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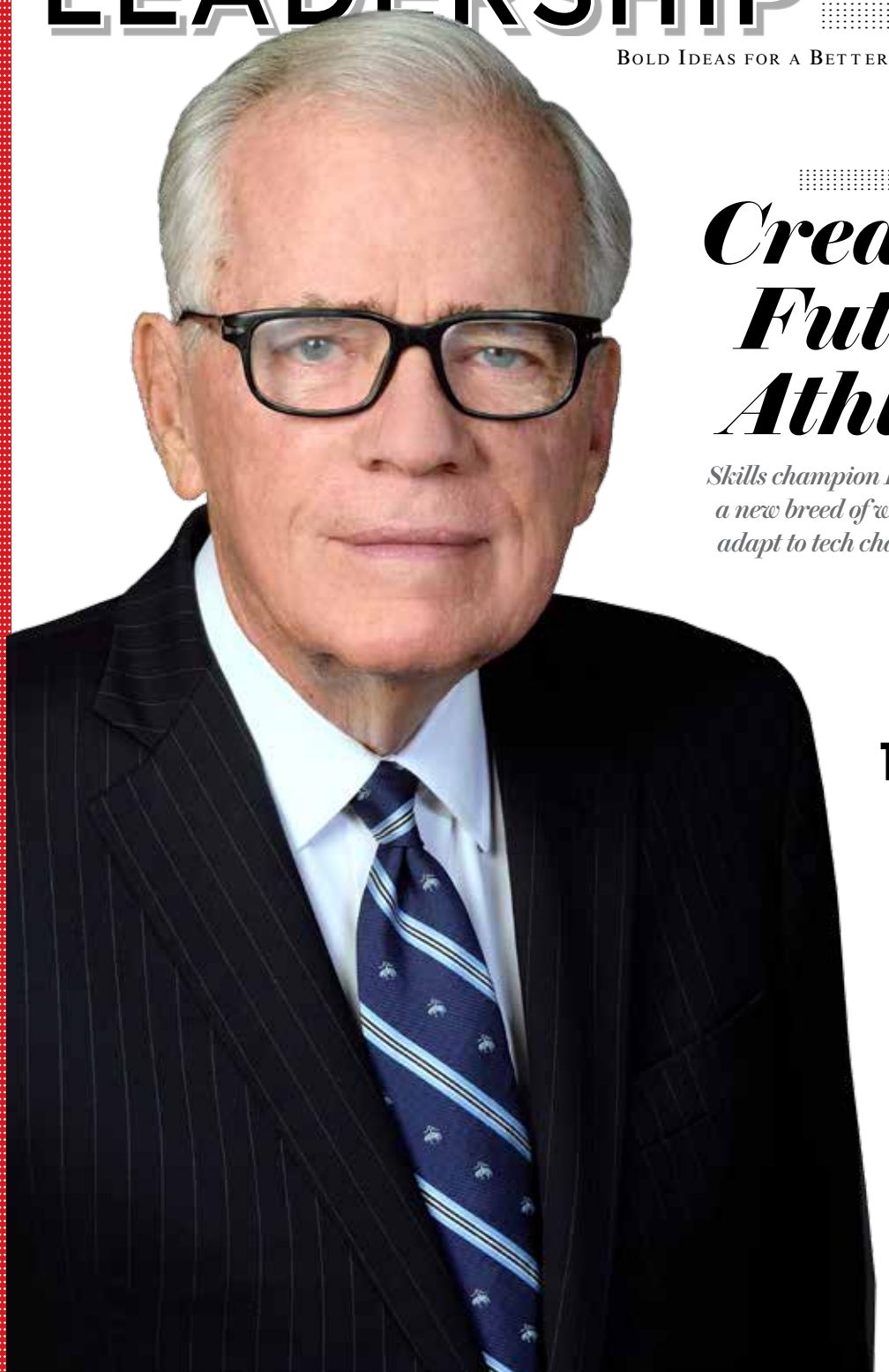

Creating Future Athletes

Skills champion Leo Reddy says a new breed of worker who can adapt to tech change is needed.

