

Celebrating success, achievement and  
potential of women in manufacturing  
A leadership view of overcoming the  
talent crisis and filling the skills gap





### Executive roundtable focuses on solutions

Building upon the women in manufacturing research previously published by The Manufacturing Institute and Deloitte, senior executives representing automotive, aerospace and defense, process, and diversified manufacturing convened at an executive roundtable to discuss how manufacturers can best attract, retain, and advance talented women in the manufacturing industry. They explored related challenges manufacturers face and made recommendations to address the challenges. The roundtable was led by The Manufacturing Institute and Deloitte, and was moderated by Ed Crooks of the Financial Times.

### Tackling the issues

During the roundtable, executives discussed the significant concerns they all have about finding enough talent to drive their organizations in the future and how vitally important women can be to helping address that concern. They focused on the C-suite's role in changing the corporate culture in the manufacturing industry, the American public's perception of the industry, and what companies can do to create a strong employer brand.

As described in the following report, the executives discussed and responded to key questions that focused on:

- How can manufacturers improve the recruiting process of women and how far back into the "pipeline" do they need to go?
- What initiatives can companies take to encourage the personal development and professional progression of women?
- How can manufacturers support women in the industry and retain female workers?

### Untapped Resource

*Untapped Resource: How manufacturers can attract, retain, and advance talented women*,<sup>i</sup> published by The Manufacturing Institute and Deloitte, surveyed over 600 women in manufacturing across functional roles and levels to gain their perspective on how effectively their companies recruit, retain, and advance women. This report highlights how the manufacturing industry faces a serious skills gap. Part of this gap is due to the underrepresentation of women in the industry. While women make up approximately 50 percent of the labor force, only 24 percent are represented in the manufacturing industry<sup>ii</sup>. Furthermore, the proportion of women holding leadership positions in manufacturing companies lags behind other U.S. industries. Despite improvements, for example the recent announcement of the first woman to serve as CEO of a global automotive OEM, challenges still abound with respect to the attraction, retention, and advancement of women in America's manufacturing workforce.

The report also suggests that there is a growing skills and talent shortage facing the manufacturing industry between now and 2020 — and beyond. This is driven by various factors including the retirement of baby boomers, the adoption of increasingly more advanced production technologies, and a shortfall in STEM (Science, Technology, Engineering, and Math) educated workers being developed in the U.S. education system.

To download this report, visit [www.deloitte.com/us/untapped](http://www.deloitte.com/us/untapped).

<sup>i</sup> Deloitte Development LLC and The Manufacturing Institute. *Untapped Resource: How manufacturers can attract, retain, and advance talented women*. 2012.

<sup>ii</sup> Catalyst Research. *U.S. Women in Business*, 2012. Catalyst Research. *Women in U.S. Manufacturing - Durable Goods*, 2012.

<sup>iii</sup> Maria Shriver and the Center for American Progress. *The Shriver Report: A Woman's Nation Changes Everything*, 2009

### Building America's manufacturing workforce starts early

Women represent manufacturing's largest pool of untapped talent. Collectively, women earn more than half of the associates, bachelors, and masters degrees in the United States. They are advancing in their careers once in the workforce, holding more than half of all U.S. managerial and professional positions.<sup>iv</sup> So, what does the manufacturing industry need to do to get its fair share of this talent?

Among the executives participating in the roundtable, there was agreement that recruitment into the manufacturing industry must begin early. There was near unanimous consensus that outreach to young people in vocational schools and high schools was critical. Some executives also felt that engagement in levels as young as fourth grade were required in order to adequately articulate the skills required — and long-term career opportunities available — in today's advanced manufacturing sector. This view is consistent with prior research, conducted by The Manufacturing Institute and Deloitte that found that less than half of Americans believe that the school system in their communities provide exposure to the skills required to pursue a job in manufacturing.<sup>iv</sup>

All of the participants agreed that communicating with teachers was very important, and participants overwhelmingly praised the work of The Manufacturing Institute's "Dream It. Do It." program as a way to bring employers together with local schools and community organizations. Other successful programs were discussed, including a STEM day camp for seventh-grade girls, partnerships with universities, and scholarships that brought college graduates into manufacturing jobs.

