MANUFACTURING CAN BECOME NEWEST DREAM JOB FOR MANY

America Primed for Industrial Evolution

But Where Are Needed Skilled Workers?

A White Paper prepared by
Fabricators & Manufacturers Association, International®
833 Featherstone Road • Rockford, Illinois 61107
fmanet.org • info@fmanet.org
Phone 888.394.4362 or 815.399.8775 • Fax 815.381.1371

© 2007 copyright Fabricators and Manufacturers Association, International®

America's Industrial Revolution in the 19th Century propelled economic development and served as the springboard for this nation to become a world power. Sadly, a number of factors since post-World War II led to a manufacturing malaise that knocked the USA off this lofty production perch. Fortunately, new dynamics are now at work which, if this country responds with intelligence and fortitude, can create an "Industrial Evolution" that will revive our manufacturing prowess.

A pipedream of industry insiders? Unsubstantiated optimism expressed by corporate leaders? Wishful thinking from trade groups?

Not at all – if manufacturers, educators, trade groups and even the media work to fill a critical need: dramatically increasing the pool of available, highly-skilled industrial workers. Many experts view filling this labor shortage as America's biggest challenge to achieve a manufacturing renaissance and, ultimately, a vastly improved economy.

This paper will outline how we lost our "manufacturing mojo," the new opportunities that have evolved, and how we should respond to the challenge.

A Quick Look Back

First, some brief reflection. The Industrial Revolution transformed this country from an agrarian society to a modern urban-industrial state. The proliferation of machinery, factories and, eventually, mass production became America's signature, while inventiveness, innovation and ingenuity became our trademarks. Made in USA once was such a dominant force in this country that 25 million people worked in the industrial arena in 1942 – equal to the number of those in service jobs, according to the Chicago Federal Reserve.[1]

Such "equality" no longer exists. The well documented demise of manufacturing jobs is evidenced by the mere 15 million folks performing such work today. We've now become a nation of service providers with a whopping 125 million workers in such positions.[2]

Although service jobs provide significant value to our society, they are not the fuel of a country's economic engine. Experts current and past assert manufacturing is the absolute catalyst. For example, according to a recent article in the *Journal of Industrial Technology*, "Manufacturing spurs demand for everything from raw materials to intermediate components to software to financial, legal, health, accounting, transportation and other services…Every $1 of final demand spent for a manufactured good generates $0.55 of GDP in the manufacturing sector and $0.45 of GDP in the non-manufacturing sector. The service sector, which now makes up more than 70% of the U.S. economy, relies on U.S. manufacturers for the goods and technology that spur service sector growth."[3]

Such facts apply to other countries as well. Just a couple of years ago, an economic report on the United Kingdom stated "manufacturing still plays a vital role in the determination of economic activity and creation of wealth…and supports a large number of jobs in the various service sectors, such as corporate banking, transport and catering."

Based on these theories, for example, Internet commerce can succeed only if such providers have goods to sell. A robust manufacturing economy indeed insures a growing and healthy retail and service economy. And, we must work toward creating the resources, know-how and infrastructure to have those goods increasingly be made in the USA. But, based on numerous pleas from manufacturing executives to find skilled workers to do just that, this opportunity may end up in a scrap heap.

The problem is pervasive. This is just a sampling of recent media and industry reports and numbers:

- *USA Today*, Dec. 6, 2006: "Manufacturers, regardless of size, are reporting a dire shortage of skilled workers: people such as welders, electricians or machinists with a craft that goes beyond pushing buttons or stacking boxes but does not require a degree."
- National Association of Manufacturers survey (NAM): More than 80% of 800 manufacturers said they were experiencing a shortage of skilled workers.
- Federal Reserve Bank of Philadelphia: In October 2006, manufacturers surveyed said "finding qualified workers" was "their biggest business problem."
- *Modern Metals*, January 2007 editorial: "Manufacturing is a skilled profession, and many employers are saying that people aren't educated enough and the skilled labor simply isn't available."

Need an even more recent poll? Results released just this spring from a survey of Fabricators & Manufacturers Association, International (FMA) members revealed the biggest challenge they face – by far – is the dwindling supply of skilled workers. Some 40 percent of those polled felt this way, far surpassing concerns such as the rising costs of materials, labor and benefits (cited by 17

© 2007 copyright Fabricators and Manufacturers Association, International®

percent), staying competitive globally (11 percent) and staying current with new technologies and regulations (6 percent).

