The Center to Advance Manufacturing Monthly News

September 2025

As we head into Manufacturing Month, we're reminded how vital this sector is to Northwest Ohio: driving innovation, creating rewarding careers, and strengthening our communities. Manufacturing Day (MFG Day) on Friday, October 3 kicks off a month of activities that raise public awareness, spotlight talent pathways, and encourage growth.

In that spirit, I'm excited to invite you to the Center to Advance Manufacturing's Annual Summit on Tuesday, October 7 at Bowling Green State University, our signature way to celebrate the month and move the conversation from inspiration to action.

This year's program features a keynote from Nate Titus (American Honda Motor Co., Inc.), Driven by Dreams: The Honda Way, underscoring how people, process, and innovation power long-term excellence. Attendees will also participate in two breakouts: Design Thinking in Manufacturing (exploring how to make manufacturing careers more visible and exciting to younger generations) and Operations & Technology in Manufacturing (how intelligent operations boost productivity, quality, and long-term performance). We'll close with *Behind the Change: Industry Voices on Technology, Talent & Transformation*, a panel of regional leaders sharing practical lessons on tech adoption, workforce, and organizational change, followed by a networking reception.

The Summit runs 1:00 - 5:30 PM at BGSU's Bowen Thompson Student Union. Advance registration is required. Click **here** to register. We hope you'll join us as we kick off Manufacturing Month together. If you'd like additional details, please reach out.

Falcon BEST Robotics Competition: Real-World STEM in Action

In mid-September, the Center joined forces with BGSU's Pre-College Programs and College of Engineering & Innovation, to help prepare the space for the Falcon BEST Robotics kickoff and support the season ahead. We've also been sharing information with partners, helping to recruit additional teams, and connecting industry to judge, mentor, and competition opportunities.

BGSU | Falcon BEST
BOWLING GREEN STATE UNIVERSITY

What is Falcon BEST? It's an 8-week, no-cost program where high-school teams design, build, and code a robot from a standardized kit, then develop a marketing pitch and exhibit booth. Teams are scored on engineering, presentation, and teamwork, giving students a realistic look at modern manufacturing and problem-solving.

Why it matters for employers: Falcon BEST is a great way to engage students early, help break down manufacturing stigmas, and spark interest in engineering, automation, and logistics careers. It also builds relationships that can grow into job shadows, internships/co-ops, and future hires.

If your company would like to learn about how you can get involved, please reach out and we'll connect you with the program coordinator. Learn more about Falcon BEST **here**.

Ohio Department of Development College Technology Internship Program

The College Technology Internship Program, formerly the Diversity & Inclusion Technology Internship Program, provides a great opportunity for students and companies! Paid internships give college students business and entrepreneurship experience, while companies gain access to young, diverse talent to help them compete and grow.

Ohio Department of Development

The Ohio Department of Development will reimburse two-thirds of an intern's wages up to $7,500. Technology companies as well as any company with a technological need are eligible to apply.

Companies do need to provide a meaningful internship experience, must have non-residential work space, and must hire interns as employees (W-2). They can hire as many as 10 interns for different positions. The minimum wage for interns is $15 per hour, but can exceed that amount.

For full details, click **here**.

JobsOhio Relocation Incentive

JobsOhio

The JobsOhio Relocation Incentive helps Ohio employers of any size in ten critical sectors expand their workforce, specifically in STEM and technical occupations, with direct financial incentives for attracting out-of-state professionals.

Why Participate?

- $15,000 incentive payment: Received for each qualifying new hire who establishes permanent residency and starts work.
- First-come, first-served: Up to $225,000 total (15 hires) per company until program funds are depleted.
- No strings attached: Direct payment of funds to your company with no restrictions on specific eligible costs.
- Employers of all sizes: Dedicated funding for companies of all sizes to ensure any employer can participate.

For full program details and an FAQ, click **here**.

CAR MBS 2025: Key Takeaways for the Auto Industry

CTAM Program Manager Ford Weber attended the Center for Automotive Research (CAR) Management Briefing Sessions (MBS) in Detroit earlier this month. MBS brings together executives and advisors from across the global automotive ecosystem and is a rich source of insight on the industry's status and trajectory. Below are highlights on the forces shaping the market and where it's headed.