With women making up less than a quarter of the manufacturing labor force, the industry as a whole has been less successful than others at attracting women and retaining them. *Untapped resource* showed that over 80 percent of the report's interview participants believed that the manufacturing industry does not make a sufficient effort at promoting itself to potential female candidates. More specifically, the women interviewed were adamant that the industry needed to expand its activities in raising awareness of opportunities within the manufacturing industry to include K–12 outreach, and that companies should be proactive in supporting school initiatives that would encourage young women to learn the technical skills needed to excel in today's (and tomorrow's) advanced and hi-tech manufacturing industry.

#### Attracting women to the industry

The majority of women surveyed for *Untapped resource* said a manufacturing career was both interesting and rewarding. And, if they had to start their careers again, more than half indicated they would choose to pursue a job in the manufacturing industry again. However, when asked whether they would recommend a career in manufacturing to their children or close relatives, more women said they were likely to encourage their sons (70 percent) rather than their daughters (55 percent). For companies to keep women as part of their workforce they must look at ways to change the internal image of the industry by creating a female-friendly working environment that includes women in their core corporate strategy and incentivizes women to commit to careers in manufacturing.

#### It's about diversity and inclusion

The executives participating in the roundtable were consistent when expressing their views that while diversity initiatives were important and critical to tackling this issue, such programs fell far short of their desired impact in the absence of inclusionary environments.

<sup>iv</sup> Deloitte and The Manufacturing Institute. Leadership wanted: U.S. public opinions on manufacturing. 2012

As one participant put it, “the most successful companies are the ones that are effective in creating an environment that is inclusive.” However, a distinction was drawn between diversity and inclusion: “Diversity is like being invited to a party; inclusion is like being asked to dance.” Another observed that there was a tendency for people to hire in their own likeness, which made it necessary to focus attention on diversity in recruitment.

For many executives participating in the roundtable, inclusion also goes beyond attraction and must be a critical element of retention — particularly as it relates to retaining women in mid- to high-level management roles who have the technical knowledge and work experience. However, the perceived male-biased culture of the industry is a contentious issue which companies are looking to address. *Untapped resource* revealed that 51 percent of survey participants felt the main driver behind women’s underrepresentation in manufacturing is the perception of a male-favored culture. The respondents suggested that the retention of women in the industry is also a challenging issue, which is due to a number of factors including: not being given entry into the “boys club” environment which is cultivated by a culture biased in favor of men; not being given the opportunities to compete for and hold “core to the business” leadership roles because of this culture bias; and not being able to strike the right work-life balance due to the lack of flexible work schedules.

---

“There is a sense that historical gender bias has excluded women in manufacturing from core managerial roles, such as production supervisors and operations managers.”

— *Untapped resource: How manufacturers can attract, retain, and advance talented women*

When speaking about the C-suite’s role, roundtable participants generally agreed that leadership from the top is vital for creating conditions conducive to the recruitment and retention of women. One participant suggested that the presence of women on a company’s board made a very great difference; others said male leaders could also have a great impact if they accepted the importance of diversity in the workforce. One executive observed: “Diverse management teams make the best decisions.” All agreed it was essential that the lead be taken right at the top, by the chief executive. Moreover, several participants stressed the importance of senior management monitoring data on the gender balance and other measures of diversity of their workforce. As one said, “Seeing it visualized on a piece of paper changed things.”

#### Workplace flexibility

Work-life balance, or the perceived lack thereof in manufacturing, may be another factor deterring women from the industry. While roundtable participants differed in some respects with regard to what manufacturers can and should offer in terms of flexibility to their workforce, there was general agreement that it is essential for all companies to focus on longer-term issues of workforce capability, as well as the shorter-term imperatives of staying in business.

Although the desire for work-life balance is often associated with women, it has become a universal concern. Participants agreed that critical to developing an inclusive work environment in the manufacturing industry was adopting flexible work arrangements to accommodate workers with family responsibilities such as childcare. Many of the executives agreed that, compared to some other countries, particularly in Europe, the United States has lagged behind in terms of flexibility policies, and several participants suggested that manufacturers should be moving on their own accord to become more flexible.

---

“We need not just women-friendly policies, but worker-focused policies, because men need these things too.”

