REGIONAL 3D PRINTING AND ADDITIVE MANUFACTURING CONFERENCE @ TRI-C

in partnership with MAGNET

June 18-19, 2015

Cuyahoga Community College
Advanced Technology Training Center (ATTC)
3409 Woodland Ave.
Cleveland, OH 44115
R3D@Tri-C, the Regional 3D Printing and Additive Manufacturing Conference, highlights the uses and advantages of this innovative technology, showcasing how manufacturers can use additive manufacturing to save time and money while also providing a platform for sharing best practices and career opportunities. The conference also has a track for K-12 and higher education professionals, who can learn how to incorporate 3D printing technology, such as MakerBots and fab labs, into their classrooms and show career pathways for students.

The new 3D Digital Design and Manufacturing Technology program was launched in spring 2015 as part of Tri-C’s Workforce and Economic Development Division. The College received a grant from the U.S. Department of Labor to develop a one-year certificate of proficiency in additive manufacturing and to enhance the existing Manufacturing Industrial Engineering Technology associate degree.

The 3D Digital Design and Manufacturing Technology program has partnered with more than 40 regional industries to ensure that the curriculum, courses and certificate programs meet their current and future needs in terms of workforce skills, knowledge and competencies.

Tri-C’s 3D Digital Design and Manufacturing program is the first and only additive manufacturing credit program in Northeast Ohio. The goal of Tri-C’s program is to promote additive manufacturing in multiple industries. Out of this came the R3D@Tri-C conference, which is designed to raise awareness of additive manufacturing technologies, their applications, best practices and career opportunities among stakeholders in the region, including corporations, entrepreneurs, educators and others who want to learn more about this technology.

To learn more about Tri-C’s 3D Digital Design and Manufacturing Technology program, visit www.tri-c.edu/3dmfg or call 216-987-2769.
**THURSDAY, JUNE 18, 2015**

5:30 – 8:30 P.M. – ATTC FIRST FLOOR

Reception with networking, interactive exhibits and displays and the world's first 3D-printed car, STRATI, and the Rally Fighter composite vehicle.

**FRIDAY, JUNE 19, 2015**

8 – 9 A.M. – ATTC ROOM 133 AND LOBBY.
Breakfast and Conference Registration

9-9:10 A.M. – ATTC ROOMS 139 AND 141
Welcome – William Gary, executive vice president, Workforce and Economic Development Division, Tri-C

9:10 – 9:55 A.M. – ATTC ROOMS 139 AND 141
Keynote speaker Tim Caffrey, senior consultant, Wohlers Associates

SESSION 1: 10 – 10:45 A.M.

- Room 131: “think[box]: America’s Maker University,” Presenter: Ray Krajci, think[box] lab technician, Case Western Reserve University
- Room 251: “Three Key Elements Towards Success in Manufacturing,” Presenter: Tracy Albers, Ph.D., president and CTO, rp+m
- Room 243: “What Additive Manufacturing Brings to the Clinical Setting,” Presenter: Karl West, director of medical devices, Cleveland Clinic/Lerner Research Institute

SESSION 2: 11 – 11:45 A.M.

- Room 131: “Educational Research in 3DP/Additive Manufacturing,” Presenter: Mike Hripko, associate vice president for research, Youngstown State University
- Room 251: “Understanding Your Options for 3D Printing,” Presenter: Mark Horner, vice president of business development, The Technology House
- Room 243: “Advance Manufacturing Workforce Development in Cincinnati,” Presenter: Dustin Lindley, additive manufacturing lab manager, University of Cincinnati Research Center

NOON – 1:20 P.M.
Lunch and panel discussion “3D/Additive Manufacturing: Disruption, Evolution & the Bottom Line in Product Development,” Location: MCC 10

- Moderator: Craig McAtee, executive director, NCATC; director, 3D Digital Design and Additive Manufacturing program, Tri-C
- Tim Caffrey, senior consultant, Wohlers Associates
- Greg Jones, vice president of Smartforce Development, Association of Manufacturing Technology
- Mike Hripko, associate vice president for research, Youngstown State University
- Mark Horner, vice president of business development, The Technology House
- Matt Hlavin, CEO, rp+m
- Tracy Albers, Ph.D., president and CTO, rp+m

SESSION 3: 1:30 – 2:15 P.M.