Tyler Harp, CAR Industry Economist highlighted findings on workforce, technology, and policy in the midwest in a very insightful session.

Talent & skills

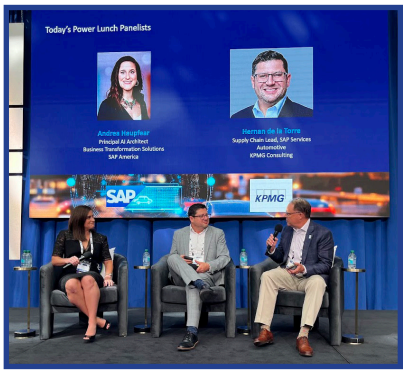
The labor shortages and skills mismatches we identified in the Northwest Ohio Automotive Manufacturing Sector study continue to affect the sector. U.S. manufacturing employment peaked at 19.5 million (1979) and is about 12.7 million today. Despite the long-term decline, there are roughly 500,000 open manufacturing jobs (≈ 3.8% vacancy). Scarcity and misalignment of critical technical and cross-cutting skills is pushing labor's share of new-vehicle cost higher.

Powertrain mix & investment

Global dynamics, trade policy, and consumer incentives/preferences are reshaping investment. 2025 is the first year since 2019 in which North American capital spending on non-EV production exceeds EV-related projects. Traditional ICE sales remain a strong share in 2025, yet the long-run trend still points away from pure ICE, with extended-range EVs and PHEVs gaining appeal.

Semiconductors

The industry's reliance on microchips is greater than ever. The average new vehicle has 1,400 microchips with EVs tending to have 2,800 or more. Microchips add roughly $1,000 - $2,000 to a vehicle's cost, and automotive has become one of the largest end-markets for semiconductors.



Andrea Hapfear, SAP America and Hernan De la Torre, KPMG Consulting shared insights on one of CAR's many panels during the conference.

Aging fleet

In the midst of this innovation and global transition, there are more older vehicles on the road than ever before. The average age of a US passenger car is 14 years, and 20% are over 21 years old. In addition to the impact the longer life spans have on new car sales, it means that many cars on the road today do not have the latest safety, fuel economy, and anti-pollution features.

Forecast: proceed with caution

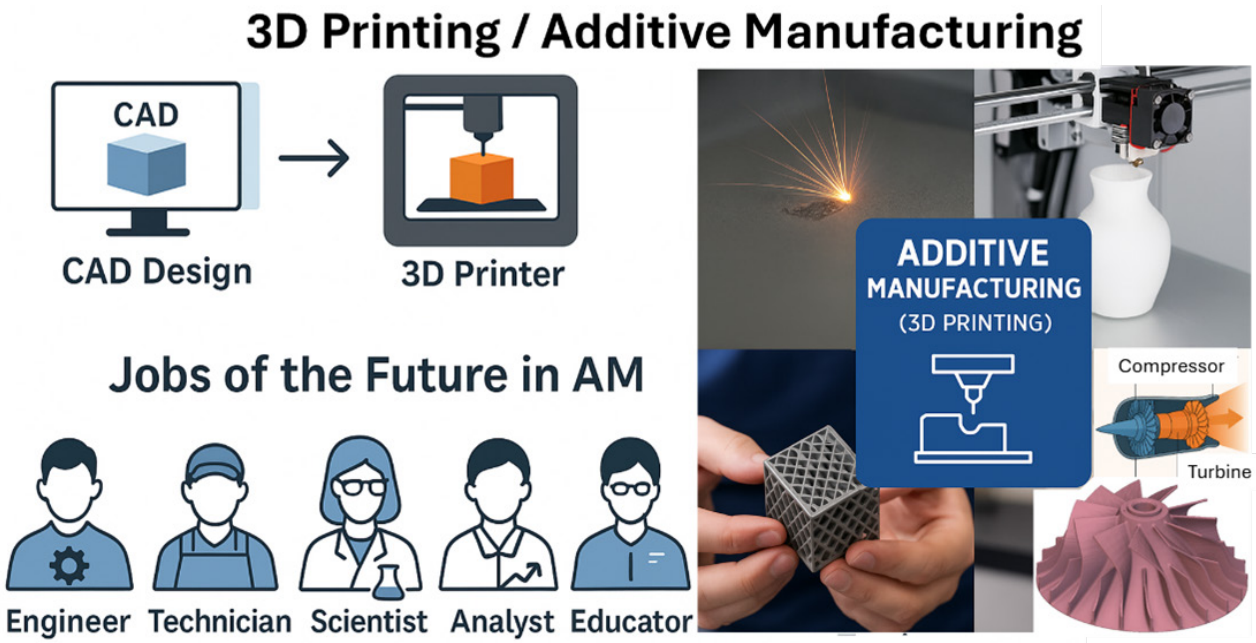
CAR's forecasters emphasized how sensitive outlooks are to assumptions (trade policy, geopolitics, favored propulsion systems, macro health, supply-chain resilience, etc.). One panelist underscored a recurring "disruption cycle" (pandemics, tariffs, chip supply, labor). Assuming no major shocks, affordability is a key ceiling: average transaction prices are around $41,700 for ICE and $51,300 for EVs, leaving ~40% of U.S. consumers priced out of new vehicles. The result is a relatively low confidence forecast of a sluggish domestic light vehicle market likely hovering at or slightly below thirteen million vehicles for the next 2-3 years.