— Executive roundtable participant

#### Promoting personal development

Manufacturers that offer customized learning and development may have an advantage in the retention and advancement of women. In addition to identifying leadership and technical skills as critical factors to success in manufacturing, those participating in the *Untapped resource* study ranked learning and development programs as one of the most impactful talent initiatives in their organizations, including support from a sponsor who advocates for an individual and undertakes responsibility for that person’s development and professional progression.

Relating to the discussion of personal development, one roundtable participant suggested that women’s reluctance to support [sponsor] each other might be caused by the perception that “there are very few slots [at the top] for people like me.” Another commented that the “glass ceiling” was actually more likely a concrete ceiling, because it was so hard to break. It was pointed out that there were three important processes to consider — recruitment, retention, *and* promotion. To address that, some executives said their companies were making an effort to think divergently about promotion to senior executive levels.

#### Promoting the role of women in manufacturing

The Manufacturing Institute, in collaboration with, Toyota, Deloitte, the University of Phoenix, and the Society of Manufacturing Engineers, have worked together to create and sponsor the STEP Ahead initiative (women in Science, Technology, Engineering, and Production). The initiative was launched to examine and promote the role of women in the manufacturing industry through research, leadership, and recognition, and was founded on a call for action to:

- Honor women who have demonstrated excellence and leadership in their manufacturing careers
- Celebrate exciting careers in manufacturing to help change negative perceptions of the industry
- Help close the skills gap by developing a more diverse workforce and attracting, retaining, and advancing female talent in the manufacturing industry
- Continue to ensure new opportunities for women in the manufacturing industry
- Empower today’s current manufacturing leaders to help inspire the next generation of leadership and talent



#### Creating an employer brand with women

Despite the advancements in manufacturing and the technologically advanced products coming off of production lines across the United States, many Americans still view careers in manufacturing as being dirty, dumb, and dangerous. Roundtable participants agreed that there is indeed still a widespread misperception in the United States of 21st century manufacturing.

Some of the participants acknowledged that partial responsibility to dispel these misconceptions fell to manufacturers, trade organizations, labor leaders, and other stakeholders within the manufacturing ecosystem. However, some executives participating in the roundtable highlighted the importance of parents and primary and secondary school educators in shaping young people's career plans, and said communicating with them could also help clear up outdated ideas and shed light on the realities of 21st century manufacturing in the United States. A public perception study by The Manufacturing Institute and Deloitte indicates the public wouldn't choose to start their careers in manufacturing nor would they encourage their children to work in the industry."

---

## "Persuading parents that American manufacturing really has a bright future ahead of it, and can offer a great career, is important."

— Executive roundtable participant

The manufacturing industry is still seen by some outsiders as a dying industry with a bias against women. This perception of the industry is far outdated and an overwhelming majority of those participating in *Untapped resource* cited that "improving the external image of the industry" was the most important priority for manufacturers for the next 10 years. In order to attract, retain, and advance women in the manufacturing industry, companies need to build a strong employer brand and breakdown the negative image manufacturing holds today. Building relationships with schools to keep them informed of manufacturing career opportunities, keeping female leaders visibly engaged in recruitment efforts, and supporting STEM education initiatives to develop female students' technical skills and interests are just a few examples of how companies can improve their employer brand.

### Improving manufacturing's image

Today's young people want to solve problems, start businesses, make waves, and make money. They don't understand that manufacturing careers offer real opportunities to do work that saves lives, puts men on Mars, and improves our quality of life.

Many parents and schools do not encourage their kids to pursue manufacturing careers either, resulting in a critical lack of understanding and interest among the next generation of talent. This is at a time when manufacturing could not need that talent more.

The Manufacturing Institute is partnering with manufacturers and other stakeholders to recreate the perception of manufacturing in the eyes of students, parents, educators, and the general public, so that manufacturers can attract the talent that they need to grow. These activities include:

- **Dream It. Do It.**— Dream It. Do It. is the national career awareness and recruitment program for manufacturers. It includes national and local activities to engage, educate, and employ the next generation of skilled manufacturing talent.
- **Manufacturing Day** — On the annual Manufacturing Day, manufacturers open their doors to their communities. By hosting plant tours and other engagement activities, manufacturers expose students, parents, teachers, guidance counselors, and the general public to the opportunities and realities of today's manufacturing industry.