- Room 131: “Developing the Skilled Workforce for Additive Manufacturing: The Roles of Educators and Employers,” Presenter: Judith Crocker, Ed.D., director of workforce and talent development, MAGNET
- Room 251: “Connecting Additive to Established Manufacturing,” Presenter: Jim McGuffin-Cawley, chairperson, Materials and Engineering Dept., Case Western Reserve University
- Room 243: “Additive Manufacturing: The Perfect Partner for Biomedical,” Presenter: Howard Kuhn, Ph.D., technical advisor, America Makes, ExOne, University of Pittsburgh

SESSION 4: 2:30 – 3:15 P.M.

- Room 251: “RAPID Recap 2015: Polymer to Metal 3DP Emerging Technologies,” Presenter: Dave Pierson, senior design engineer, MAGNET

3:15 – 4 P.M.
Dessert and raffle in ATTC lobby, networking and exhibits
Tim Caffrey
Senior Consultant,
Wohlers Associates

Tim Caffrey is a senior consultant at Wohlers Associates. His roles and responsibilities include the execution of consulting projects, speaking and representing the company at national and international events. He is a principal author of the Wohlers Report, an in-depth, worldwide study of the state of the additive manufacturing and 3D printing industry. He has worked with Wohlers Associates since 2000.

Caffrey’s career in additive manufacturing began in 1992 at Boeing’s Propulsion Laboratory in Seattle. He directed Boeing’s first in-house AM facility, which grew from one system for wind tunnel models into a large operation with nine systems that provided AM parts throughout the corporation. In 1996, Caffrey managed the AM operation of Plynetics Express in Schaumburg, Ill., which had, at the time, the largest installed base of AM systems in the world. He was promoted to plant manager one year later.

Caffrey’s experience includes more than 20 years in professional writing and editing, including maintenance procedures for Boeing aircraft, operational tests for Boeing flight testing, engine case repair procedures at Pratt & Whitney and advertising copywriting at Walmart’s corporate headquarters. He also designed flight-test hardware while at Boeing. In addition, Caffrey has experience in the oil and gas industry, serving as a plant engineer at a coal-fired power plant early in his career.

Caffrey holds a Bachelor of Science degree in mechanical engineering from the University of New Mexico. He and his wife, Joy, live in Fayetteville, Ark., and have three grown children.

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Additive manufacturing (AM) encompasses an array of rapidly growing technologies that is revolutionizing the design and manufacturing of products for transportation, medical, energy, electronics and consumer use. This course introduces attendees to the full range of AM processes. The topics are covered in the context of design for additive manufacturing, the specification of material characteristics, process parameters, and geometric attributes to meet application objectives.

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This interactive course will be facilitated at the laboratories of America Makes (the National Additive Manufacturing Innovation Institute) in Youngstown, OH.
Tracy L. Albers, Ph.D.
President and CTO, rp+m

Albers is a proven leader with extensive experience in materials development. At rp+m, Dr. Albers defines and executes business and technology strategies to position the company for growth. Albers was director of research and development for a $1.5 billion global materials company for nearly a decade. She received her Ph.D. in physical chemistry from the University of Pittsburgh in 2006 and two bachelor's degrees, in chemistry and exercise physiology, from Baldwin-Wallace College. Albers was recently recognized as a leader for women in manufacturing, receiving a STEP Award from the Manufacturing Institute in February 2013.

