



## From the Director ...

NCATC Friends and Colleagues,

As we turn the corner on another great year for advanced technology and manufacturing workforce development activities, projects, and events, we are fairly certain that 2018 will be an even busier and more exciting year than 2017.

During 2017, NCATC's Board refined and approved its **2017–2020 Strategic Focus Areas** roadmap, which will formally guide our activities, projects, and events for the next three years. And we have cross-walked/mapped our five focus areas to strategies 1–4 of the **2017–2020 AACC Strategic Plan** for even greater national impact, value, and collaboration.

NCATC's Strategic Focus Areas Include:

1. Industry 4.0: Emerging Trends in Advanced Technology and Manufacturing,
2. Apprenticeships, Work-Based Learning and Entrepreneurship in Workforce,
3. Competency-Based Learning in Workforce Development,
4. Industry-Recognized Credentials and Certifications, and
5. Adult Education and Learning Opportunities.

You can find more details on each of these NCATC Strategic Focus Areas at [ncatc.org](http://ncatc.org). (Go to <Strategic Focus Areas> under <Quick Links>.)

**2018 is NCATC's 30th Anniversary!** NCATC was founded in 1988 from a public/private collaboration of industry and education for Advanced Technology and Manufacturing expertise to lead and advance workforce development curriculum, programs, and initiatives. Since then, our ATC network of community and technical colleges has grown to over 170 institutions and 30 corporate Strategic Partners. You can view the NCATC Membership Map at [ncatc.org/membership-map](http://ncatc.org/membership-map) and the 2018 NCATC Strategic Partners at [ncatc.org/find-a-member-atc/spa](http://ncatc.org/find-a-member-atc/spa).

The NCATC Board of Directors and staff look forward to seeing you at the **2018 NCATC National Events**. We will be on the west coast for our **Summer Workshop**, hosted by **College of the Canyons in Santa Clarita, California, June 4–5, 2018**. Then we return to the home of two founding member colleges—**Cleveland, Ohio**—for our **30th Anniversary Fall Conference, September 19–21, 2018**. For more event details, visit [ncatc.org](http://ncatc.org).



As always, we encourage you to stay regularly connected, via [ncatc.org](http://ncatc.org), social media, and quarterly newsletters like this one.

J. Craig McAtee, NCATC Executive Director ♦

## Strategic Partner Spotlight

### Miller: Committed to the Future of Welding

Miller Electric Manufacturing Company believes that welding training is mission critical. The future of the industry depends on developing tools and solutions that shorten training time for new welders, build operator skills faster, and appeal to a new generation of prospective welders.

As a leading worldwide manufacturer of welding equipment and solutions, Miller is committed to welding education and the future of the industry—and works to provide the resources and tools necessary to build tomorrow's welding workforce. Miller offers many resources for instructors and students, ranging from educational seminars and mobile welding apps to free classroom resources such as publications and posters.



Easy-to-use welding equipment and advanced training solutions from Miller such as AugmentedArc™—a realistic welding simulation system for classroom training—are also key to bridging the welding industry's skills gap.

One Miller partner, Harper College in Palatine, Illinois, has seen enrollment in its welding program grow in the past decade from a handful of students to more than 400 students annually. That growth has been spurred in part by a connection to the local manufacturing industry; Harper's welding program has partnerships with nearly 150 local companies.

Through these connections, students have access to paid internships that often lead to employment opportunities, and they have the opportunity to test their skills in a real-world setting and be exposed to areas of the industry they might not otherwise become familiar with until after they graduate. The college is also the official training center for the Fabricators and Manufacturers Association, which recently donated \$500,000 to the program.

Harper students also reap the benefits of using the Miller LiveArc™ welding performance management system, which combines a welding simulator with a live arc MIG welder. Program instructors say the training tool has been invaluable to helping welding students advance their skills.

Another Miller school partner, Monroe Community College, is a good example of how collaboration with other educational institutions and private entities can result in success. Monroe offers classes at a one-of-a-kind training facility—Rochester Arc + Flame Center (RocAFC) in Rochester, New York. The center, which serves professional welders and the general public, offers state-of-the-art training classes in everything from welding to jewelry making. Their class roster includes one-day entry-level classes in MIG, TIG,

See "Miller," page 2

# The Bottom Line for Michigan's M-CAM Program? Impact.

Kristin E. Wolff & the M-CAM Research Team, Social Policy Research Associates



In 2014, a coalition of eight Michigan colleges launched the Michigan Coalition for Advanced Manufacturing program (M-CAM). Supported by a Trade Adjustment Assistance grant from the US Department of Labor, the program sought to help people transition to good jobs in the state's manufacturing sector.

