McCaughey's listing of problem-solving, trouble-shooting and critical thinking.

Solutions to the skilled labor problem include focus on corporate promotion, competitive compensations, hiring practices, apprentice programs, skill-set training and improving industrial

vocation programs and tax credit offerings to employers. McCaughey focuses on what manufacturers can do if they take the problem into their own hands and get involved. "We need to get more involved as business leaders and participate," he said. "If we are going to make a difference and help shape the direction of education in order to better support our business sector, we need to sponsor scholarships and align to schools, we need to teach classes and offer internships. The use of advanced technology processes in the manufacturing sector might eliminate the number of workers we need, but it becomes even more important for us to have a sophisticated, highly skilled workforce in order to remain competitive."

The unemployment problem and concurrent skills shortage can be reversed. The U.S. used to be the world's innovation leader and the panelists agreed that attention to innovation needs to be re-invigorated. They cited a need to create regional alliances that join local governments, universities and investors to spark new business creation and to invest in R&D clusters in areas like clean energy and life sciences. McCaughey described a Schuler partnership with Chrysler and US Steel in which they sponsor a development program for engineers to specialize in metalforming. This program is called CLIC-Form at Oakland University.

Industry Threats and Challenges

As manufacturers look ahead they also have to consider pending threats and challenges. There was a developing crisis at the start of 2011 when commodities prices spiked hard. Since then oil has fallen a bit but metals are still high compared to past years. The question is whether this will get appreciably worse or whether there is some hope that prices will fall?

There are also major concerns about the regulatory environment. Industry must live by government imposed regulations and they will affect the way business is conducted. There is a major push for green technology and methodologies. Will these be mandated or simply encouraged? What should small manufacturers prepare for? Lazzeri represents the chemical industry, perhaps one of the most heavily regulated sectors. He talked about cost and complexity of the regulatory environment. "Chemical registrations are becoming more complex and costly. Many REACH- (**R**egistration, **E**valuation, **A**uthorization & restriction of **C**hemicals) like chemical management plans are evolving including the U.S. EPA TSCA Reform. Chemical management plans require substance volume tracking as well as use and exposure information and environmental testing and reporting. Companies will need to streamline their offerings and minimize the number of components to reduce registration, testing and reporting costs. Global regulatory agencies should work in concert, sharing scientific information to minimize redundant testing developing risk assessment approaches to minimize the overall cost to industry. "

Stropki focused on the business side of manufacturing when addressing regulations and legislation that could negatively impact U.S. manufacturers' global competitiveness. "Congress is considering a repeal of LIFO, the Last In First Out accounting method. If they repeal LIFO, he said, "a wide range of businesses would be hit by a significant tax increase, making it even more difficult for U.S. businesses to compete in the global marketplace."

McCaughey regulatory concerns go the same direction as Stropki's. He notes that "the Small Business Administration's Office of Advocacy estimates that regulatory compliance costs \$1.1 trillion annually." He also commented on intellectual property protection issues. "We need to recognize intellectual property (IP) as one of America's competitive strengths that must be defended at all levels, domestically and globally," he said. "U.S. IP is worth about \$5 trillion. There must be enhanced efforts against counterfeiting through Executive Branch agencies, including Treasury. "

Biekert cautioned that federal, state and local governments all need to stop imposing additional regulatory burdens on manufacturers or even more jobs will be lost in this country.

Black Swans and Arab Springs

There is concern about the big economic picture and the recovery that was supposed to have shown much better results by now. The anticipated gains have not materialized and the talk of a double dip still hovers in the background.

There is a concept in economics that is called the Black Swan event. It simply states that there are going to be developments that fundamentally change the system. They can be anticipated, but there is almost no way of predicting when they will occur. This year there were two in quick succession that changed the manufacturer's world. The upheavals in the Middle East (the Arab Spring) caused a massive spike in oil prices and the tsunami/earthquake in Japan damaged segments of the global supply chain for months. There will be other Black Swans in the years to come – just when and what they consist of will remain an open question.

Lazzeri noted "new emerging regions such as Asia ex-China, Eastern Europe, Africa, and Latin America beyond Mexico and Brazil, will continue to drive global competition. Inconsistency in regulation and trade protection from region to region will exist for many years to come. The new world economy is with us... and will require a balanced approach to growth, cost control, investment in facilities, and people. Organizationally, companies will have to transition to a model of constant change and responsiveness to the new market realities."

Older, more established companies like DuPont are faced with a coming workforce/experience transition as baby boomers that have put off retirement due to the economic uncertainty, begin to move off the payrolls in large numbers over the next five years. The generations that follow the boomers – "the X and Ys" will bring new challenges to the workplace as their desire for job/career mobility increases, companies seek to "variabilize" manpower, and company/employee loyalty wanes."



Summary

The United States manufacturing sector is taking the initial steps required to reinvent itself. Those steps are being shaped by the need to resolve challenges on the skilled labor and regulatory fronts, and to educate our legislative leaders as to the critical role manufacturing plays in creating national stability. The need is apparent for manufacturers, educational institutions and governmental entities to work together to educate a new generation of skilled workers to fulfill the new workforce labor requirements that will lead to the re-establishment of the United States as the global leader in technology and innovation. There is work to be done, but these four manufacturing sector leaders are optimistic about the industry's desire and ability to conquer the challenges and build a strong future.