THE MANUFACTURING PREDICAMENT

Sector Primed to Surge, Yet Skilled Labor Shortage an Obstacle
Manufacturing. It’s been America’s “signature” since the days of the Industrial Revolution when machinery, factories and, eventually, mass production became our hallmarks and inventiveness, innovation and ingenuity were our trademarks.

Financial pundits, business leaders and government officials past and current assert manufacturing represents this country’s economic engine and serves as the catalyst for prosperity. The sector spurs demand for everything from raw materials and intermediate components to software and services of all kinds. Studies and statistics show that manufacturing significantly impacts the widespread creation of jobs – and wealth.

A 2010 national study of Americans sponsored by The Manufacturing Institute and Deloitte revealed more than three quarters of respondents – 78 percent – believe the manufacturing industry is very important to our economic prosperity.

“Despite such value placed on U.S. manufacturing, its influential “signature” currently is not a bold flourish, but a shaky, subdued script. Yes, the worst economy since the Depression and years of job losses to low-wage countries have been devastating. But the economy already shows signs of a comeback, it is manufacturing that has led the way in the rebound, and there is a growing recognition that outsourcing of jobs overseas will decrease as these formerly “low-wage” countries build their own middle-class populations.

Although these are positive trends, many are not ready to predict that a vibrant U.S. industrial environment is on the horizon, and a number of experts are far from optimistic. The reason? Manufacturers simply cannot find the skilled labor needed today to handle the kinds of sophisticated production processes and tasks required on the manufacturing shop floor.
It is a remarkable contradiction. Companies cannot find workers in an economy still reeling from months of double-digit unemployment rates. Yet, research and real-life scenarios support what for many is counter-intuitive. For example:

• The 2010 Manpower Talent Shortage Survey revealed that among the most difficult U.S. jobs to fill today are those in the skilled trades, which encompass welders, electricians, carpenters/joiners and other related occupations.

• A recent CBS News segment reported the number of open manufacturing jobs doubled in one year to 227,000, yet many are not filled due to a shortage of skilled workers.

• A PBS Newshour report in December 2010 noted “there is an unfilled demand for highly skilled, highly educated personnel in the manufacturing sector.”

• The state of Pennsylvania predicted a shortage of 15,000 to 17,000 workers in precision manufacturing and industrial maintenance over the next decade.

• The Chicago Manufacturing Renaissance Council told the Chicago Tribune this past December that “technologically advanced factories report a shortage of qualified workers.” In that same story, Robert Laystrom, the president of Chicago-based Laystrom Manufacturing, said he searched for four months before he found a maintenance worker who could tend to the firm’s sophisticated laser-cutting machinery.

As more and more baby boomers retire, the problem is expected to accelerate dramatically.
How Did This Happen?

How and why is manufacturing facing this remarkable dilemma? A confluence of factors is at work:

**Manufacturing’s Image Problem**

There’s no doubt that manufacturing has an image problem – especially among today’s youth. Unfortunately, the old stereotypes of backbreaking labor and grimy working conditions persist. Ask people today what they think of manufacturing and most will probably recite a perception of a dirty, dangerous place that requires little thinking or skill from its workers and offers minimal opportunity for personal growth or career advancement. Of course, this is totally inaccurate.

Today’s manufacturing jobs are “cool” and appealing. Workers are now required to be experts and operate the most advanced, sophisticated equipment and automated apparatus in the world. They can cut steel with laser lights, water jets and plasma cutters, and program robots to paint, package and palletize products. Computer programming and other high tech skills are needed, which dovetails precisely with what younger people love these days; these jobs can be more fun than many service sector jobs.

Jeff Owens, president of the Peoria, Ill., production equipment maintenance firm Advanced Technology Services, recently wrote, “It’s no secret that today’s youth do not see manufacturing as a glamorous career to pursue. Many perceive manufacturing jobs as low-tech which, in fact, couldn’t be further from the truth. If you go into manufacturing plants, the technical sophistication and the computing power are much more than you might find in an office environment or in many of the computing environments that exist today.”

For now, youth remain unconvinced. A national poll of teenagers underscored in a major way teens’ disinterest in manufacturing and working with their hands. The poll, sponsored by
How Did This Happen?