The timing of the grant award was excellent. Michigan's manufacturing sector had suffered during the great recession, and by the time it was ready to ramp-up again, it was a different sector. First, it had become much more automated, so available jobs required higher levels of technical skill than they had a few years before. Second, large numbers of older workers had taken the recession as an opportunity to retire or pursue other employment, so there were openings at many different levels. Training programs that had served workers in the industry for many years needed reinvention.

But M-CAM was not just a new training program. The partner colleges were looking to test a new approach. The idea was to develop flexible models that incorporated hand-on learning and were aligned with industry standards so students could earn credentials that would help them secure good jobs and begin to build rewarding careers more quickly than traditional pathways allowed. The colleges developed a range of new programs in four areas: production, welding, CNC machining, and mechatronics. They revamped curriculum, invested in new equipment, and built comprehensive career counseling and student support programs.

## What happened?

It worked. Perhaps surprisingly, it worked not just for students with existing knowledge of manufacturing but for those with diverse experiences and backgrounds and those who were at different stages in their careers. At the end of the three-year program, 83 percent of the nearly four-thousand enrolled students were employed, and four in five had earned a credential. Compared to the outcomes of students enrolled at the same colleges in similar programs, M-CAM students were earning between \$500 and \$1,000 more per quarter and were employed at rates 10-22 percent higher than their peers.

It engaged employers as well. Colleges nearly doubled the number of employer partnerships—to nearly 400 by the spring of 2016—and engaged more than half in five or more different roles, reflecting the depth of these partnerships.

M-CAM also left its mark at the systems level. Michigan colleges operate independently rather than as part of a system which can make collaboration challenging. M-CAM colleges developed programs together and also shared models and practices aimed at improving their internal operations as well-bridging credit and noncredit programs, launching or marketing prior learning assessment, and even improving statewide data management practices.

Finally, M-CAM used its research dollars to both evaluate the program and to create a suite of printed and multimedia products

intended to help others learn from the M-CAM experience. A collection of 10 briefs on topics ranging from the experiences of women, older workers and justice-involved individuals, to the nature of counseling and career support, are available, accompanied by the full report, an executive summary, and five professionally-produced videos, on SPR's website at: [spra.com/M-CAM/](http://spra.com/M-CAM/). ♦

*Kristin is a Senior Associate at Social Policy Research Associates, the evaluation partner in the M-CAM initiative. Heather Lewis-Charp was the Project Director. SPR was honored to help the Michigan team discover what aspects of their programs worked and why and share it with the broader community of community colleges and workforce partners who could benefit from its many lessons. Let us know what you think! Tweet @Social\_Policy, comment online, or email Kristin\_Wolff@spra.com.*



Lake Michigan College M-CAM student Brittany Schroeder on lathe

• Miller (continued from page 1) •

and stick welding and an advanced 20-week welding and fabrication certificate program.



For-credit college classes are offered at the center in conjunction with Monroe Community College (MCC) and the Rochester Institute of Technology. The center's crown jewel is a 20-week, 360-hour welding and fabrication certificate in partnership with MCC. The center also offers a variety of other programs, including a 120-hour pipe welding certificate, DOT qualification preparation, custom training, and even merit badge programs in welding for Boy Scout troops. In addition to MIG and TIG welding machines from Miller, the center uses a LiveArc™ welding performance management system that helps provide accurate and cost-effective training for students.

These success stories demonstrate that new training solutions and technologies—and key collaborations and partnerships—are critical to the future of the welding industry. ♦

# Aerospace Manufacturing in the Dallas-Fort Worth Metroplex

Nick Graff, Executive Director, Advanced Manufacturing Centers, Dallas County Community College District

"Everyone sees airplanes flying in the sky, but they don't think of the complexity behind what goes into manufacturing those machines!" That's what Daisy Pardo thinks and—as a quality engineer at Texas-based Beacon Industries, an aerospace/aviation manufacturer—she should know.