CRITICAL ISSUE

The Integrated Enterprise

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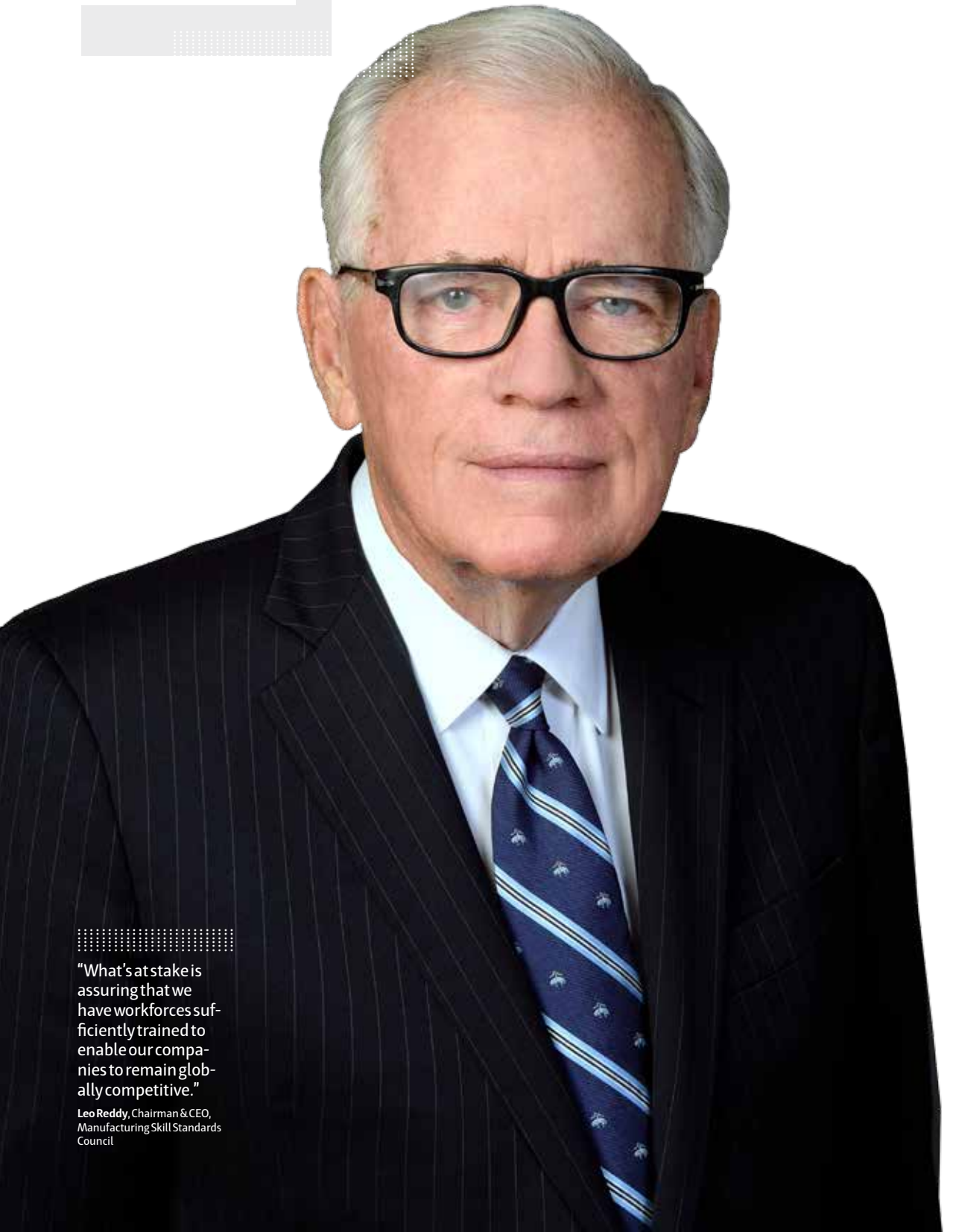


"What's at stake is assuring that we have workforces sufficiently trained to enable our companies to remain globally competitive."

Leo Reddy, Chairman & CEO, Manufacturing Skill Standards Council

Creating the Industrial Athletes of the Future

Leo Reddy, the winner of the Manufacturing Leadership Council's 2017 Lifetime Achievement Award, aims to close the skills gap by encouraging a new breed of hybrid worker with the ability to adapt to rapid technological change.

As a youth, Leo Reddy worked during his summer breaks at the New England Confectionary Company in Cambridge, MA., where his father was president. It was the beginning of a lifetime's passion for manufacturing and a heartfelt belief in the power of a strong U.S. industrial base.