To recapture its once-held position of worldwide leadership, the U.S. must focus not on the art of selling and marketing things, but on making them.

Manufacturing Mojo Lost

Discussing why our country is in this predicament will offer many clues on how to remedy it. In some ways, we witnessed a "perfect storm" of elements:

Education priorities today rarely position manufacturing as a preferred career choice

This is one conclusion reached by the U.S. Department of Labor (DOL) this summer when one of its economic reports stated, "Too few young people consider manufacturing careers and often are unaware of the skills needed in an advanced manufacturing environment. Similarly, the K-12 system neither adequately imparts the necessary skills nor educates students on manufacturing career opportunities."[5]

And, how often during the years have we seen headlines such as this one, which ran in the May 26 *Milwaukee Journal-Sentinel*: "Cost-conscious school districts have scrapped vocational programs."

Plus, when there are courses, some feel they come up short. According to Neil Tebbanno, vice president of operations for Project Lead The Way, a national pre-engineering program that teaches school children applied math and science through hands-on work, "Traditional high school courses are taught in silos. There is a silo for math, one for science, etc.; there is very little communication between them. And they are taught by well-intentioned instructors who have never had much work experience and their understanding of manufacturing and engineering is limited."[6] Even if high schools offer shop classes in, say, metalworking, they are not keeping up with the latest technologies.

High school counselors often contribute to the malady, too, by directing so many of their students to the typical four-year university program and not considering manufacturing. An illustration of this problem occurred in Rockford, Ill., recently, when the school superintendent took counselors to manufacturing shops. Most had never been inside a manufacturing facility so, naturally, they steered students to traditional college curricula. Upon exposure to the modern production/manufacturing facilities, the counselors changed their message to indicate that a four-year degree was not the only route to take.

Colleges and universities have some culpability, too. Although schools may offer training in engineering or computer drafting, how many in recent years offer instruction in more journeymen programs for the new technical positions of today?

The NAM reached the conclusion about the education gap back in 2003, when it noted, "Research showed that the United States' educational system exacerbates the negative perception of manufacturing because it is largely out of step with the career opportunities emerging for young people in today's economy, including those in manufacturing…The educational system fails to engage these students (i.e., college dropouts) and help them enter alternative post-secondary programs…Many well-paid and rapidly increasing manufacturing jobs remain unfilled, including those requiring two- and four-year technical degrees or short-term skill certificates."[7]

Foreign born bring language barriers

Manufacturing jobs *do* appeal to many immigrants, yet those who have difficulties with English as their second language often face hurdles that preclude learning the job skills effectively, understanding the work and/or communicating well with their peers and supervisors. Thus, manufacturing effectiveness takes another hit, acknowledged in 2007 by the DOL, noting, "Manufacturing workforce is increasingly foreign born, meaning that possessing adequate English language skills is becoming a prominent challenge. Employers have had difficulty finding English language programs that suit their needs."[8]

Manufacturing jobs went overseas

Emerging technologies in India and China initially resulted in a steady stream of jobs going overseas because low labor rates. Some countries offered temporary incentive subsidies, too, in the form of abatements on taxes, permits, licensing and training.

New skills required

Most of the fastest growing jobs today are in industries requiring advanced knowledge and skills and often offer high wages, according to U.S. Labor Secretary Elaine Chao.[9] But, as noted earlier, many in the available workforce lack these skills and the educational background. The nation has shed 5 million manufacturing jobs in three decades, but higher-skilled factory jobs increasingly go unfulfilled as employers deal with applicants with poor reading and math abilities and a bad attitude about blue-collar work.[10]

© 2007 copyright Fabricators and Manufacturers Association, International®

Manufacturing gets no respect today

The poor image of manufacturing during recent years – and still today – may be the most powerful factor driving the skilled workers shortage. Just this summer, the DOL, in a candid overview, stated, "Manufacturing confronts a negative image, characterized by such phrases as "declining," "dirty," "low-pay," etc. Consequently, too few highly skilled workers seriously consider manufacturing careers."[11]

A division of the DOL, Advanced Manufacturing Industry, Employment and Training Administration, also chimed in. "A modern manufacturing facility today bears little resemblance to a traditional factory of decades past," it said. "Popular perceptions of manufacturing jobs as dark, dangerous and dirty are largely outdated as advanced robotics and other 'intelligent' systems become pervasive throughout the manufacturing process."[12]

Despite this truism, those on the front lines know an image problem remains. "There is an image that manufacturing is a dead-end type of career," Ronald Bullock of Bison Gear and Engineering recently told the Associated Press. Lou Schorsch, chief executive of Mittal Steel, told *The Wall Street Journal*, "Despite being intensely high tech and increasingly clean, policy makers still view us as a dirty industry."