Beacon, North Lake College, and the Dallas County Community College District—led by Pardo and Tim Samuels, executive dean of workforce, business, and technology at North Lake—are creating a partnership designed to build a pipeline of much-needed talent for the growing Dallas-Fort Worth aerospace industry.

The Dallas-Fort Worth metroplex has 88 aerospace manufacturing companies among its employers; indirect involvement in that sector increases that number to approximately 900. Those companies, combined, employ almost 450,000 aerospace manufacturing technicians and engineers—that's one in every six North Texas workers. Those numbers are expected to climb dramatically by 2025. Additionally, aerospace manufacturing technicians earn approximately \$20 to \$25 per hour, and that industry accounts for more than \$8.2 billion dollars of DFW's economy.

Officials project that the region needs to add approximately 6,300 new employees to the current market in order to meet demand, keeping in mind that five to 10 companies move to or open in DFW during a typical five-year period. As a result, thousands of additional employees will be needed.

With those figures in mind, representatives from North Lake College, DCCCD, and 180 Skills met to talk about the need to add critical aerospace manufacturing courses to the college's curriculum. Dr. Christa Slejko, president of North Lake College; Dr. Joe May, DCCCD's chancellor; and leadership of 180 Skills agreed that the need was clear. As a result, the district sent a group of representatives to tour Boeing facilities in Wichita, Kansas, and learn more about the career programs housed at 180 Skills.

Based on findings from the tour and details from 180 Skills, the North Lake College team decided to offer initial programs in five career fields that have been credentialed by SpaceTEC ([www.spacetec.us](http://www.spacetec.us)):

1. Advanced Manufacturing Technician
2. Aerospace Electrical Assembly Technician
3. Aerospace Quality Technician
4. Aerospace Structures Technician
5. Composites Manufacturing and Repair Technician

North Lake expects to begin offering the courses in 2018, according to Samuels, who added, "The next critical step in this process is to obtain support from industry." That process involves scheduling convening meetings with various companies so that the curriculum, learning outcomes, competencies, and skills which students achieve will align with hiring needs of aerospace manufacturing companies in the North Texas region.

Samuels said, "These classes will be fast-track, boot-camp, accelerated courses which will cross over to other advanced manufacturing, construction, and perhaps some automotive careers. We will correlate skills that lead to successful career paths." He added that an online, prerequisite skills assessment will help ease the transition for students.

An important part of the plan features internships, externships, and apprenticeships.

Pardo said, "This model, which introduces new people to the industry who are willing to learn and whose brains are like 'sponges,' will enable us to hire them for the future." She added that machinists are a "dying breed"—not based on lack of interest but because there's a lack of exposure to the field. "If you have a CNC machine, there's nothing you can't make."

Pardo said that North Lake students who are hired after they complete the courses will be eligible for jobs in inspection, planning, receiving, and logistics.

Samuels said the bottom line is that they have received buy-in from the community and support from employers. "It's about evolving and emerging technologies," he added. "Job-ready skills are credentials. We must customize our curriculum to meet that demand. And we need to ask what are industries requiring today that they weren't yesterday? We must keep up with needs and trends." ♦



## Grant News *Congratulations to Our Member Institutions!*

### National Science Foundation Selects Northland to Lead Large Drone Education Initiative Project

The NSF ATE program has awarded Northland Community and Technical College a grant to carry out a project titled "Unmanned Aircraft Systems and Geospatial Information Technology Integration into Technician Education." (More at [www.northlandcollege.edu/now/news/view.php?news\\_id=1660](http://www.northlandcollege.edu/now/news/view.php?news_id=1660))

### BridgeValley Community and Technical College Receives Grant from American Electric Power Foundation

Thanks to a \$1.58 million grant from the American Electric Power Foundation, thousands of high school students in Kanawha County (WV) will be able to explore careers in STEM and earn college credits while still in high school. (More at [www.appalachianpower.com/info/news/viewRelease.aspx?releaseID=2439](http://www.appalachianpower.com/info/news/viewRelease.aspx?releaseID=2439))

# Institute for Advanced Manufacturing Officially Open for Business

*Clinton Community College, Plattsburgh, New York*

This fall Clinton Community College (CCC) opened its Institute for Advanced Manufacturing (IAM), a 30,000-square-foot state-of-the-art facility designed and equipped to provide hands-on technology training and support for advanced manufacturing.

