

OVERVIEW

Apprenticeships specifically in the manufacturing industry are common among CSG grantees. The Manufacturing Industry Forum was conducted in order to further their understanding of the manufacturing sector. A panel of industry experts was featured, representing multiple subsectors of the industry, including food and beverage, electronics and semiconductor, and construction composite materials. The panel provided insights from their individual subsectors about the challenges of supply chain issues, an aging workforce and opportunities for talent development. In the following sections, a summary of the conversation and additional insights are provided. In addition, a recording of the event can be found [here](#).

FEATURED MANUFACTURING INDUSTRY ORGANIZATIONS

National Institute for Innovation and Technology (NIIT)

NIIT's mission is to respond to needs of advanced manufacturers in the semiconductor manufacturing space by bringing together industry, academia and government to provide innovative solutions.

SFMade

A nonprofit intermediary that works with 600 manufacturers that produce products in San Francisco, making sure these manufacturers thrive and create jobs. Food and Beverage manufacturers are the largest subset of their member companies.

Owens Corning (OC)

Manufacturer comprised of three different product lines: commercial and residential roofing/asphalt, residential/commercial insulation and construction composites used for wind turbines and automotive and aeronautics manufacturing. OC also builds and renovates their own manufacturing plants.

I. Interesting Facts about Manufacturing Subsectors

In general, there is a stigma that manufacturing is loud, dirty, and dangerous. As panelists pointed out, this is often not the case for many manufacturers. Most use advanced technology that makes production processes safer, cleaner, and quieter than before.

In semiconductor manufacturing, over 87% of computer chips are produced outside the U.S. Also, there are over 3,000 steps to produce a semiconductor, and a problem with any of those steps can result in a loss, referred to in the industry as "yield loss". A shortage of semiconductor chips throughout the world is leading to manufacturing issues across industries, and NIIT is focused on helping to solve that issue. (e.g., carmakers will lose billions due to a lack of chips for cars if this problem is not solved)

Manufacturing for composite building materials uses a continuous manufacturing process. There are key differences between discrete and continuous manufacturing processes that manufacturing engineers need to take into account. Discrete manufacturing produces a distinct item, such as an automobile and is usually ordered in itemized quantities (e.g. 100 automobiles). Continuous manufacturing produces materials that are measured in weight or volume such as chemicals or building materials like insulation. Manufacturers may actually use both types of processes, depending on their operational needs. OC provided an example related to how they need to regularly rebuild glass furnaces due to the heavy impact on them in continuous manufacturing that isn't as much of a problem in discrete manufacturing.



II. Challenges in Manufacturing

Employers are not good at signaling the skills they need to education and training providers, and they do not get the talent they need as a result.

- Global Foundries communicated they needed workers trained specifically for semiconductor manufacturing technicians. The training program designed for this specific type of manufacturing became under-enrolled and when job opportunities in that industry waned locally, the trainees in these programs were not prepared for other types of manufacturing. The fundamental manufacturing technical skills – electromechanical skills; safety; process and production; foundational (employability) skills – are more important to teach than the specifics of a subsector. Employers can always contextualize to the subsector.
- Employers don't always recognize transferrable skills. Job seekers then get incorrect messages about what is required and either don't apply or pursue particular jobs they may actually be a fit for.

An aging workforce leads to attrition and it is imperative that employers train people while they still have a workforce to train. For example, new hires at OC don't need to have fiberglass manufacturing experience – they just need the fundamental skills and can be trained for the specialized production processes.

Supply chain disruption is a key challenge facing all manufacturing subsectors.

- COVID-19 brought the global economy to a slow crawl, along with other natural disasters such as storms and power outages in certain parts of the country, slowing down manufacturers.
- Raw materials and supplies for manufacturers must be in the right place at the right time. Understanding the customer's needs are important here, in addition to gathering feedback from those on the plant floor versus only hearing from leadership.
 - » Plants previously shuttered are restarting and producing materials as needed.
 - » Talent is being shifted to having regional support in place for plants and manufacturers overseas.
- Food and beverage manufacturers in San Francisco have focused on local suppliers and other manufacturers are considering shifts like this.
- Semiconductor manufacturers have three key challenges: supply chain, fundamental understanding of cybersecurity, and workforce development.