Even from a cultural perspective, manufacturing is not part of the American mindset and makeup, particularly among young people and certainly among high school students and those younger. After the baby boom generation, manufacturing took a back seat to newer information technologies and many people no longer wanted to get their hands dirty. John Sinn of the Center of Applied Technology at Bowling Green University, believes, "Culturally, we have browbeaten manufacturing to such an extent that we don't have people interested."[13]

Adds actor John Ratzenberger, producer and host of the Travel Channel's "John Ratzenberger's Made in America" program and co-founder of the Nuts, Bolts & Thingamajigs Foundation (NBTF), a charitable organization dedicated to introducing young people to the pleasures of tinkering, "Part of the problem is the media and Hollywood often portray manufacturing in a poor light, denigrating anyone who works with their hands."

Why Manufacturing Can Be the Dream Job

Changing this landscape is quite doable. The American manufacturing community and others connected to it can position manufacturing as the dream job by leveraging these trends with vigor and verve:

The industry has changed

Innovations and new technologies implemented in factories and plants from coast to coast and border to border have dramatically transformed manufacturing. Of course, such complex new production technologies require highly-trained production workers.

The jobs are "cool" and appealing

With such developments, workers can now be experts and operate the most advanced, sophisticated equipment and automated apparatus in the world. They can cut steel with laser lights, perform laser welding and plasma cutting, operate water jets and program robotics. Due to this, computer/high tech skills are needed, which dovetails to what younger people love these days; these jobs *can* be more fun than many services jobs. Plus, this requires a higher education that nearly everyone aspires to.

Wages are good

Here's a key part of the sell: Manufacturers will pay a premium for this expertise and offer excellent, highly competitive wages. One welder from Illinois summed this trend concisely in 2006 when he told an Atlanta newspaper, "We are doing a blue collar job and make white collar money."

Jobs are plentiful

Concurrently, the manufacturing work force is shrinking. So, opportunities will abound. According to employment projections by the DOL, between 2002 and 2012 there will be 2 million job openings in computer science, math, engineering and physical sciences; and 2.4 million skilled production jobs for machinists, machine assemblers and operators, systems operators and technicians. At the same time, the current science and engineering workforce is getting older. More than half of these workers are already older than 40, and 26 percent are older than 50.[14] This dynamic is impacting our neighbor to the north as well, where experts note Canada's aging population will create a shortage of skilled workers.

A presentation by Eric Mittlestadt, CEO of The National Council for Advanced Manufacturing, at the 2007 American Welding Society Conference, also addressed the "shrinking U.S. workforce." By 2018, he said, 70 million baby boomers will retire, 40 million new workers will enter the workforce, creating 30 million fewer available workers."

Robert Gleeson of the Regional Development Institute at Northern Illinois University, agreed, noting that "as the

© 2007 copyright Fabricators and Manufacturers Association, International®

baby boomers move into retirement, they will create a steady flow of new job opportunities in sectors that otherwise are not expected to grow in total employment."[15]

Skilled jobs are staying in the U.S.

American manufacturers are discovering specialized work like this cannot be done overseas. The *Chicago Tribune* reports in a story headlined, "Lack of qualified workers threatens India's success," that although "Indian schools churn out 400,000 new engineers every year, as few as 100,000 are actually ready to join the job world." China, the county that so many see as an overwhelming threat to U.S. jobs, may be no longer. According to Business Insurance magazine, "While China has a lot of raw, hardworking talent, employees who lack the necessary skills set is one of the key bottlenecks to growth for most multinationals there. Just 10% of Chinese engineers are suitable for work at non-Chinese companies."

There is a prevailing mood in general that taking advantage of low labor rates overseas may by not be as advantageous as it seems. There are intangible costs involving political control and currency risks, and lack of protection for intellectual property. Additional real costs are increased inventories and delays in time-to-market. These costs are hard to see and harder to measure, but they are real.

