**PowerPoint Outline #2 for OMA, COMP Subject Matter Experts: “Ohio’s Future Is Built Here: Advanced Manufacturing Careers Powering the World”**

**For use with OMA, COMP K–12 Presentation Slide Deck #2: “Ohio’s Future Is Built Here: Advanced Manufacturing Careers Powering the World”**  
**Designed for Industry Experts Presenting to K–12 Students in the Classroom**



**PURPOSE OF THIS CONTENT SET**

The Presentation Content Sets equip industry subject matter experts (SMEs) to confidently present advanced manufacturing career pathways to K–12 audiences.

The Content Sets are scaffolded to offer varying degrees of support for SMEs. The first layer of scaffolding is the Presentation Slide Decks which include brief notes of scripts, support and suggestions for delivery. See sections under individual slides for those details.The Presentation Outlines provide additional scripts and best practices in classroom delivery on a slide-by-slide basis. The Presentation Guides extend the content by providing alternative scripts, additional questions, pro tips and classroom insights and also are organized on a slide-by-slide basis.

Options are considered just that - optional. They are designed to provide variations for Ambassadors to better personalize the presentations. Feel free to eliminate all options and follow the presentation strictly as the slide deck suggests.



**Slide 1 – Title Slide: The Future Is Built Here: Advance Manufacturing Careers Powering the World**  
**Speaker Notes:**

* See slide notes for quick reminders.
* Welcome students with energy — “If you like science, problem-solving, or technology, you already belong in advanced manufacturing.”
* Optional Icebreaker: “Name something in your life that someone had to *make* before you could use it.”

**Content:**

* Speaker Self-Introduction and Qualifications
* Organization Logos

**Slide 2 – Why Consider a Career in Advanced Manufacturing?** (Brief Review from Presentation #1)

**Key Points:**

* Uses **robotics, chemistry, biotechnology, and data** to create next-gen products.
* Focuses on **innovation, quality, and sustainability**.
* Involves **clean labs, smart factories, and automation systems**.
* Discussion: “Manufacturing from long ago vs today’s advanced manufacturing is very different. The use of technology and precision engineering in design and production has far exceeded limitations of the past.” *Note: This is a review from Presentation #1.*
  + **Technology Use**: Traditional manufacturing relies on manual processes, while advanced manufacturing incorporates automation and digital technologies.
  + **Production Speed**: Advanced manufacturing typically offers faster production times due to streamlined processes and robotics.
  + **Customization**: Advanced manufacturing allows for greater customization and flexibility in production compared to traditional methods.
  + **Quality Control**: Advanced techniques utilize real-time data and analytics for improved quality control, unlike traditional methods.
  + **Resource Efficiency**: Advanced manufacturing often uses resources more efficiently, reducing waste and energy consumption.
  + **Workforce Skills**: Traditional manufacturing requires less specialized skills, while advanced manufacturing demands a more skilled workforce proficient in technology.

**Engagement Tip:** Ask: “What’s the coolest piece of tech you’ve seen lately? Someone *made* that.”



**Slide 3 – On-ramps to Sustainable Employment**

**Content:** Ohio is building on-ramps for new talent and people returning to the workforce such as veterans and helping to upskill those currently in Advanced Manufacturing workforce pipelines.

**Key Points:**

* Many ways to enter and move up in Advance Manufacturing.
* Builds the **medicine, materials, and machines** that power modern life.
* Supports **healthcare, transportation, energy, and sustainability**.
* Offers **great pay, purpose, and opportunities** to innovate.

**Engagement Tip:** “Which industry do you think uses more robots — biotech or automotive?”

**Slide 4 – Libbey Glass in the News**

**Content:** Builds the medicine, materials, and machines that power modern life.

Supports healthcare, transportation, energy, and lifestyles.  
 Offers great pay and opportunities to innovate.

**Key Points:**

* Many ways to enter and move up in Advance Manufacturing.
* Builds the **medicine, materials, and machines** that power modern life.
* Supports **healthcare, transportation, energy, and sustainability**.
* Offers **great pay, purpose, and opportunities** to innovate.

**Engagement Tip:** Share Video: Libbey Glass (Ohio). WTOL Channel 11 report with Governor DeWine. 00:01:55. 2022. <https://youtu.be/LxqAD-__Kr8?si=WF1XAcIHjnewYF0X>

“Why do you think Governor DeWine takes time from his busy schedule to talk about Libbey Glass? Why is glass making so important?”