M. Judith Crocker, Ed.d.
Executive Director of Workforce and Talent Development, MAGNET

Judith Crocker is the executive director of workforce and talent development for MAGNET, the Manufacturing Advocacy and Growth Network. In that role, she works with manufacturers and colleges and universities to meet challenges to the Northeast Ohio workforce. Before joining MAGNET, Crocker was executive director of workforce development at Lorain County Community College. She held similar positions at Cleveland State University and Cleveland Metropolitan School District. She is a teacher, counselor and administrator with more than 25 years of experience in workforce and adult, alternative and career technical education in Ohio and Utah. She has worked as a consultant and project manager at the state and national level. She holds degrees from the University of Toledo and the University of Utah.

Matt Hlavin
CEO
rp+m

Matthew K. Hlavin founded rp+m (rapid prototype + manufacturing) in 2010, from a third generation, family-owned plastic injection molding business, Thogus. The mission and purpose of rp+m is to integrate additive manufacturing and traditional manufacturing to build an advanced manufacturing company with a skilled workforce driven by materials, design and technology to create new outcomes that are globally competitive.

Since founding rp+m, Hlavin has taken the original rapid prototyping business and built it to become an advanced manufacturing company helping clients and partners create new products driven by optimizing design with existing and new materials for additive manufacturing. Hlavin promotes innovation within rp+m as well as outside the walls by developing critical partnerships with suppliers, customers, and educational institutions.
Mark Horner
Vice President of Business Development, The Technology House

Mark Horner is the vice president of business development and is one of the founding members of The Technology House. When the company started in 1996 as a rapid prototype service bureau, it had five employees, one SLA machine and one seat of PRO/Engineer CAD software. Since that time, Horner has helped The Technology House grow into a full service company offering product development, additive manufacturing, production injection molding and production CNC machining, including five-axis machining, helping companies develop and produce parts in industries such as medical, aerospace and consumer products.

Horner was introduced to the rapid prototyping field in 1989 at Packard Electric in Warren, Ohio. There he trained to operate an SLA-250 machine that was serial number 6 produced by 3D Systems. The machine helped Packard’s component engineering department begin to rapid prototype its new electrical connector designs for the automotive industry.

Mike Hripko
Associate Vice President for Research, Youngstown State University

Mike Hripko was recently named the new associate vice president for research at Youngstown State University. Hripko provides leadership and strategic direction for advancing scholarship, research, grant activity and technology transfer at the university. Before his role at YSU, Hripko joined America Makes in January 2014 as deputy director of Workforce and Educational Outreach. He is a native of Youngstown, Ohio, and a long term resident of the Mahoning Valley.

Hripko also served as director for research and technology-based economic development for the Youngstown State University College of Science, Technology, Engineering and Mathematics. In this role, he supported several industry, government and academic collaborations resulting in new and expanded programs, technology-based research and regional economic development.

Hripko also enjoyed a 31-year career with Delphi Packard Electric Systems in Warren, Ohio, from which he retired as manager of Product Management and Pricing in 2008. He led a team of engineers responsible for comprehensive product portfolio management, including the coordination and prioritization of new product development and ensuring that all new products achieved quality and profitability metrics. Additionally, his team was responsible for establishing and maintaining the pricing strategy for a $1 billion global business.

During his Delphi career, Hripko also managed other departments, including product management, marketing sales and component design engineering.

Hripko holds a bachelor’s in mathematics from the University of Dayton, a master’s in industrial engineering (operations research) from the University of Iowa and an MBA from Kent State University.
Howard A. Kuhn, Ph.D.
Adjunct Professor,
Swanson School of Engineering,
the University of Pittsburgh

Howard Kuhn is adjunct professor at the Swanson School of Engineering at the University of Pittsburgh where he teaches courses in manufacturing, product realization and engineering entrepreneurship, and supports research in manufacturing of biomedical devices for tissue engineering. He is also a technical advisor for the National Additive Manufacturing Innovation Institute in Youngstown, Ohio.

He was director of research and development for the Prometal Division of ExOne, formerly ExtrudeHone (2002 – 2008), where he continues as a research consultant.

Kuhn was a co-founder of Concurrent Technologies Corporation, a non-profit, applied research and development firm headquartered in Johnstown, Pa., and served as its vice president and CTO (1988 – 2000).