Nuts, Bolts & Thingamajigs (NBT), the Foundation of the Fabricators & Manufacturers Association (FMA), showed a majority of teens – 52 percent – have little or no interest in a manufacturing career and another 21 percent are ambivalent. When asked why, 61 percent said they seek a professional career, far surpassing other issues such as pay (17 percent), career growth (15 percent) and physical work (14 percent).

A Nation of ‘Non-Tinkerers’

Reinforcing this mindset is American adults’ disinterest in the manual arts. Another NBT poll revealed that America has become a nation of “non-tinkerers,” with 60 percent of adults avoiding major household repairs, opting to hire a handyman, enlist their spouse, ask a relative or contact a property manager. Some 58 percent said they never have made or built a toy and 57 percent state they have average or below average skills at fixing things around the house.

These rather startling findings tell us most Americans simply do not work with their hands anymore, whether it’s to tackle a hobby for pleasure or to handle a necessary household repair. This means young people essentially have no role models when it comes to repairing things themselves or taking pride in building something useful. It’s no wonder that so many teens today dismiss the idea of a career in manufacturing.

Education System Falls Short

Education priorities today rarely position manufacturing as a preferred career choice. The U.S. Department of Labor reported on this trend a couple of years ago, stating, “Too few people consider manufacturing careers and often are unaware of the skills needed in an advanced education environment. Similarly, the K-12 system neither adequately imparts the necessary skills nor educates students on manufacturing career opportunities.”

Two dynamics are primarily responsible for this shortcoming. First, without question, in recent years many cost-conscious school districts dropped vocational programs and shop classes to better balance their stretched budgets. These actions were happening even before the current economic crisis. According to Dr. Chris Kuehl, economic analyst for FMA, “Only 6 percent of all the high schools in America offer shop classes. It is the single most expensive program a school supports. In addition, technical schools don’t have the fiscal
How Did This Happen?

capability to keep up with the rapidly changing technology now found in manufacturing facilities. Therefore, students are not trained in the skills and technologies employers need.

The NBT poll of teens underscored this unfortunate trend. Only 28 percent said they have taken an industrial arts or shop class. It’s interesting to note that more than double that number – 58 percent – have completed a home economics course.

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In addition, the poll revealed 61 percent of the teens never have visited or toured a factory or other type of manufacturing facility. When such a small number of young people can take pride in finishing a shop project or can view the operations of today’s factories, it’s no surprise manufacturing is not on their career radar screens.

The second factor that contributes to the problem is, ironically, the high school counselors responsible for directing students to fulfilling careers. High school principals and counselors often fail to realize that manufacturing is a viable career option for students, opting instead to direct them to the typical four-year university program and degree. The education system theoretically should prepare our children for the future, yet does not provide them exposure to skills and fields that offer significant opportunities.

From a broader perspective, when you consider that only three-quarters of all students in the U.S. who start high school graduate, a concerted effort to raise graduation rates becomes even more paramount so more students leave high school with employable skills.

These perspectives were reinforced in a significant way in late 2010 via a national survey of FMA members. When asked how to best improve the skill sets of new employees, the leading answer, cited by 66 percent of the respondents, is “more focus on careers in manufacturing in traditional school systems via curricula, school counselors and other means.” This is the same response FMA members gave in 2007 when asked a similar question.

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And, when asked to rank the academic preparation future workers should have, more than two-thirds of these manufacturing executives – 68 percent – cited the need for a technical certificate (earned at a community or technical college), followed by high school diploma or GED (52 percent) and specialized industry certification (41 percent). Ranked significantly lower were associates and bachelors degrees.

“Manufacturers need to reach out and be more active in their communities to tell the positive manufacturing story and stress the opportunities that exist.” Dr. Chris Kuehl, FMA economist

Manufacturers’ Role

The manufacturing sector is not entirely blameless here. For reasons attributable to their own financial challenges and need for some to focus exclusively on business survival, many companies have not been proactive to any great extent to help combat the skilled labor shortage issue.

“Manufacturers aren’t terribly active in Chambers of Commerce or professional associations or with their local universities and colleges,” said FMA economist Kuehl. “They need to reach out and be more active in their communities to tell the positive manufacturing story and stress the opportunities that exist. Such communications from the executives themselves can help remedy the conditions that created this crisis.”