But he didn't follow a traditional manufacturing career path. Far from it. After serving as a naval officer and CIA analyst, Reddy joined the U.S. Foreign Service and became one of America's leading foreign policy experts on Soviet affairs and arms control during the Cold War, winning a host of distinguished service awards for his work. As Diplomat-in-Residence at the Center for Strategic and International Studies, he then began to focus on developing an industrial policy designed to bridge the gap between defense and commercial industrial competitiveness.

That role led to an invitation in 1989 to leave the diplomatic service and help establish a new public-private partnership body to accelerate advanced manufacturing and workforce skills in the U.S., the National Council for Advanced Manufacturing (NACFAM), and ultimately to his current position as Chairman and CEO of the Manufacturing Skill Standards Council (MSSC), which he's led since 2005.

In our latest Dialogue with a global manufacturing industry thought-leader, Leo Reddy, winner of the this year's Manufacturing Leadership Lifetime Achievement Award, talks to Executive Editor Paul Tate about the urgent need to transform the relationship between industry and education to help close the skills gap, the emergence of a new type of hybrid front-line manufacturing worker who can adapt to digital disruption, and his belief that an enlightened industrial policy can help the U.S. make a positive difference to societies around the world.

Q: What do you see as the main forces now transforming the global manufacturing industry?

A: The success of the U.S., spearheaded by the ingenuity of its powerful multinational corporations, has built an economic model that enables ordinary citizens in every country to raise their standard of liv-

ing. The stunning success of China in transitioning to a capitalist economy in recent years is the model to which nearly every developing country now aspires. This creates an enormous global demand for the kinds of products and services that the U.S. has developed since World War II. It also creates an interdependence between states that incentivizes collaboration over conflict.

To maintain that level of influence, the U.S. must remain the world's most innovative industrial base. I believe that this means pooling public and private resources and the national leadership needed to fund the development and deployment of advanced technologies and related workforce skills.

Q: What new front-line skills do you now see as fundamental for the manufacturing industry over the next ten years?

A: Historically, front-line industrial work has been synonymous with deeper skills in a single craft. Today, technology is driving change on the factory floor and within the supply chain at such a rapid pace that we need to cultivate the "hybrid" worker with strong core technical competencies, comfort with digital manufacturing, and the critical thinking skills needed to adapt to rapid technological change. That's why our motto here at the MSSC is "Certifying the Industrial Athlete of the Future."

Q: Why is this so important? What's at stake?

A: What's at stake is assuring that we have workforces sufficiently trained to enable our companies to remain globally competitive. To be competitive, they have to be more productive. To be more productive, they have to constantly innovate. To do that, they have to acquire new software, new equipment, new methodologies, new processes. That's all a process that requires an increasingly skilled workforce. We're having difficulty doing that.

In manufacturing alone, Deloitte estimates that we need to fill about 3.4 million jobs in the next 10 years and we don't really know where we're going to fill 2 million of those jobs. So, there is a serious skills gap. It's not just a metaphor; it's a fact. And we're one of the groups working very hard to try and close that gap.

Q: So what needs to happen to overcome this shortage?

A: Effecting this kind of change involves a transformation of the nation's educational system to align school more closely with the needs of the economy. For example, we need more CEO's who follow the example of Snap-on CEO Nick Pinchuk, who works actively with the nation's community col-

"Today, technology is driving change on the factory floor and within the supply chain at such a rapid pace that we need to cultivate the 'hybrid' worker."

leges at several levels.

But we also need to extend C-suite engagement to the secondary, not just the collegiate level. The time to form the industrial workforce of the future is at the secondary level by ensuring that students have the information they need to understand the promise of career pathways in advanced manufacturing and supply chain logistics.

This means working closely with school boards, state agencies, and school counsellors to ensure that they are giving priority to STEM education and the need for industry certification education and training at the secondary level. It also means speaking with one voice through the use of national standards and letting schools know that companies will give a hiring preference to students with well-established National Association of Manufacturers (NAM)-endorsed national certifications, like those offered by the MSSC.

Q: Why is this educational transformation necessary?

A: One of the key issues here is that there's a whole culture that drives the education system, driving people increasingly towards getting more and more college, more and more advanced degrees and so forth, as being the entire goal of education.

I think that we have a different goal in the business community. We're hoping that all people can be prepared for productive employment in their own chosen career, and they should have a major say in what that is, as cost effectively as possible. So, we really have a different concept of what education is all about.