He was a co-founder and technical director (1980 – 1988) of Deformation Control Technology, a Cleveland-based consulting firm serving the metalworking industry.

Kuhn was on the faculties of Drexel University (1966 – 1974) and the University of Pittsburgh (1975 – 1988) with joint appointments in the Department of Mechanical Engineering and the Department of Materials Science and Engineering.

He is a fellow of the American Society of Materials International and is a recipient of their Gold Medal (2008) as well as the Edgar C. Bain and Zay Jeffries awards for service to materials processing. In 2011, he received the Eli Whitney Lifetime Achievement Award for Productivity from the Society of Manufacturing Engineers.

Kuhn received a bachelor’s, master’s and Ph.D. in mechanical engineering at Carnegie Institute of Technology (now Carnegie-Mellon University).
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Raymond Krajci
Teaching Assistant, think[box], Case Western Reserve University

Raymond Krajci graduated from CWRU in 2014 with a degree in computer engineering. Already a teaching assistant for think[box], Krajci stayed around to become staff soon after graduation, working as a lab technician. Besides working in think[box], he creates electronic fashion with Diffractive Design and develops products for tabletop gaming.

Dustin Lindley
Additive Manufacturing Center Manager, University of Cincinnati Research Institution

Dustin Lindley is the lab manager for advanced manufacturing research at University of Cincinnati Research Institution, with a joint appointment as an adjunct professor in the College of Engineering and Applied Sciences and the College of Design, Art, Architecture and Planning. In this role, Lindley is building a world-class additive manufacturing research laboratory, using both the extensive capabilities of the University of Cincinnati and deep experience in the industrial application of additive manufacturing. Lindley has been working in additive manufacturing for more than 11 years as a technical leader at Morris Technologies, Inc., where he specialized in the development of new materials, design of components for manufacturing with additive processes, and process control and sensor development. Lindley holds a Bachelor of Science in physics and a master's degree in mathematics from the University of Illinois at Urbana-Champaign. He earned an master's in mechanical engineering at the University of Cincinnati in 2012. He is a member of the ASTM F42 committee on additive manufacturing.

Jim McGuffin-Cawley
Arthur S. Holden Professor of Engineering and Chair of the Department of Materials Science and Engineering, Case Western Reserve University

Jim McGuffin-Cawley is the Arthur S. Holden Professor of Engineering and the chair of the Department of Materials Science and Engineering at Case Western Reserve University. His interest and activities in additive manufacturing date back to the late 1990s. Recently, he has been collaborating with colleagues at Lincoln Electric to extend laser hot-wire cladding technologies to additive manufacturing. McGuffin-Cawley has served America Makes (the National Additive Manufacturing Innovation Institute) as a representative of CWRU on the governance board and as an elected member of executive committee since its creation.
Karl West
Director of Medical Device Solutions,
The Cleveland Clinic

Karl West is Cleveland Clinic’s director of Medical Device Solutions. MDS is an interdisciplinary product development team with a mission to promote the development of innovative medical devices that can advance patient care. West has been in the biomedical engineering department at the Cleveland Clinic developing medical devices since 2002. West obtained his bachelor’s in mechanical engineering and his master’s in physics.

Dave Pierson
Senior Mechanical Design Engineer, MAGNET

Dave Pierson has spent 23 years with MAGNET as senior design engineer. He brings 20 years of experience with additive manufacturing and his first print job was the tray for Sonic restaurants. He has experience with FDM, Polyjet, PBF and SLA. Projects include products for the Cleveland Clinic to Malley’s candy bar production equipment. He has the SME additive manufacturing certificate.