To learn more about the Center for Automotive Research, visit **cargroup.org**.

3D Printing: Shaping the Future of Manufacturing and Jobs

What is 3D Printing?

3D printing, formally known as additive manufacturing (AM), is a process where objects are built layer by layer from a digital design file. Instead of cutting away or molding material like traditional manufacturing, 3D printing adds or fuses material layer by layer—whether that material is plastic, metal, ceramic, or composites. This technology unlocks three key advantages: (1) Design Freedom: Complex shapes—such as lattices, internal channels, and bio-inspired structures, among many others—can be produced that are impossible or very costly using conventional methods, (2) Material Efficiency: Because it adds rather than subtracts material, waste is dramatically reduced—an important step toward sustainable manufacturing, and (3) Rapid Innovation: Designers can go from a digital model to a physical proto type in hours, speeding up product development and reducing costs.



Why It Matters

Across industries—from aerospace and automotive to healthcare and electronics—companies are using AM not only for prototypes but also for real parts. Imagine a rocket engine injector with optimized cooling channels, a lightweight turbine blade built for extreme conditions, a customized medical implant designed exactly for one patient, or a heat sink with intricate channels to cool electronics more efficiently. These are all real applications of AM today. And the field is growing quickly: the global 3D printing market is projected to surpass $320 billion by 2035. With that growth comes opportunity—not just for innovation, but also for jobs.

Jobs of the Future

Additive manufacturing is creating new career pathways. Engineers design digital models and optimize printing processes. Technicians operate printers and perform quality checks. Scientists develop new materials. Data analysts train AI systems to predict defects and optimize settings. Even educators are preparing students to think in new ways about design and problem-solving.

In short, 3D printing doesn't just create parts—it builds the future workforce.

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National and Ohio Workforce Efforts

The U.S. government has identified advanced manufacturing as pillars of national strength, linking them directly to global competitiveness, economic security, and innovation. Federal initiatives such as America Makes—the nation's leading institute for AM innovation—are to build a resilient manufacturing workforce. These efforts align with broader national strategies to modernize supply chains, accelerate clean energy technologies, and expand high-paying STEM careers. Within this national landscape, Ohio stands out as a manufacturing leader. Consistently ranked among the top states in manufacturing output and employment, Ohio combines a strong industrial base with forward-looking workforce programs. By linking companies, universities, community colleges, and training centers, Ohio is creating a robust talent pipeline that positions the state as a national model for advanced manufacturing workforce development.