Some industry executives also have acknowledged that extremely beneficial tactics that fostered skills – in-house apprenticeships, training programs and internships – have diminished during the economic downturn. Apprenticeships are one way to encourage prospective young employees to enter the field. Students who intern can learn valuable skills throughout the year and often become full-time employees at these companies upon graduation. Manufacturers have fallen short in offering these programs.
What Must Be Done

Industry trade groups, manufacturers, educators and the media each can contribute to meeting the challenge. Fortunately, significant inroads have been made to:

Increase Young People’s Interest in Manufacturing

It’s quite apparent that attracting the next generation of workers to manufacturing can be a panacea. That’s the goal of the Gold Collar Careers initiative in Wisconsin established by a consortium of companies, trade groups and educators. And, that’s why FMA member D&S Manufacturing participated in a new promotional video that features young people visiting local manufacturers marveling at today’s high-tech factories and encouraging middle and beginning high school students to consider manufacturing careers. The video, titled “Manufacturing – the New Cool,” and made possible through a grant from the Wisconsin Technical College System, is being distributed to teachers and counselors.

Taking a similar message to young audiences is one goal of the aforementioned Nuts, Bolts & Thingamajigs (NBT) organization. NBT provides grants for a number of summer manufacturing camps across the country that expose junior high and high school students to math, science and engineering principles, and many facets of manufacturing technology.

Camp participants use technology to create a product from start to finish, providing them practical manufacturing experience in 3D design, CNC programming, welding, machining, fabricating and more, while learning product creation, problem solving, entrepreneurship and team building.

Visits to area manufacturers provide an up-close look at products being made as well as career advice and inspiration from the entrepreneurs who run the companies.

NBT also issues scholarships to students at colleges and trade schools pursuing careers in manufacturing. In 2010, 10 scholarships were awarded to students across the country.
What Must Be Done

Two additional examples of this kind of outreach include the girls welding skills summer camp conducted by the Weld-Ed National Center for Welding Education and Training, and The Manufacturing Institute’s “Dream It. Do It.” Initiative, now active in 20 U.S. cities. It targets 16 to 26 year-olds providing access to available training and educational opportunities via partnerships with local manufacturers, government entities and educational institutions.

Partner with Educators in Effort

Support from the educational community in this effort is critical. Such engagement can be done through both formal and informal activities.

One excellent example of the former is the state of California’s “I Built It-Youth” campaign, a statewide effort to begin training California’s future skilled workforce to help rebuild California’s infrastructure. The campaign is a collaboration between the California Department of Industrial Relations and the California Department of Education. It is designed to promote careers in the construction trades to junior and senior high students through apprenticeship opportunities and fosters participation in the state’s economic recovery process to prepare them to join the next generation of skilled workers in California.

Another program that teams government with educators is “Max & Ben’s Manufacturing Adventures,” which features two 13-year-old boys presenting on a website their tours of local manufacturing facilities in video format. Funded through a community-based job training grant from the Department of Labor, the program was conceived and executed by Western Technical College in La Crosse, Wis.

The Manufacturing Institute recently launched the National Association of Manufacturing endorsed Skills Certification System that targets deficits in education and training. These credentials validate the skills and competencies needed in entry-level manufacturing jobs, combining both technical and non-technical skills to succeed in the manufacturing environment. The system currently is deployed in four states, with 20 additional states in the planning phases for implementation.

Then there is the case in which an entire high school is established to prepare students for manufacturing careers. The Chicago Manufacturing Renaissance Council (CMRC) founded such an institution in 2007 when the doors opened to Austin Polytechnical Academy in the Windy City. CMRC is a coalition of business, labor, government and community leaders working to make Chicago the global leader in advanced manufacturing. Among its missions: improve the public’s perception of manufacturing, and support education, training and access to careers in manufacturing.
Thus was born Austin Polytechnical Academy, which educates students in all aspects of manufacturing, from skilled production and engineering to management and company ownership. The school features the same computerized, high-tech equipment used by modern manufacturers today. In 2010, 23 Austin students earned nationally-recognized machining certifications from the National Institute for Metalworking Skills (NIMS).