This is not just theory. Here's what a manufacturer executive told the *FFJournal* this summer: "I have spoken to at least three different customers lately who told me that jobs that went to China are returning because of quality issues."

What must be done

The convergence of these factors has laid the foundation for an industrial evolution in this country. Yet, there remain many blocks to build to complete the process. Fortunately, initial progress has been made. Here's what we need to do and build on:

Industry sectors must team up and help drive the process

Entities that include local economic councils, government units, schools and manufacturers themselves need to create programs and work together. In Maryland, for example, the Carroll County Department of Economic Development, Carroll Community College and manufacturing industries joined forces to address a manufacturing workforce shortage in the region. The Carroll County Manufacturing Consortium was formed in 2007 with the goal of recruiting and attracting qualified and trained workers to the many specialized niche manufacturing industries in the county.[16]

Then, you have the Chicago Manufacturing Renaissance Council (CMRC) which, a couple of years ago, forged an innovative and unique partnership of Chicago's business, labor, government, education and community leaders. CMRC is geared toward and dedicated to helping Chicago lead the race to the top in what it terms "global high road/high performance manufacturing." The consortium is working to educate the public regarding the image and societal appreciation of modern, high-tech manufacturing; reform the public education and workforce development systems; and enhance government programs for manufacturers and their workers.[17]

The Dream It. Do It. Campaign, a program started in April 2006 to educate and train local people to fill manufacturing jobs in Smyth and Washington Counties in Virginia, uses grants from state and local agencies. In less than two years, students have enrolled in 450 occupational and leadership skill training classes and area community colleges, which offer courses specified by the local manufacturers.[18]

Bottom line: Such initiatives should be fostered in all regions of the country.

Reach out to potential job candidates when they are young

Who would imagine that woodworking and welding would replace swimming and sports as major activities for a number of youngsters who attend summer camps? Yet, such programs are starting to flourish, introducing young people to the joys of making things and underscoring the opportunities in manufacturing.

FMA offers grants for manufacturing summer camps at numerous locations across the country - each aimed at changing the image of manufacturing for youths. Through partnerships with nonprofit organizations, such as the Boys and Girls Clubs of America, FMA provides guidelines on the basic structure of how a camp should be conducted. The organizations then use their community resources to develop the camps based on local manufacturing needs.

The camps provide a positive, hands-on experience so young people will consider manufacturing as a career option. They target youths at the critical level of early secondary education, exposing them to math, science and engineering principles, and giving them opportunities to see the technology being used in industry and the high

© 2007 copyright Fabricators and Manufacturers Association, International®

level of skills that will be required from the workforce.

Typically, during the first couple of days, students use computer assisted design to create a project. They then transfer their designs to a computer numeric control machine and are able to take their finished products home. The final days of the camp are reserved for visiting local manufacturing companies to see what types of career opportunities are available.

"These camps provide youths with the exposure to vocational and technical trades that no longer exist in all public education systems," said Terry Egan, FMA Foundation director.

Partnering with FMA on the grants is John Ratzenberger's NBTF, created to help avert what it, too, sees as a growing crisis in America – too few young people developing the kind of manual skills required by industries, workshops and engineering practices. Through mentoring programs, education and media awareness, NBTF seeks to introduce young people to the pleasures of tinkering.

Another great example is a program offered by the Montgomery County Community College in Pennsylvania – week-long Advanced Technology summer camps in engineering and nanotechnology/ biotechnology for high school students. The camps are part of an ongoing Advanced Technology Initiative, which seeks to support and encourage the research, development and implementation of new and revised programs in advanced technologies at both the college and in the region. Students attending the engineering camps are exposed to the areas of physics, engineering, graphics, chemical engineering, robotics binary coding and material science.[19]

This camp movement is involving major corporations as well. In an effort to tap future workers in middle school or earlier, employers including IBM, Texas Instruments, Exxon Mobil and Boeing are increasing their backing of career-driven summer camps. "We are definitely seeing more business and industry involvement," says Janet Bray, executive director, Association for Career and Technical Education, an Alexandria, Va., educators' group. "The corporate support ranges from providing funding, facilities and equipment to employee volunteers working as camp instructors, staffers or year-round mentors."[20]

Even the YMCA has joined the manufacturing camp movement! Camp Matawa outside West Bend, Wis., offers its one-week "Toolin' It!" program with activities in computer-aided design, computer numeric factoring, control pressing, die making and machinery.