### Executives recommend strategies for tapping the untapped resource

While the U.S. manufacturing industry is seeing a gradual economic resurgence, the skills and talent gap in the industry remains a predicament, including the underrepresentation of women.

Women are essential to addressing the skills gap in manufacturing and companies must be the driving force in encouraging, incentivizing, and promoting women to enter and advance in the industry. Manufacturers who take steps now to address the issue of attracting, retaining, and advancing women may hold the key to addressing the talent gap.

Executive roundtable participants made the following recommendations to help address the issue of attracting, retaining, and advancing women in the manufacturing workforce.



#### 1) Integrate women into the corporate strategy

Ensure the CEO personally makes the recruitment, retention, and promotion of women a strategic imperative and leads the cultural change wanted in the company.

#### 2) Share best practices among the company

Use your own employees across the company: different departments, sites, and offices, as a learning resource to inform, educate, mentor, and share best practices with one another.

#### 3) Don't wait for change

Be proactive at every level of the organizations to address the issue of recruitment, retention, and advancement of women. Recognize your division or department cannot always wait for change to come from the center.

#### 4) Use affinity groups for more than networking

Make more than "contacts" — take advantage of connections to generate ideas, motivate peers, share best practices, and give/receive guidance.

#### 5) Women for women

Engage The Manufacturing Institute STEP Ahead honorees and other successful women in manufacturing as leaders and ambassadors, going into schools to talk about career opportunities and inspire potential young female candidates. Have these same leaders mentor the next generation to extend the interactions and engagement with ongoing discussions, site visits, apprenticeships, and other effective outreach programs.

#### 6) Don't forget the men

Women can't do this alone. Ensure the men in the organization are equally involved, committed, and engaged with the efforts. If only the CEO and the women in the organization are leading and the men are on the sideline, your progress will be limited and superficial if at all. The men must be equal participants in this important, strategic talent strategy and must be involved with meaningful roles and responsibilities for making it work.



### Executive roundtable contributors

The executive roundtable was attended by senior business leaders from:

- AGCO Corporation
- Airgas North Central
- Alcoa Building & Construction Systems
- Babcock & Wilcox
- Ball Aerospace
- Behlen Manufacturing
- Bison Gear and Engineering
- Click Bond
- GE Appliance
- LORD Corporation
- Toyota Motor North America



### The Manufacturing Institute STEP Awards

The roundtable was followed by the second annual Women in Manufacturing STEP Awards, where The Manufacturing Institute recognized 160 women in the manufacturing industry from the factory floor to C-suite level who had demonstrated excellence in manufacturing. The honorees illustrate the impact women have on shaping the industry, whether they are running the company, designing the next big product, or testing innovations on the shop floor.

#### 2014 Women in Manufacturing STEP Awards

Over 500 attendees from 110 companies convened in Washington DC to celebrate and applaud the STEP Award honorees and encourage the growth and involvement of women in the manufacturing industry.

Speakers at the awards included:

- Jennifer McNelly, President, The Manufacturing Institute
- Jay Timmons, President and CEO, National Association of Manufacturers
- The Honorable Amy Klobuchar, United States Senator, State of Minnesota
- Latondra Newton, Chief Corporate Social Responsibility Officer, Toyota Motor North America
- Althea DrePaul, Key Account Manager, EJ Ajax
- Diana Perreiah, President, Alcoa Building & Construction Systems (BCS) North America

Before the awards ceremony, the honorees participated in congressional meetings and personal development sessions throughout the day. The honorees heard from Senator Patty Murray (D-WA), Congresswoman Shelley Capito (R-WV), and Chandra Brown, Deputy Assistant Secretary for Manufacturing at the U.S. Department of Commerce.