As the Austin Polytechnical program illustrates, change is most likely to happen one school district at a time with the support from local manufacturers who will need to hire local graduates. For example, employers in Naperville, Ill., have worked with the local Indian Prairie school district to encourage the development and implementation of a new engineering and technology track within the high schools.
What Must Be Done

Similar grassroots and less formal activities with the local education community can work as well. Manufacturers should consider offering factory tours to local elementary and middle school classes. Ideally, a young, energetic worker will lead a tour of the plant. When students see a clean, modern facility full of sophisticated machinery, it will leave a lasting, positive impression.

Manufacturing equipment suppliers should consider donating equipment to local trade or vocational schools to support manufacturing courses. Manufacturers also should be willing to advise local instructors and counselors at community colleges or high schools on available job opportunities and skill requirements, and participate in curriculum planning.

Revive Apprenticeships and In-House Training

Companies should invest time and dollars to conduct programs such as internships and apprenticeships that reach out to specific individuals already considering manufacturing careers.

Advanced Technology Services proactively recruits young workers while they are in high school or a technical school. The initiative employs students as interns and then, after graduation, hires them on full-time at which time they go through an intensive training program.

Climax Portable Machine Tools in Newberg, Ore., conducts a multi-faceted internship program as well. It recruits students between the ages of 17 and 20 to participate in a learning experience not found in the classroom. The Climax program even involves first aid training and a community service project that, the firm says, is designed to “impact our business and their professional growth.”

Climax also uses its experienced, highly-skilled workforce in training roles. The company offers a cross-training program that features senior machinists training and acting as mentors to junior employees, and established an in-house training program to help reverse the attrition of highly trained machinists and to keep them current with the new skills necessary.

Similarly, BEGNEAUD Manufacturing, a precision sheet metal job shop located in Lafayette, La., conducts an in-house apprenticeship program that introduces employees to every metalworking process at the company on a rotating basis. BEGNEAUD, too, partners an experienced operator with the younger employee for each specific practice.

Informing young people of such substantial, hands-on learning opportunities is yet another effective way to foster interest in a manufacturing career.
What Must Be Done

Foster a Positive Image

All of the campaigns and programs described here, plus showcasing the career opportunities and wage potential, can help change young people’s minds about manufacturing – if they hear about them.

That’s why the industry must constantly inform the editorial media – and this includes the vast and growing social media universe – about these initiatives and available career paths. These media outlets can help tell the story to the younger population, as well as influentials such as educators and parents, that dreams jobs are there for the taking.

In fact, that’s one of the missions of NBT. It uses some of its resources to drive local and national public awareness campaigns to spread the message that manufacturing is a viable career option. NBT is not alone in spreading this gospel. Entities such as The Manufacturing Institute, SME and others are quite proactive in this area. Educational institutions also promote their special initiatives that may include their hosting of manufacturing camps, ties to “Dream It. Do It.” or the introduction of robotics to their curricula.

The Alabama Construction Recruitment Institute (ACRI) took the effort to an even higher level. In late 2010, it retained Mike Rowe, prominent host of “Dirty Jobs” on the Discovery Channel and a long-time voice for the need of skilled workers, to help convey the message in the state. In a new public service announcement, Rowe speaks directly to Alabama teens and their parents about the growing need for skilled tradesmen such as electricians, pipefitters, boilermakers and steel workers.
What Must Be Done

“A third of Alabama’s skilled tradesmen are over 50, and they’re retiring fast,” Rowe says. “Guess who’s replacing them? No one.”

ACRI executive director Tim Alford said the “root of the problem is public relations. We found there are so many misconceptions about these jobs, often perceived only as minimum wage, seasonal, dangerous or without a career ladder. Nothing could be further from the truth.”

In Conclusion

The message is clear. The goals are attainable. The economic climate is warming in a positive way.

Many in the industry are encouraged by the progress being made. For example, in the NBT poll cited earlier, parents were asked if they would support having a young factory worker in their family. More than half – 56 percent – actually would recommend their child pursue a career in manufacturing or another kind of industrial trade.

Knowing so many parents will back their children in this career path is truly welcome news. However, a significant amount of work remains to be done – as, conversely, 44 percent of parents currently are not supportive. The industry needs to convince them, their children and others in this great country that manufacturing is an honorable and fulfilling career.