Bottom line: Parents and educators should recognize the availability of such programs and consider introducing their children and students to these fun, learning experiences.

Get educators on board

The education system is beginning to join the evolution, although this is an area that often will require significant urging to those in academia – as well as funding. Yet, inroads are being made.

To illustrate, a new, innovative initiative at Max S. Hayes High School in Cleveland provides students the 21st century skills needed to become blue-collar employees working in manufacturing and computers. The program has a rigorous curriculum, including calculus, chemistry, physics, robotics competitions and rotations in computer-aided design and drafting, computer numerical control machining, robotics and engineering welding.[21]

In Milwaukee, after years of cuts, some shop classes are returning to local schools. Milwaukee Public Schools re-opened welding labs at two high schools this year. The system is starting robotics at three high schools in fall 2007, has expanded a program in computer-integrated manufacturing and is starting a small-engine program with equipment donated by Briggs & Stratton.[22]

The manufacturing sector can respond either through launching programs on their own or relying on third party providers. Recognizing the shortage of skilled labor, Liebherr Mining Equipment, Newport News, Va., is providing full benefits, additional training courses, educational subsidies and relocation assistance to entice potential applicants.[23] The Project Lead the Way class in Milwaukee has funding via a three-year, $455,000 contribution by Rockwell Automation aimed at middle schools to eventually increase and improve candidates for Rockwell's engineering scholarship.

At Second Chance Partners for Education, also in Wisconsin, students learn trades while working toward high school graduation. The 21-month program for at-risk students, begun by Generac Power Systems, integrates two hours of classroom learning with six hours a day of on-the-job training that includes production welding, product testing and computer numeric control machining.[24]

Williams International, a gas turbine manufacturer in Ogden, Utah, is investing a whopping $30 million in a program at Ogden-Weber Applied Technology College that will bring in students, some of them in high school, for hands-on training.

And then, for manufacturers without those kinds of resources and/or time, companies can turn to people like Brian Smith and the training and consulting firm Phillips

© 2007 copyright Fabricators and Manufacturers Association, International®

CNC Technologies. His firm is developing programs that consist of third-party training combined with mutual commitment of the shop owner and prospective employee.[25]

Bottom line: Trade groups and manufacturing executives should aggressively convey to educators the need to create curricula that provides young people the knowledge and skills in demand today on the factory floor.

Recognize overseas labor is not the panacea

There is a trend now away from relying on overseas work and manufacturers must understand why this is happening – and keep more work at home.

Active Magazine in its June 2007 issue, "Not long ago, the default answer to sagging manufacturing profits was to slash labor costs by moving the factory overseas. But many manufacturers now realize that offshoring doesn't always make sense. Offshore risks include uneven quality control, communication breakdown because of language barriers, political upheaval and high transportation costs." The possibility also exists that a low-cost factory can steal a U.S. firm's intellectual property to build a rival product. Plus, with international shipping costs high, U.S. manufacturers can often outsell foreign competitors on large, heavy items.

Bottom line: Government and economic leaders must frequently communicate such perspectives issues to manufacturing executives.

Overhaul the image of manufacturing

Thankfully, new attitudes and perceptions regarding the jobs we do are beginning to get some traction.

In Carroll County, Maryland, a local economic council is pledged to overcome the preconceived notions of traditional manufacturing and present manufacturing jobs as an appealing option for youth; a marketing committee was formed to generate ideas to do just that.[26]

"The New Steel" campaign from the steel industry portrays positive features of the industry with ads. One, with the headline, "The Backbone of America," shows pictures of steel bridge girders and highlights the industry's military and economic importance.[27]

A national TV-based PSA campaign developed by the Nuts, Bolts, and Thingamajigs Foundation seeks to inspire youth (and their parents) to engage in shared hands-on tinkering activities.

And, on a smaller scale, the Dream It. Do It. program in Virginia is actively spreading the word about manufacturing jobs. Campaign director Bruce Kravitz says he visits area high schools and pays for print, television and radio ads. He even sets up computer kiosks at the high schools and community colleges to promote the program. "Manufacturing is growing, and that's the message we've got to get out."[28]

Bottom line: We must constantly inform the media about all of these exciting initiatives with energetic public information campaigns, work with them to help tell these stories to the public – and convince young people dream jobs are there for the taking.