Rick Pollack
Founder and CEO, MakerGear

Rick Pollack founded MakerGear in his Shaker Heights garage in 2009. Prior to MakerGear, Pollack spent more than 20 years developing software and working for various technology-based startups and small businesses. Pollack was a principle and vice president of technology for ADIS. ADIS developed CRM software for the automobile industry in the late ’90s and was acquired by Reynolds and Reynolds. He is also a former vice president of technology for Beachwood-based NineSigma. He has a bachelor’s in computer science from the University of Cincinnati.
ATTC First Floor

ATTC Lobby:
- Swagelok
- NCATC
- USFLN

ATTC Room 120:
- STRATI
- AMT
- The Technology House

ATTC Corridor (entrance to Room 120):
- ATC/Stratasys

Exhibitors:

ATTC Room 133:
- Peoples Bank
- Youngstown Business Incubator
- rp+m
- MAGNET
- Ophir

ATTC Room 134:
- Tri-C’s 3D/AM Printers
- Boundary Systems
- MakerGear
- ExOne
- FARO

ATTC Room 142:
- Tri-C’s Youth Technology Academy (YTA)

ATTC Parking Lot Entrance:
- ATM Rally Fighter
How to get from ATTC to MCC 10

To get to MCC 10, exit ATTC onto E. 30th, cross Woodland Ave., and turn right onto E. 30th. Take the first sidewalk towards MCC, and go down to the lowest level to MCC 10.
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Cuyahoga Community College (Tri-C®) opened in 1963 as Ohio’s first community college and remains Ohio’s oldest and largest public community college. For more than 50 years, Tri-C has provided high quality, affordable education and programs to more than 900,000 members of our community. The College ranks first in Ohio and 45th in the nation in conferring associate degrees, all disciplines.

Tuition at Tri-C is among the lowest in Northeast Ohio and across the state. Each semester Tri-C offers more than 1,000 credit courses in more than 140 career and technical programs and liberal arts curricula. More than 600 non-credit workforce and professional development courses are offered each year. Tri-C offers more than 800 distance learning courses and more than 130 courses at locations throughout the community, close to home and work.

The College serves more than 52,000 credit and non-credit students annually. Classes are available day, evening and weekends, in person, via television, via the internet, and also through independent learning. Tri-C’s campuses in Parma, Highland Hills, Westlake and downtown Cleveland, and its Corporate College® locations in Warrensville Heights and Westlake, provide state of the art facilities and equipment. The College also opened a Hospitality Management Center on Public Square in downtown Cleveland in 2010 and the Brunswick University Center.

About the 3D Digital Design and Manufacturing Technology program

PROGRAM OVERVIEW

The 3D Digital Design and Manufacturing Technology certificate program is designed to train skilled workers in the field of 3D digital design and subtractive and additive manufacturing technologies. Call 216-987-2769 or email 3Dmfg@tri-c.edu to make an appointment to discuss your future in 3D digital design and additive manufacturing. Financial aid may be available for those who qualify.

PROGRAM HIGHLIGHTS:

- Earn a certificate with only 32 credit hours
- Flexible scheduling, day and evening courses
- Internship opportunities
- Job placement and career services
- Transfer credits to Tri-C’s Associate of Applied Science degree in Manufacturing Industrial Engineering Technology or some credits may transfer to four-year colleges and universities
The mission of MAGNET, the Manufacturing Advocacy & Growth Network, is to support, educate and champion manufacturing in Ohio with the goal of transforming the region’s economy into a powerful, global player.

Founded in 1984, MAGNET is a nonprofit organization dedicated to helping manufacturers compete and grow under the leadership of a board of directors that reflects the breadth of manufacturing in the region.

MAGNET provides consulting services aimed at helping companies achieve bottom-line efficiencies through increased productivity and process-improvement programs while improving top-line sales through a variety of new product development and growth strategies.

During the period 2008 to 2012, MAGNET undertook 752 projects for 459 companies. These projects helped those manufacturers achieve the following results:
- $540 million in increased or retained sales
- $79 million in cost savings
- $174 million investment in their operations
- 6,264 manufacturing jobs created or retained

MAGNET is a provider of Manufacturing Extension Partnership services funded by the U.S. Department of Commerce’s National Institute of Standards and Technology.

ATC 3D

ATC specializes in 3D Printing Systems featuring:
- Idea Series (FDM)
- Design Series (FDM/Polyjet)
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- Educate students on a wide variety of production processes

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