**⚙️ INDUSTRY SPOTLIGHTS:** Biomanufacturing, Automotive (EV, Battery), Energy, Aerospace and Defense

Note: Wage data sourced from BLS, LMI, OMA when available. Also Indeed and similar sites designed for job seekers and employers. See Citations page.

**Slide 5 – Biomanufacturing**

* **Goal:** Introduction to careers in Biomanufacturing

**Careers:** Bioprocess technician, lab automation tech, quality control specialist, process engineer  
**Salary Range:**

* Entry: $45K–$60K
* Experienced: $80K–$120K+
* **Content:** Produces life-saving vaccines, treatments, and therapies using smart systems.
* **Engagement Tip:** “If you were to help develop the next life-saving medicine, what disease or condition needing treatment would be the first on your list?”

**Video** Share “A Day in the Life of a Biotechnology Technician”. Career OneStop. 00:01:34 <https://youtu.be/QEr_X2rDM-0?si=O3gpGresQoivcY62>

**Slide 6 – Automotive**

**Goal:** Introduction to Automotive careers from design to production.

**Careers:** Robotics technician, automation engineer, product designer, maintenance specialist, electrical vehicles and batteries  
**Salary Range:**

* Entry: $45K–$65K
* Experienced: $85K–$120K+

**Highlight:** Combines design, robotics, and AI to create sustainable vehicles. Define Advanced Mobility Vehicle (remotely piloted aircraft such as drones).

**Engagement Tips:** Ask, “Who wants to help design a car of the future? What would be included?”

**Slide 7 – Marshmallow Tower Activity**

**Goal:** Build a stable tower using raw spaghetti and a single marshmallow. Suitable for all age groups.

**Materials Needed:** Package of raw spaghetti, package of standard size marshmallows.

**Instructions:**

1. Divide students into teams of four or five. Each group receives 20 spaghetti sticks and only one marshmallow.
2. Tell them that the tower must be free-standing (can’t lean on anything, be suspended, or anchored to the floor with tape). The tallest and most stable tower wins.
3. The entire marshmallow must rest on or be attached to the top of the tower.
4. Use as much or as little of the materials as you want.
5. Students can break or cut the spaghetti if needed. They can have additional pasta sticks if needed
6. Tell students they have 12 minutes to build a tower.
7. When time is up, the tower must be freestanding as defined above.

8. The winning tower is the tallest and most stable.

9. Debrief celebrating the diversity in ideas and styles.

💡**Pro Tips:** Younger students may benefit from having fewer members in groups. Five or fewer may be the optimal number of Design Teams given time constraints, but if necessary more will work well too. Point out specific examples and use student names when possible. This activity is suitable for all age groups.

**Slide 8 – Energy and Clean Technology**

**Goal:** Introduce students to careers in energy that innovate sustainable solutions through wind, solar, battery (development and disposal), and smart-grid systems.

**Careers:** Energy technician, power systems engineer, renewable energy installer, automation technician, environmental systems designer, grid integration engineer

**Salary Range:**

* Entry: $42K–$65K
* Experienced: $80K–$120K+

**Highlight:** The energy industry is transforming through advanced manufacturing, sustainability, and digital technologies that create cleaner and more reliable power systems. These roles drive innovation in electric vehicles, battery storage, and renewable energy systems that protect our environment and strengthen our economy.

**Engagement Tips:** Ask, “Where does your electricity come from?” or “What would happen if we could store sunlight in a battery?”  
Encourage students to think about how technology and teamwork can create a more sustainable world.



**Slide 9 – Aerospace and Defense**

**Goal:** Introduce students to aerospace and defense careers that design, build, and maintain systems that protect, connect, and explore our world.

**Careers:** Aerospace technician, avionics engineer, systems integrator, materials engineer, unmanned aerial systems (UAS) specialist, defense manufacturing technician

**Salary Range:**

* **Entry:** $48K–$70K
* **Experienced:** $90K–$130K+

**Highlight:** Aerospace and defense combine precision engineering, safety technology, and innovation to create everything from fighter jets and spacecraft to navigation and communication systems. Students can explore how advanced materials, automation, and AI shape the future of flight and defense.

**Engagement Tips:** Ask, “Who here has ever watched a rocket launch or seen a fighter jet fly overhead? What kind of technology do you think makes that possible?”