In September of 2014, CCC and its partners secured \$12.7 million through the SUNY 2020 challenge grant program to construct the IAM. The College broke ground on the new facility in May of 2016, and almost 16 months later welcomed its first cohort of degree-seeking students and sessions of workforce development employee training. The IAM is the first new building constructed on Clinton's campus since the Stafford Center for Art, Science and Technology opened in 1998.

"The Institute for Advanced Manufacturing is the type of building that inspires excitement for learning, and I hope it will serve to draw more students to explore the field of manufacturing, which provides a tremendous amount of job opportunities in the North Country region," said SUNY Chancellor Kristina M. Johnson. "My congratulations to the Clinton Community College family."

Clinton's educational partners include Clarkson University, CV-TEC, SUNY Plattsburgh, and Champlain College Saint-Lambert in Longueuil, QC. Other partners include CITEC, the North Country Regional Chamber of Commerce, North Country Workforce Investment Board, The Development Corporation, and a number of area manufacturers.

"More than a building, the Institute for Advanced Manufacturing is a pathway to the future for North Country employers in need of a skilled workforce, for North Country residents seeking careers in modern manufacturing and technology, and for the achievement of quality growth for the North Country economy," stated Garry Douglas, President of the North Country Chamber of Commerce.

The IAM is seen by local leaders as a critical platform for sustaining and growing manufacturing in the North Country, and is already supporting efforts to attract new companies and investment to the area. The facility houses Clinton's technology degree programs, and will serve as a regional hub for manufacturing education with flexible teaching/learning space and courses available for manufacturers to advance their workforce.

The North Country Regional Economic Development Council identified transportation, aerospace and manufacturing as a priority cluster for economic development in the region, and the IAM is designed to help foster growth. Over 8000 people are already employed at 38 manufacturing companies in Clinton County alone. Clinton County is poised to be a leading center of advanced manufacturing in the Northeast with local employers projecting growth, which will increase the demand for skilled employees.

"Clinton County continues to create its own future, and Clinton Community College is helping to lead the way. The Institute for Advanced Manufacturing will help ensure that the region retains a vibrant manufacturing base, and that we have an educated and trained workforce qualified to fill the jobs that will be created here," states Paul Grasso, President of The Development Corporation.

In the North Country region, it is projected that the need for machinists will grow by 27%, mechanical engineers by 25%, assemblers by 16%, and welders by 11%. The statewide median salaries for these positions range from \$38,000 for assemblers and welders to \$84,000 for mechanical engineers. The IAM at CCC

offers some of the only programs in our region to prepare students for these competitive positions.

"We have worked very closely with the IAM Advisory Committee and industry partners to ensure that the programs we have developed, and the equipment and design of the IAM are as relevant as possible," states IAM Director, Kris Renadette. "When students go into the workforce, the manufacturing environment, tools, machinery, and even policies and codes of conduct are familiar to them."

Clinton Community College is a member of the State University of New York system. Clinton offers 22 associate degree programs, seven certificates, multiple non-credit professional credentials, and many flexible learning options including online and evening courses. As part of the SUNY system, Clinton credits transfer seamlessly. ♦



## NCATC

### Welcomes Its Newest Board Members

**Maria Coons**, Harper College (IL)

**Marc Goldberg**, Portland Community College (OR)

**Amanda Sizemore**, St. Charles Community College (MO)

## Strategic Partner Spotlight

### OpusWorks

BridgeValley Community and Technical College (BVCTC) in Charleston, West Virginia, joined the OpusWorks Academic Partners Network for the purpose of delivering industry-customized, turnkey, Lean Six Sigma Green Belt training classes.

BVCTC saw the potential to grow by offering turnkey Green Belt for healthcare training to current clients and prospects. However, prior to its partnership with OpusWorks, BVCTC did not have in-house any instructor with a Green Belt and healthcare background.

Jeff Wyco, SVP of the Workforce and Economic Development Division and Advanced Technology Center Operations of BVCTC, joined OpusWorks Academic Partners Network in 2014. The OpusWorks Academic Partners Network works with community and technical colleges and universities to meet the training needs of individuals, businesses, and other local, state, and regional employees.

In the year following the partnership, BVCTC delivered a turnkey Green Belt for Healthcare training class for people in leadership positions at Thomas Health System.

The turnkey, blended-learning class consisted of modular, virtual e-Learning, and in-person learning.