Q: How is the role of the MSSC now evolving to reflect the new dynamics of a 21st Century industrial base?

A: More than any other industry certification body, MSSC expends substantial re-

Executive Profile:

Leo Reddy

Title: Chairman & Chief Executive Officer, Manufacturing Skill Standards Council (MSSC)

Nationality: U.S.

Education: Master's degree in International Relations and BA degree in Honors Classics, Georgetown University.

Languages: English, French, German, Spanish

Previous roles include:

- Founder and CEO, National Council for Advanced Manufacturing (NACFAM)
- Diplomat-in-Residence, Center for Strategic and International Studies (CSIS)
- Career Minister, Specialist in NATO and Arms Control, U.S. Department of State
- Analyst, Soviet Affairs Office, Central Intelligence Agency
- Anti Submarine Warfare and Gunnery Officer, U.S. Navy

Other Awards:

- White House Presidential Award for Outstanding Service (1988)
- State Department President's Award for Sustained Superior Accomplishment in U.S. Foreign Policy (1988)
- State Department Distinguished Service Award for work on NATO-Warsaw Pact Force Reductions Talks (1985)
- State Department Meritorious Service Award for Leadership in Developing U.S. and NATO positions on the Helsinki Conference on Security and Cooperation in Europe (1973)
- State Department Meritorious Service Award for Contributions to U.S. Policy Towards NATO (1969)

"The time to form the industrial workforce of the future is at the secondary level by ensuring that students have the information they need to understand the promise of career pathways in advanced manufacturing and supply chain logistics."

sources in keeping pace with technological change through annual research and reviews by industry experts so that we can ensure that next-generation production and logistics technicians are aware of emerging technologies. For example, MSSC standards now include an understanding of 3-D printing, the Internet of Things, mobile internet, next-generation robotics, next generation materials and nanomanufacturing, same day delivery, omni-channel logistics, et al.

"The MSSC expends substantial resources in keeping pace with technological change through annual research and reviews by industry experts so that we can ensure that next-generation production and logistics technicians are aware of emerging technologies."

Q: What do you see as the greatest challenges ahead? What keeps you awake at night?

A: The challenges are huge. After World War II the trade and vocational schools were cut back and cut back, so it's very difficult now to find robust training programs and institutions. They're out there. There are many of them doing good work, but in terms of the overall gap and the demand, and the industry need, they're really quite insufficient.

This is exacerbated by the fact that the federal government itself does not play a huge role in education. In fact, it funds only about six percent of the total education budget in the country. When you add the Pell Grants, that's maybe 10 percent. So, the federal government is very light in this investment despite all the rhetoric. Everybody thinks we have to upskill our workforce, but the real policies and resources available are very, very skimpy.

In addition, there are constant fluctuations in public policy from one administration to the next. For example, the President's current "skinny budget" envisions eliminating the Workforce Innovation and Opportunity Act program at the Department of Labor, and slashing the already meagre funds in the Office of Career Technical Education at the Department of Education. These cuts will have disastrous results for certification-related education.

Q: This is all a far cry from your initial career in foreign policy. What initially made you leave a highly successful diplomatic position to move into the world manufacturing in the late 1980s?

A: For a long time I was a Cold War warrior, I suppose, but with the winding down of Cold War tensions, I shifted my focus at the Center for Strategic and International Studies away from arms control, and towards the future of the defense industries.

I headed a study there on building a more flexible "dual-use" industrial base, enabling companies to produce efficiently for both defense production and civilian market competitiveness. So I got to know a lot of companies, a lot of defense companies, a lot of automation companies, and they invited me to found and build the Na-

Fact File:

Manufacturing Skill Standards Council

Location: Alexandria, VA.
Business Sector: Industrial Training and Certification
Established: 1998
Revenues: N/A
Status: Non-Profit
People: 19 Employees
Presence: 1000+ U.S. MSSC Test Sites, 1,800+ Trained Instructors
Certifications: 125,000 Credentials to 55,000 Individuals

tional Coalition for Advanced Manufacturing (NACFAM). I decided to go ahead and do it.

Q: What was the original vision behind NACFAM and what did it achieve?

