US Manufacturing 2014 – Short Term Win or Long Term Trend?
Today’s Agenda

- The Facts
- The Challenge
- The Opportunity
What the media and some politicians have tried to convinced everyone that:

- Manufacturing is a dead end career path
- Outsourcing to China, India, and Mexico has replaced the American worker
- EPA and government regulations are too restrictive for manufacturing
- Nothing is made in America anymore.
Now the Facts...
U.S. Manufacturing Sector is the Eighth Largest Economy

Integrating Advanced Manufacturing Technologies

Sources: International Monetary Fund and U.S. Bureau of Economic Analysis
2010 Global GDP was $62.22 trillion

- US was $14.445 trillion (23%)
- China was $5.88 trillion (9.4%)
- Japan was $5.47 trillion (8.8%)
- Brazil GDP = Florida + Illinois GDP
- Russia GDP = Texas GDP
- India GDP = \( \frac{1}{2} \) of California GDP
- Greece GDP = GDP of Riverside Co, CA

Source: IMF Data Source
The U.S. Is The Largest Manufacturing Country In The World

Sources: United Nations, Statistics Division, and MAPI Calculations
Average 5% improvement per year from 1994 thru 2008 primarily through technology advancements
Employment & Productivity Growth

Source: Dept of Labor
Manufacturing: Powering the Recovery

Percentage Point Contributions to Real GDP Growth

Source: Bureau of Economic Analysis
By 2018:

- 70M baby boomers will retire
- 40M new workers will enter the workforce

30M gap of available workers!

Where will the workers come from?
In a recent survey, more than 1/3 of large US manufacturing based companies plan to re-shore jobs from China back to US.

Reasons

• Outsourcing to China is more costly than it appears
• Ease of business and closeness to American customers
• Other factors include labor costs & product quality

*Source: Boston Consulting Group – SME Quality Magazine May 2012
The percentage of GDP attributable to manufacturing puts Iowa sixth in the nation.

Manufacturing contributed $27.6B, or 18.8% of the state’s total GDP, to Iowa’s economy in 2011.

Manufacturing sector’s 211,998 jobs accounted for 10.8% of Iowa’s total employment in 2011.

More than half (53.4% of Iowa’s manufacturing jobs are located in its non-metropolitan counties.

In 2011, manufactured goods accounted for 88% of the state’s total exports, or $11.7B.
Example - US Steel Industry 1984-2004

- Employment decreased by 74% from 289K to 74K
- Output increased 36% from 75M tons to 102M tons
- Technology, automation, and innovation was the key

Fortune, 11/10/05
U.S. steel production has risen almost 5 percent over the last five years, according to the American Iron and Steel Institute. But steel employment has fallen 10 percent, according to the Bureau of Labor Statistics.

"Forget about labor costs." said Nucor's Vice President DiMicco. "Hot-rolled sheet [one of the major products of the steel industry] is selling for $1,000 a ton today. Our labor costs for everything are under $10 per ton, he said. “Labor has become virtually insignificant."

"The United States has become one of the lowest-cost producers of steel in the world," said Michelle Applebaum, a former steel analyst with her own Chicago research company. Who's the high-cost producer? "China. "Nobody in America is buying ore at the inflated prices the Chinese are paying," Applebaum said.

Chicago Tribune, June 2, 2010
The Challenge
Workforce Issues:

- 11.8 Million people are directly employed in manufacturing in the US today
- 50% of working engineers in the U.S. will retire in the next 8-10 years
- 500,000 engineering jobs Available today (Unfilled)
Workforce Gap – Next 10 Years

➢ By 2020:

- 70 Million Baby Boomers will retire
- 40 Million “Millennials” will enter the workforce (*Born between 1980 and 1995*)
- 30 Million gap of available workers
- Engineering graduates will be of highest need.

*Fortune 10/7/10*
Manufacturing Workforce Trends

- 83% of US Companies say they can’t find qualified workers
- Company executives do not see an adequate supply of workers to replace the retiring Baby Boomers and the skills that they posses.
- Occupy Movement folks perhaps should have considered a degree in Tool & Die

FOX News Poll 9/5/11
The United States Is Falling Behind in Engineering

Source: National Science Foundation, Science and Engineering Indicators, 2008
The U.S. Workforce Suffers from a Math and Science Skills Deficit

Source: U.S. National Center for Education Statistics, 2006
The Manufacturing Workforce Has Become More Skilled

Importance of Manufacturing

- Leads in GDP Growth and Productivity
- Pays higher wages and benefits ($68,860) than National Average ($56,717)
- Backbone of Defense Technology Base
- Wealth Creation and Economic Security

2/2008 NAM
Initial Summary:

- We are manufacturing more products than ever before with fewer people.
- Manufacturing is key to wealth and job creation.
- Manufacturing exports bring significant income back to the US and help offset our trade deficit.
- There is a labor and talent shortage that is impacting manufacturing and it is going to get worse over the next decade.
The Opportunity
What Do We Do Going Forward?

1. Promote Manufacturing!
   - We need our share of the Best and the Brightest
   - Not everyone needs a 4 year degree

2. Continue to Invest in Technology
   - Reduce Labor
   - Improved Productivity/Man Hour
   - Improve Quality

3. Industry Recruitment and Retention
   - Waukesha Business Alliance – Manufacturing Matters!
Invest in Technology to Reduce Labor and Improve Quality

- Remember the US Steel Example
  - $1,000 per ton/$10 is Labor

- Lot sizes continue to get smaller
  - Are we agile enough to adapt?
  - Are we educated enough to compete?

- Supply Chains Too Long to China
  - Why is US mfg a better solution than foreign competitors?
Automation – An opportunity for differentiation and improved competitiveness:

- US manufacturing employees-to-robot ratio is 238 to 1
- Japan’s manufacturing employees-to robots ratio is 36 to 1
- FANUC’s newest servo motor plant has employee-to-robot ratio of 1 to 6.7

*FANUC Robotics, Save Your Factory 2011*
Industrial Education has now become Critical

- What are *we* doing to attract the next generation of the Best and Brightest?
  - Educators to Factories
  - Robot First Programs
  - Dream it Do it
High school visits to manufactures.
  - Tech Ed Classes
  - Trade Show – Special Invites
  - New Technology when installed

Intern programs

Local media

PTA speaker

FIRST Robot Competition
What Are Doing as an Industry?

- **SME**
  - Project Lead the Way
    - 115 Schools in 2008
    - 500 School in 2013
  - STEPS Program

- **AMT**
  - IMTS Student Summit

- **NAM**
  - Dream it, Do it.
Conclusion
“Taking raw materials and making something of value out of the labor applied has historically generated substantial wealth. If we allow ourselves to be just consumers we will end up washing each other’s clothes.

More importantly, we bestow as a result, an enormous power to those who supply us, and become vulnerable to their dictates”

- Paul Tontsch, Precision Injection Molding, LLC
Employment & Productivity Growth

Source: Dept of Labor
Assuming these trends continue…

- We will produce more with fewer people and will compete on a global scale
- We will be required to efficiently integrate multiple technologies in our businesses
- We all must make a concerted effort to attract and retain the next generation to our industry
- We all have an obligation to promote manufacturing’s image whenever and wherever possible
Questions

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