## The Manufacturing Institute 2014 STEP Ahead Award Honorees

<b>Sandy Abel</b> Micro Factice	<b>Stacey Bibik</b> Stacy Machine and Tooling	<b>Felica Coney</b> Procter & Gamble	<b>Carla Gasparin</b> AGCO Corporation	<b>JP Huang</b> LORD Corporation
<b>KarrieLee Abelein</b> Lockheed Martin	<b>Elizabeth Bierman</b> Honeywell Aerospace	<b>Patricia Conrad</b> Baker Hughes	<b>Jonna Gerken</b> Pratt & Whitney	<b>Sandy Hunter</b> Hunter Hawk, Inc.
<b>Stephanie Adams</b> Accuform Manufacturing	<b>Laura Lee Bocade</b> DIRTT Environmental Solutions	<b>Erin Cuellar</b> AGCO Corporation	<b>Lisa Gilkinson</b> Mitsubishi Power Systems Americas, Inc.	<b>Sarah Hutten</b> Stay Online Corporation
<b>Megan Agrafiotis</b> LORD Corporation	<b>Katie Boor</b> Ingersoll Rand	<b>Stephanie Davis</b> Ingersoll Rand - Club Car	<b>Jessica Glover</b> Mitsubishi Power Systems Americas, Inc.	<b>Carol Jackson</b> Carpenter Technology
<b>Grace Allen</b> Procter & Gamble	<b>Sandra Bouckley</b> Eaton Corp.	<b>Tanya DiSalvo</b> Criterion Tool	<b>Peggy Gulick</b> AGCO Corporation	<b>Marisa Jimenez</b> Lockheed Martin
<b>Monica Arias</b> Pratt & Whitney	<b>Tara Boutin</b> Sandvik Coromant	<b>Celeste Dowdy</b> HOERBIGER Corporation of America	<b>Rosa Gutierrez</b> Baker Hughes	<b>Jeanne Johns</b> BP
<b>Jane Arnold</b> Bayer Material Science	<b>Dawn Braswell</b> Siemens Energy, Inc.	<b>Candace Drahn</b> M's Machine and Manufacturing, Inc.	<b>Lisa Habe</b> Interlake Industries	<b>Jill Jones</b> Brown-Forman Corporation
<b>Kimberly Arrigoni</b> Haberman Machine	<b>Christi Brazener</b> Bison Gear and Engineering Corp.	<b>Altheha DrePaul</b> EJ Ajax	<b>Darlene Hansford</b> Industrial Metal Plating	<b>Rachel Joseph</b> Southeastern Container, Inc.
<b>Claire Backer</b> Jost Chemical Co.	<b>KT Brickman</b> Custom Processing Services	<b>Jada Dressler</b> PEPSICO-FritoLay	<b>Meggan Harris</b> Pratt & Whitney	<b>Colleen Kassera</b> Rockland Flooring
<b>Donna Bailey</b> Roy O. Martin	<b>Edye Buchanan</b> Fives North American Combustion Inc.	<b>Cally Edgren</b> Rockwell Automation	<b>Pamela Hart</b> Stella-Jones Corporation	<b>Elizabeth Kautzmann</b> FANUC America
<b>Tracy Baker</b> DIRTT Environmental Solutions	<b>Karen Buerkle</b> John Deere Waterloo Works	<b>Susan Elkington</b> Toyota Motor Corporation – Toyota City, Japan	<b>Christi Hartman</b> Metaldyne Powertrain Group Operations	<b>Shari Kennett</b> The Dow Chemical Company
<b>Deborah Balogun</b> Noven Pharmaceuticals	<b>Beth Burt</b> Sandvik Coromant	<b>Elizabeth Engels</b> The Timken Company	<b>Mary Beth Heydrick</b> The Dow Chemical Company	<b>Kitae Kim</b> AGCO Corporation
<b>Brenda Baron</b> Implant Sciences Corporation	<b>Becky Campbell</b> Baker Hughes	<b>Debbie Freligh</b> Westminster Tool	<b>Jennifer Hise</b> CEMCO Inc.	<b>Elizabeth King</b> ESCO Corporation
<b>Alexis Beckford-Knighton</b> Mitsubishi Power Systems Americas, Inc.	<b>Karen Childs</b> Caterpillar, Inc.	<b>Tamara Frieze</b> Sharretts Plating Co, Inc.	<b>Diane Hitt</b> East Coast Erosion Blankets	<b>Marcy Klevorn</b> Ford Motor Company
<b>Mary Bell</b> Caterpillar, Inc.	<b>Dianna Clute</b> Caterpillar, Inc.	<b>Andrea Funk</b> Cambridge Lee Industries LLC	<b>Afton Hollertz</b> Allmand Bros., Inc.	<b>Irina Kleyman</b> ACE Clearwater Enterprises
<b>Jill Bellak</b> MBX Systems	<b>Linda Cohen</b> ConMed Corporation	<b>Barbara Garrison</b> Exxel Outdoors Inc.	<b>Alisa Hoskins</b> Central Florida Box	<b>Alicia Kuhlman</b> Vermeer Corporation
<b>Maria Betancourt</b> ConMed Linvatec	<b>Eileen Competti</b> Babcock and Wilcox			<b>Michelle Kumbier</b> Harley-Davidson Motor Company