Keep the Dreams Alive

The American Dream has been part of this country's fabric since the day it was founded. The dream has taken many forms for U.S. citizens – freedom in all of its manifestations, security and protection, living comfortably, and working and earning a decent wage. That last quest has taken a bit of a hit in recent years, particularly for those employed at making products.

However, this country is on the cusp of reviving that dream for millions. The beauty is that this is a shared dream, beginning with the manufacturers themselves, who are clamoring for motivated, skilled and enthusiastic workers. Then, there are many organizations now working in concert to help make such relationships happen.

And, the influential power of the press is changing its course, beginning to focus on the needs – and the opportunities.

Lastly, we have the young people themselves. As they recognize the exciting potential to work with the most advanced technologies, in a clean, comfortable environment, and receive a high level of wage commensurate with the high skills required, *this* American dream will live again.

All of us with any link to manufacturing should be dedicated to this worthy mission that will benefit so many Americans – and our country.

© 2007 copyright Fabricators and Manufacturers Association, International®

APPENDIX-ARTICLE REFERENCE

[1] Gerald Shankel, "It's Time to Move Beyond the Fallacy…", *Modern Applications News*, July 2007

[2] Ibid

[3] Dr. Ji Yao Shen, Dr. Derrel Dunn and YunShen, "Challenges Facing U.S. Manufacturing and Strategies, *Journal of Industrial Technology*, April-June 2007

[4] Joe Neliisa and Catarina Figueira, "Is There a Future for UK Manufacturing?", *Management Focus*, Winter 2002

[5] United States Department of Labor Employment & Training Administration, June 8, 2007

[6] Jack McGuinn, "Where Manufacturing and Education Mesh," *Gear Technology*, January/February 2007

[7] National Association of Manufacturing, "Keeping America Competitive," April 2003

[8] United States Department of Labor Employment & Training Administration, June 8, 2007

[9] Lyric Wallwork Winik, "How Safe Is Your Job?", *Parade*, July 1, 2007

[10] Thomas Sheeran, "Manufacturing's Evolution Leaving Jobs Unfulfilled," *Arkansas Democrat Gazette*, May 19, 2007

[11] United States Department of Labor Employment & Training Administration, June 8, 2007

[12] United States Department of Labor Employment & Training Administration, "Addressing the Workforce Challenges of America's Advanced Manufacturing Workforce," An ETA/Business Relations Group Report

[13] Barbara Hagenbaugh, "Wanted: Factory Workers," *USA Today*, December 5, 2006

[14] National Association of Manufacturing, "Manufacturing a High Performance Workforce," Solutions White Paper series

[15] Robert Gleeson, "How Our Region is Adapting to the New Global Economy," *Northwest Quarterly*, Spring 2007

[16] "Captivating Youth Interest in High-Tech Manufacturing Fields," *SSTI Weekly Digest*, July 18, 2007

[17] Chicago Jobs Council, "Marketing the New Image," Fall/Winter 2006

[18] Christopher Brooks, "Program Helps Local Employers Train Workers," *Bristol Herald Courier*, June 10, 2007

[19] Captivating Youth Interest in High-Tech Manufacturing Fields," *SSTI Weekly Digest*, July 18, 2007

[20] Sue Shellenbarger, "In Their Search for Skilled Workers, Big Employers Go to Summer Camp," *Wall Street Journal*, February 26, 2006

[21] Sheeran, *Arkansas Democrat Gazette*

[22] Joel Dresang, "Renewing allure of Nuts & Bolts," *Milwaukee Journal Sentinel*, May 26, 2007

[23] *Modern Metals*, September 2006

[24] Dresang, *Milwaukee Journal Sentinel*

[25] Patrick Michaels, "Smart Management: Getting the Most from Skilled Labor," *F&M Magazine*, June/July 2007

[26] Captivating Youth Interest in High-Tech Manufacturing Fields," *SSTI Weekly Digest*, July 18, 2007

[27] Paul Glader, "U.S. Steelmakers Polish Their Image, *Wall Street Journal*, May 25, 2006

[28] Brooks, *Bristol Herald Courier*

© 2007 copyright Fabricators and Manufacturers Association, International®

© 2007 copyright Fabricators and Manufacturers Association, International®