3D Printing at BGSU

At Bowling Green State University, the Mechanical and Manufacturing Engineering (MME) Program in the School of Engineering within the College of Engineering and Innovation plays a vital role in supporting this national and regional effort. Our labs house a wide range of 3D printing technologies, each serving a different purpose: (1) Laser Powder Bed Fusion (LPBF): High-precision metal 3D printer, (2) Fused Deposition Modeling (FDM): A versatile method for prototyping with polymers, (3) Fused Granulate Fabrication (FGF): Large-scale printing with recycled pellets—great for sustainability, (4) Digital Light Processing (DLP): High-resolution printing for thermal and biomedical models, and (5) Binder Jetting: A flexible system for metals, ceramics, and sand molds.

These printers are complemented by advanced tools like scanning electron microscopy (SEM) and universal testing equipment that allow us to study how a part's structure impacts its strength and performance. This "structure–property relationship" is the backbone of materials science and a key concept for students and industry alike.

Why It Matters for Northwest Ohio

By combining cutting-edge equipment with workforce development initiatives, BGSU is helping prepare students, teachers, and industry partners for a future where design, data, and manufacturing come together. Additive manufacturing isn't just about making products—it's about building skills, growing careers, and keeping U.S. manufacturing globally competitive.

As Northwest Ohio continues to strengthen its role in advanced manufacturing, 3D printing will remain at the heart of innovation, sustainability, and job creation.

Want to Learn More?

This month's Knowledge Hub feature was authored by Dr. Zahabul Islam (Za), an Assistant Professor in the Mechanical and Manufacturing Engineering Program in the School of Engineering at Bowling Green State University (BGSU). His research focuses on additive manufacturing (AM) techniques such as laser powder bed fusion (LPBF), directed energy deposition (DED), and fused granulate fabrication (FGF) for metals, ceramics, polymers, and composites. He also works in mechanical testing and microstructural characterizations to establish processing–structure–property relationships. His work advances sustainable manufacturing, energy and aerospace, and biomedical applications. Alongside his research, he is committed to workforce development and STEM outreach, leading programs that prepare K–14 educators, students, and industry partners for the future of advanced manufacturing.

Student Spotlights

We're debuting a monthly Student Spotlight to celebrate interns, co-ops, and apprentices with manufacturers and logistic companies from our partner schools. Real-world experience is where education and industry intersect. Each month we'll spotlight students and share takeaways from their experiences - what they worked on, what they learned, and advice for peers.

If you'd like to learn about internship, co-op, and apprenticeship opportunities with students from Bowling Green State University, the University of Findlay, and Owens Community College, please reach out and we'll connect you. Together, we can create more pathways for students to build skills - and for companies to meet tomorrow's workforce, today.

Sydney Payeff
Bowling Green State University, Schmidthorst College of Business
Role: Buying Intern, Chassis – Purchasing Supplier Development, Toyota Motor North America (Saline, MI)

Sydney Payeff, a business major specializing in marketing in BGSU's Schmidthorst College of Business, spent the summer supporting sourcing negotiations with supplier partners at Toyota - gaining a front-row view of an ever-changing supply chain. She credits BGSU's emphasis on building relationships with recruiters and mentors for opening the door to a buying/supply chain role outside her major. What's stood out most at Toyota is the culture of continuous improvement and collaboration, which aligns with her own values and has made the experience especially impactful. Next up, she's excited to visit Toyota's Kentucky manufacturing plant to see how buyer decisions translate on the factory floor and to deepen her understanding of cross-functional operations.

Charles Littlejohn
Bowling Green State University, College of Engineering & Innovation
Role: Intern, Goodyear — Tall Timbers Mold Operations (Findlay, OH)

Charles Littlejohn, a mechatronics engineering technology major, spent his co-op immersed in 3D modeling and design with Creo Parametric at Goodyear's Tall Timbers Mold Operations, turning real production problems into working solutions. He credits the College of Engineering & Innovation for sharpening problem-solving, professionalism, and organization skills that helped him manage tasks efficiently and earn trust on the floor. The experience reinforced his goal to contribute at companies that push the limits of engineering, and it underscored the importance of a strong work environment. Most of all, he says the co-op taught patience - engineering takes time, and not every idea lands on the first try - a lesson he'll carry forward as he brings new ideas to future teams.

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