💡**Pro Tips** Encourage curiosity about how pilots, robots, and engineers work together to keep aircraft and missions safe.

**Slide 10 – Semiconductor Manufacturing**

**Goal:** Introduce semiconductor careers that power everything from smartphones to satellites through microchip design and clean-room production.

**Careers:** Semiconductor technician, process engineer, equipment maintenance technician, materials scientist, automation engineer, quality engineer

**Salary Range:**

* **Entry:** $45K–$70K
* **Experienced:** $85K–$125K+

**Highlight:** Semiconductor manufacturing combines nanotechnology, precision automation, and chemistry to produce the tiny chips that run our phones, computers, cars, and defense systems. This field is one of **Ohio’s fastest-growing advanced manufacturing sectors** due to global chip demand and U.S. innovation investment.

**Engagement Tips:** Ask, “How many chips do you think are in your phone?” or “Why do you think clean rooms need to be dust-free?”

**Share Video:** well suited for any student but intended for a younger audience: Intel. “How Intel Manufactures Chips”. 00:05:04. <https://www.youtube.com/watch?v=4oQoZF_KRCc&t=1s>

-or-

**Video Option** - well suited for older students: Intel, “How Chips are Made”. 00:04:44 <https://www.youtube.com/watch?v=_VMYPLXnd7E>



**Slide 11 – The Possibilities Are within Your Reach**

**Key Points:**

* Review of on-ramps and pathways from Presentation #1
* STEAM, STEM, CTE classes currently available in schools
* Entry through multiple higher education routes: certificates, apprenticeships, 2-year, or 4-year programs.
* Many companies offer tuition reimbursement and paid training (provide current example).
* Certifications: MSSC, NIMS, SME, BioWork, Chemical Process Tech.
* High pay, full benefits, and job stability
* Work in clean, high-tech environments
* Impact industries that matter: medicine, clean energy, and mobility

**Highlight:** Average manufacturing salary: **~$76,000/year (U.S. BLS)**

**Engagement Tip:** “What if your first job paid you to keep learning? Does anyone here get paid to go to school? Why do you think some employers might choose to pay someone to learn?”

💡**Pro Tips:** Remind students that not only are there opportunities to earn strong wages, there are many existing routes to get into the industry. From completing stackable certificates as a high school student to Senior to Sophomore programs to apprentice, externships and internships programs, opportunities exist to help you get started!



**Slide 12 – Demonstration**

***Activity Option:*** Demonstration - content based upon Ambassador’s experience, industry, materials available. Under 10 minutes.

**Demonstrations** areslated to allow time for a demonstration option. Demonstrations should stay within 10 minutes and can vary based upon Ambassador’s expertise, what they can share from their industries, materials available, etc. Getting students involved in the demonstration is a plus but not an absolute.

💡**Pro Tip:** Select a demonstration you feel students may not have witnessed before, something with a “Wow! Factor” if at all possible. Note: *If more time is needed, eliminate activity in slide 7.*



**Slide 13 - Ohio’s Future is Made Here, with You!**

**Key Points:**

* Creativity and teamwork are essential
* Diversity of talent drives innovation
* You are part of something bigger - building the world around us
* **Engagement Tip:** ““What problem will *you* help solve in the future?” Thank them for being engaged and let them know you look forward to visiting again soon to talk more about careers in Advanced Manufacturing.

Note: Be sure to leave online resource ideas or handouts for future (follow up) discovery sessions with teachers or counselors.



**🔧 Presentation Tips for Ambassadors** (listed here and notes section of slide deck as reminders and incorporate into training)

* Use Presenter’s Guide for additional support
* Keep it visual, interactive, and use analogies (“Robots are like helpers that never get tired”)
* Use wow-factor via live or video demonstrations
* Use hands-on activities, incorporate movement as often as appropriate for content,
* Include real examples, actual career salaries and case studies detailing success stories,
* Provide opportunity for projects completed in teams
* Use props: Bring small robots, 3D-printed items, parts, giveaways,
* Use “A Day in the Life” videos from Career OneStop <https://www.careeronestop.org/>: Share short occupation videos to help demonstrate what it looks like to be an electrical design engineer, modern auto technician, clean room technician, software and technology designers, etc.
* Leave swag (conference style giveaways) whenever possible.
* See Guide #2 for more presentation support tools.