## The Manufacturing Institute 2014 STEP Ahead Award Honorees

<b>Karla Lewis</b> Reliance Steel and Aluminum Co.	<b>Kathy McNair</b> Cameron-Drilling Systems	<b>Jennifer Pfeiffer</b> The Dow Chemical Company	<b>Sue Shimoyama</b> Rockwell Automation	<b>Sheila Tierney</b> Ingersoll Rand
<b>Patricia Lewis</b> Berkley Screw Machine Products, Inc.	<b>Jennifer Merrill</b> Harris Government Communications	<b>Dana Phillippe</b> Baker Hughes	<b>Molly Sims</b> Siemens Energy, Inc.	<b>Amber Timblin</b> Insitu, Inc.
<b>Dr. Maureen Lockwood</b> Thombert, Inc.	<b>Jennifer Miller</b> Behlen Mfg. Co.	<b>Monique Picou</b> Procter & Gamble	<b>Veronica Singh</b> Menges Roller Company	<b>Sher Valenzuela</b> First State Manufacturing, Inc.
<b>Ana Lopez</b> Johnson and Johnson	<b>Kristine Mirabella</b> Bausch + Lomb	<b>Barbie Poitras</b> Volk Packaging Corporation	<b>Rachel Snicker</b> Steinwall Inc.	<b>Carmelia Van Horn</b> Ball Aerospace & Technologies
<b>Lori Luchak-Olund</b> Miles Fiberglass & Composites	<b>Rachel Monfils</b> Lockheed Martin	<b>Darci Powers</b> Batesville Casket Company, Inc.	<b>Amy Stabell</b> Pixelligent Technologies	<b>Patricia Vargas</b> ExxonMobil
<b>Shawn (Liz) Lucini</b> Noven Pharmaceuticals, Inc.	<b>Wanti Muchtar</b> Vermeer Corporation	<b>Missy Propper</b> GenMet Corp.	<b>Denise Stanislawczyk</b> ABB Inc.	<b>Veronica Vargas</b> Procter & Gamble
<b>Deborah MacKay</b> Lexmark International	<b>Johanna Nina</b> Codman Neuro (a Johnson and Johnson Company)	<b>Denise Quinn</b> MillerCoors	<b>Yvonne Stimac</b> Metal Essence, Inc.	<b>Jane Wachutka</b> PTC
<b>Mary Beth Mancias</b> Met-Ed, A FirstEnergy Company	<b>Liz O'Grady</b> Thomas & Betts- A Member of the ABB Group	<b>Christa Reed</b> Babcock & Wilcox	<b>Alyse Stofer</b> Medtronic	<b>Sylvia Wetzel</b> Bison Gear and Engineering Corp.
<b>Millie Marshall</b> Toyota Motor Manufacturing, West Virginia	<b>Caitlin Oswald</b> Pratt & Whitney	<b>Erin Reibold</b> Siemens Energy, Inc.	<b>Veronica Stumpf</b> LSI Industries	<b>Janice Wiegand</b> Mercury Manufacturing Company
<b>Sharon Martin</b> LORD Corporation	<b>Janae Owens</b> General Electric	<b>Amanda Riebel</b> HOERBIGER Corporation of America	<b>Pam Swanson</b> Airgas North Central	<b>Erica Wiegel</b> Wiegel Tool Works, Inc.
<b>Teresa Martinez</b> HOERBIGER Corp. of America	<b>Ivonne Pacheco</b> Mitsubishi Power Systems Americas	<b>Carol Rinder</b> Weatherchem/Mold Rite Plastic	<b>Shannon Sweatman</b> Southern Manufacturing Technologies	<b>Jenny Wilcoski</b> Caterpillar, Inc.
<b>Jessica Mattis</b> General Motors	<b>Helen Patricia</b> Kennametal	<b>Sandra Roque</b> Noven Pharmaceuticals	<b>Ruthanne Szumski</b> Pratt & Whitney	<b>Della Williams</b> WilliamsRDM
<b>Bethany Mayer</b> HP Networking at Hewlett-Packard	<b>Jackie Peer</b> Schweitzer Engineering Laboratories, Inc.	<b>Brenda Ryan</b> Ryan Industries, Inc. & Alliance Industries LLC	<b>Traci Tapani</b> Wyoming Machine Inc.	<b>Marissa Wingate</b> Lockheed Martin
<b>Lycinda McDaniel</b> Ingersoll Rand	<b>Diana Perreiah</b> Alcoa Building & Construction Systems North America	<b>Kim Ryan</b> Batesville Casket Company, Inc.	<b>Melissa Tata</b> Dell	<b>Silvia Wixson</b> Able Manufacturing & Assembly, LLC
<b>Mary McDonald</b> Ball Corporation	<b>Monica Pfarr</b> American Welding Society	<b>Judith Schwader</b> Insitu, Inc.	<b>Rebecca Taylor</b> National Center for Manufacturing Sciences	<b>Judy Wojanis</b> Wojanis Hydraulic Supply Company, Inc.
		<b>Laurie Shakley</b> Click Bond, Inc.	<b>Julie Thyne</b> The Dow Chemical Company	