A: The vision for NACFAM was to be the leading industry voice in Washington for federal policies and establishing the public-private partnerships needed to transform the U.S. industrial base through the accelerated development and deployment of advanced manufacturing technologies and related workforce skills. It played a key role in building a whole series of public policies and programs focused on advanced manufacturing, including President Clinton's Technology Reinvestment Project, the Manufacturing Extension Partnership, Cooperative Research and Development Agreements (CRADAs) with labs like Sandia, Los Alamos, Oak Ridge, and Lawrence Livermore, and federal grants to develop national skills standards to build a more flexible industrial workforce capable of keeping pace with technological change.

Q: What subsequently led you to take on your current position as Chairman and CEO of the Manufacturing Skill Standards Council in 2005?

A: NACFAM incubated the MSSC to successfully compete for a $5 million grant from the federal National Skill Standards Board in 1997 to become the "Voluntary Partnership" of industry, labor and education for manufacturing.

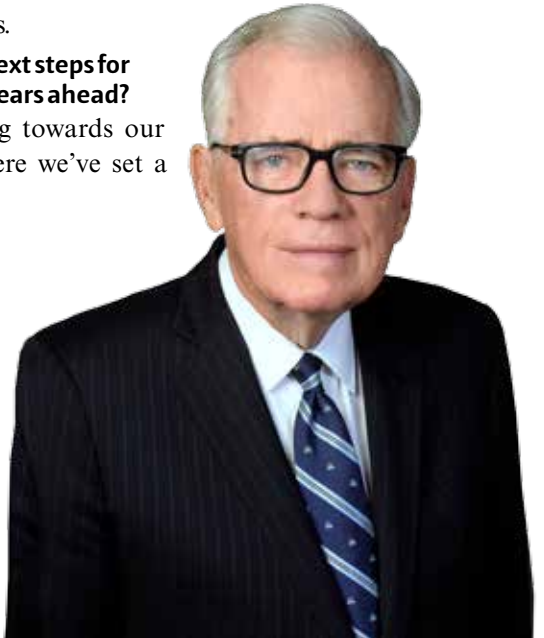
Over 700 companies, all the industrial unions, and 400 educational organizations participated in developing and validating national standards in order get a closer alignment between industry's needs and the nation's education system, especially at the secondary and two-year college levels. It grew so strongly as a nationwide training and certification body that I had to devote my full time to its growth.

The MSSC has maintained its responsibility for defining the industry-wide skill standards and certifications for front-line production in advanced manufacturing. That potentially applies to around 12 million workers – around half in manufacturing production work, and half in distribution and logistics and related occupations. These are all front-line jobs, from entry level up to the first line of supervision. That's where we focus.

So far in our work in developing standards we've involved maybe 75 to 80 percent of all of the top 100 manufacturers in country. We've also established more than 1,000 MSSC Test Sites around the U.S. supported by 1,800 trained instructors, and we've issued more than 125,000 manufacturing skills credentials to around 55,000 individuals.

Q: What are the next steps for the MSSC in the years ahead?

A: We're working towards our 20/20 vision where we've set a



"We're working towards our 20/20 vision where we've set a goal of issuing MSSC credentials to 20% of the production and distribution-logistics workforce by 2029."

goal of issuing MSSC credentials to 20% of the production and distribution-logistics workforce within 20 years, by 2029. That means credentialing over 2 million individuals during that time frame.

Q: How are you hoping to make that happen?

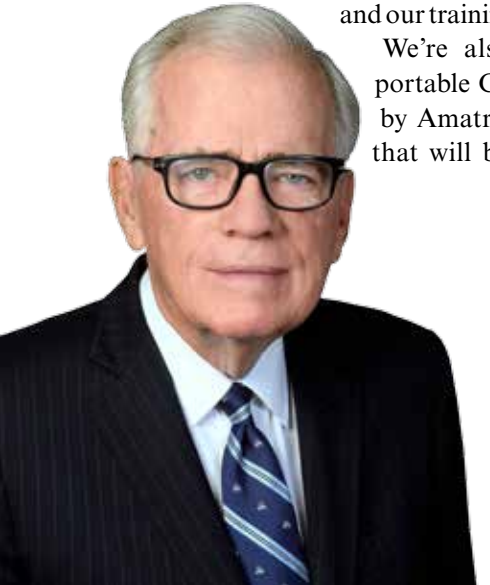
A: We're building a series of interrelated strategies to achieve that goal. For example, the whole emphasis on digitization, the move towards Manufacturing 4.0, is an accelerating trend. So, we're expanding our certifications to include some technically advanced credentials to increase the attractiveness of career pathways in manufacturing and supply chain logistics. If you look at 3D printing, or the Internet of Things, or Big Data and the Cloud, it's important for incoming workers to at least be aware of these concepts today. We introduce them. We give people an understanding of these emerging technologies. That doesn't mean we are training them specifically on how to apply each technology, but as any technology becomes more mature and more widespread, we will build them into our testing and our training.