BVCTC provided Thomas Health System with OpusWorks' industry-specific e-Learning modules and materials, all accessible through a

highly capable platform, customized and branded to BVCTC.

BVCTC used an OpusWorks Master Black Belt instructor to lead the class, work with students on individual projects, and lead an in-person Capstone project.

In 2015, BVCTC successfully delivered a turnkey Green Belt training course to 16 students in leadership positions at Thomas Health System. Due to the success of the training, a decision was made amongst leadership to implement organization-wide training.

In 2016, an additional 22 students participated in and completed Green Belt training for Healthcare.

BVCTC had a win with Thomas Health System and they anticipate continuing organization-wide training with another Green Belt training class to be launched in 2018.

BVCTC also looks forward to expanding their customized training offerings with additional turnkey products such as Problem Solving Essentials.

For more information on these solutions, email Carol Dierdorff, SVP Workforce Development, at [cdierdorff@opusworks.com](mailto:cdierdorff@opusworks.com). ♦

# OpusWorks®

by THE QUALITY GROUP



## 2017 NCATC ATC Workforce Development Award Recipient Recognized



NCATC presented its inaugural Innovative ATC Workforce Development Award to Dr. Alan Grier at its fall conference in Portland, Oregon. The award recognizes outstanding workforce development professionals and industry colleagues who make a significant contribution to the education and training of today's advanced technology and manufacturing workforce. The award is sponsored by NOCTI ([www.nocti.org](http://www.nocti.org)) and Nocti Business Solutions.

Grier is a mechatronics program coordinator at Midlands Technical College in Columbia, South Carolina. Grier used his knowledge of advanced machine tool techniques, CNC programming, and advanced manufacturing techniques to increase the proficiency of Midlands Technical College's Machine Tool program graduates. His knowledge of advanced manufacturing was key in the creation of Midlands Technical College Mechatronics program. Grier also received a donation of a new robotic module from Michelin® for the Mechatronics lab in the Advanced Manufacturing and Skilled Crafts Building, which was renamed the Michelin Mechatronics Lab.

In the spring of 2016, Grier's class was invited to participate in the White House's National Week of Making, where the consortium of colleges hosted hundreds of middle school students at the National Museum of American History to recreate inventions from American history. Grier and his students created dies and plastic injected molded parts to support this project.

Nominator Alan Clayton stated, "Dr. Grier brings 'out of the box' creative thinking to his students, his programs, and Midlands Technical College and this is why he is richly deserving of this award."

NCATC, NOCTI, and Nocti Business Solutions congratulate Dr. Grier on receiving this national honor and applaud his contributions to career and technical education. ♦

### 14th Annual Stratasys Extreme Redesign Challenge



Every year Stratasys calls upon tomorrow's engineers, artists, and entrepreneurs to redesign an existing product to improve

how a task is accomplished or design something entirely new that addresses an unmet need.

#### Prizes:

- Ten finalists in each category will receive a **3D printed model** of their design and Stratasys apparel (\$50 value).
- One second-place winner in each category will receive a **\$1000 scholarship**.
- One first-place winner in each category will receive a **\$2500 scholarship**. Plus, his/her instructor will receive a demo 3D printer for limited-time classroom use.
- **Bonus prize: NCATC will award a \$1,000 scholarship to one winning entry in the engineering category.** Only students from NCATC member schools are eligible.

Stratasys is accepting entries through **February 26, 2018**. For more info, and to enter, visit [www.stratasys.com/industries/education/extreme-redesign](http://www.stratasys.com/industries/education/extreme-redesign).



33607 Seneca Drive  
Cleveland, Ohio 44139  
440.600.7749

The National Coalition of Advanced Technology Centers is a network of higher education resources that advocates and promotes the use of technology applications that enhance economic and workforce development programs and services.

[www.ncatc.org](http://www.ncatc.org)

# Save the Dates!

**June 4–6, 2018**

**NCATC  
Summer Workshop**

**September 19–21, 2018**

**NCATC 30th Anniversary  
Fall Conference**

*Hosted by*

**COLLEGE OF THE CANYONS**

*Santa Clarita, CA*



*In partnership with*



Fabricators & Manufacturers  
Association, International®

*Cleveland, Ohio*

*Conference Hotel:  
Hilton Cleveland  
Downtown*