## Authors

### **Craig Giffi**

Vice Chairman  
U.S. Automotive and Industrial  
Products Industry Leader  
Deloitte LLP  
cgiffi@deloitte.com

### **Tonie Leatherberry**

Principal  
Deloitte Consulting LLP  
tleatherberry@deloitte.com

### **Ben Dollar**

Principal  
Human Capital and  
Organizational Transformation  
Deloitte Consulting LLP  
bdollar@deloitte.com

### **Jennifer McNelly**

President  
The Manufacturing Institute  
jmcnelly@nam.org

### **Gardner Carrick**

Vice President  
The Manufacturing Institute  
gcarrick@nam.org

### **Visit Deloitte.com**

To learn more about our manufacturing practice, visit us online at [www.deloitte.com/us/competitiveness](http://www.deloitte.com/us/competitiveness).

### **Disclaimer**

This publication contains general information only and Deloitte is not, by means of this publication, rendering accounting, business, financial, investment, legal, tax, or other professional advice or services. This publication is not a substitute for such professional advice or services, nor should it be used as a basis for any decision or action that may affect your business. Before making any decision or taking any action that may affect your business, you should consult a qualified professional advisor. Deloitte shall not be responsible for any loss sustained by any person who relies on this publication.

### **About The Manufacturing Institute**

The Manufacturing Institute is the 501(c)(3) affiliate of the National Association of Manufacturers. As a non-partisan organization, the Institute is committed to delivering leading-edge information and services to the nation's manufacturers. The Institute is the authority on the attraction, qualification and development of world-class manufacturing talent. For more information, please visit [www.themanufacturinginstitute.org](http://www.themanufacturinginstitute.org).

### **About Deloitte**

As used in this document, "Deloitte" means Deloitte LLP and its subsidiaries. Please see [www.deloitte.com/us/about](http://www.deloitte.com/us/about) for a detailed description of the legal structure of Deloitte LLP and its subsidiaries. Certain services may not be available to attest clients under the rules and regulations of public accounting.

### **About the Financial Times**

Financial Times Live, the global conferences and events arm of the Financial Times, gathers pre-eminent public and private sector decision-makers, visionaries and strategists from the world's most important economies and industries for a wide range of interactive, agenda-setting programs that combine the power of on-site discussion and networking with the flexibility of live-streamed and on-demand broadcasting. Chaired by senior journalists from the Financial Times and its group publications, the summits, conferences, awards and strategic forums organized by FT Live provide audiences with the opportunity to listen to and interact with speakers of the highest caliber in lively and stimulating debates that cover the key issues of our time.