We're also leveraging a new portable CPT trainer developed by Amatrol called "Skill Boss" that will be compact and cost-effective enough for widespread use at the secondary level, including in regular high schools, rural schools, and inner city schools. And we're adding a new "Fast Track" service designed for incumbent workers, in order to expand our training and certification services into industry, going beyond our focus mainly on the pipeline of incoming workers.

We are also deepening our collaboration and other organizations, like NAM and more endorsed certifications; with state agencies, especially in the 25 largest industrial states to establish comprehensive state-wide programs at both the secondary and two-year college levels; and with large corporations to build a robust pipeline of MSSC-certified jobs applicants. For example, we entered a partnership last fall with Walmart Logistics through which we are now on a trajectory to provide MSSC Certified Logistics Associates to all their 162 distribution centers in the U.S.

And we're continuing to strengthen our national standards to ensure that they remain the nation's most authoritative source for core technical skills for front-line jobs. For example, we're in the process of adding experts from 60 additional companies to our National Experts Panel on Manufacturing, which is responsible for reviewing and updating our standards.

Q: So what role do you feel that industrial companies, both large and small, can play in achieving that vision?



"Today's leaders need to show more passionate advocacy and develop convincing arguments for the value of technological change."

A: The most important action that industrial companies can take is what we call a "no-cost" recruitment policy. We ask that companies adopt a formal policy that they will give preference to job applicants with a MSSC credential, and that they officially convey that policy to their own recruiters, to staffing agencies, to relevant state government agencies, and to secondary schools and two-year colleges near their plants.

Q: At an industry level, what do you see as the key business challenges facing manufacturing over the next 5 years as companies pursue an increasingly digitally-driven future?

A: One of the biggest challenges will be finding a front-line workforce capable of making full use of these advanced technologies, and convincing communities, parents and students of the value of career pathways in manufacturing and supply chain logistics. There's already a lot going on here, so I think the signs are promising. But it needs better understanding nationally.

I was encouraged in April when the President held a meeting of manufacturing execs. He told them "I want more jobs. I want to see more manufacturing jobs coming back." They answered him, saying, "Well, we already have about 600,000 jobs that we have a hard time filling. It's a question of a shortage of skills." They made that very clear to him. I don't think he'd understood that, and I don't think most people understand it either. Today, we need national leadership from the White House level on down to really focus on this need to make it happen.

Q: What leadership skills do you think are going to be needed for the future of manufacturing?

A: Today's leaders need to show more passionate advocacy and develop convincing arguments for the value of technological change. While not denying the disruptive effects of technology, executives need to hone their arguments for the long-term benefits, multiplier effects, new products and services, etc. Corporations are too defensive today about things like automation and robotics. They could point out, for example, that Germany and Japan both have a higher percentage per capita of industrial robots than does the U.S. But they still have large production workforces. If you're doing a good job, then your product line will increase, and your business will increase.

Q: Finally, if you had to choose a watchword or catchphrase for the future of manufacturing, what would it be?

A: It would be 'enabling global prosperity'. Manufacturing is such a powerful economic driver, with a huge multiplier effect and a truly global presence. Revitalizing the strength of today's manufacturing base can really help to raise living standards around the world. It has a strategic impact, as we've already seen in many, many societies.

I've always been very frustrated that our foreign policy in the U.S. for many years has been focused almost entirely on fear, like the global war on terrorism, ISIS, and so forth. Of course, these are very real issues that we have to deal with.

But I'd much rather have a foreign policy based on hope. Given the strength of our major corporations, who are the delivery mechanism for this, we can deliver and create climates that are favourable to American industry and that have a very salutary effect worldwide. So I see the future of manufacturing as the foundation for making global prosperity the most important value that the U.S. has to offer the world, and the new centrepiece of U.S. foreign policy. **M**

"I see the future of manufacturing as the foundation for making global prosperity the most important value that the U.S. has to offer the world."