III. Talent and Workforce Development

- The increased focus on diversity and inclusion has been encouraging employers like OC to put systems/materials, like employee handbooks, in place that make career pathways clear for workers. SFMade has been helping manufacturers make connections with local workforce organizations that provide additional benefits for recruitment when compared to traditional recruitment tools like LinkedIn and Craigslist.
- Rotation and training programs are in place for some employees and expanded to manufacturing staff at OC.
- The Industrial Maintenance Technician apprenticeship program has shown value in the semiconductor manufacturer space.
- There needs to be an opportunity to bring in underrepresented employees – this can include updating the job descriptions, and for training, colleges and training providers need to change course descriptions.
- NIIT is creating a dynamic tool to better track skills and competencies required by specific manufacturing jobs and ensure proper signaling to and alignment with training providers by using a unified competency model. The app is currently in beta.
- There is a need to identify and better communicate (or “signal”) the skills and competencies that are needed in manufacturing. The U.S. Chamber of Commerce is working on this, as is Open Skills Network (OSN) and [Credential Engine](#).
- Encourage employers to engage with workforce development organizations to adapt and obtain the right talent. Ideally solutions for this can be integrated into what employers are already doing.



IV. Impacts of Automation

- Owens Corning – The company is automating processes that improve quality and safety as opposed to automating for efficiency. Also, many processes cannot yet be automated. For example, tying knots on fiberglass strings requires a high level of dexterity not yet able to be automated. They have the view that manufacturing jobs need to be sustainable (e.g., minimizing hazards and burnout) and automation can assist in this process.
- SFMade – Automation may change the skills required of employees, for example, they may need the skills to operate and maintain advanced technologies. They conduct outreach to employers to learn more about how their workforce needs are changing so this can be communicated to training providers and educators.

V. Final Thoughts

- The panelists expressed an interest in learning more about promising practices in workforce development and apprenticeship from the CSG grantees.
- Apprenticeship providers may want to find employers that see value in community college training programs and the value of the noncredit training available. This has implications for onboarding and recruitment of apprentices. Some employers in the industry have funds for noncredit courses, including short-term credentials like the [OSHA 10-Hour Class](#).

PANELISTS

Bryan Sanchinell

*Senior Director of Workforce Products
National Institute for Innovation and Technology*

Bryan is an accomplished workforce development professional with focused experience in learning development, organizational and change management. A 10+ year proven track record of launching, implementing, and evaluating programs to up-skill underrepresented communities and underemployed workers within an industry association, community-based organizations, and Higher Education. Sectoral experience in Advanced Manufacturing, Design Technology, Transportation, Culinary Arts, and Office Services.

Robert Weinman

*Director of Workforce Innovation
National Institute for Innovation and Technology*

With over twenty years of experience in Workforce Development, Robert has focused primarily on emerging opportunities and strategies in High Tech and Advanced Manufacturing. He has worked in universities and community colleges and in private industry with industry associations and employers such as SEMI, Johnson & Johnson, and GlobalFoundries.



PANELISTS CONTINUED

George Colón

*Director of Workforce and Youth Programs
SF Made*

George Colón is a Workforce professional based in Oakland, CA. George has 12 years of business advising experience, with the last five years focused on advising around diversity, equity, inclusion, and how to support the success of a more diverse workforce.

Megan Chase

*Capital Delivery Leader
Owens Corning (OC)*

Megan Chase currently leads the Advanced Manufacturing Capital Delivery Project Services team at Owens Corning, providing the composites business with Project Management, Safety and Construction Management, Mechanical Utilities resources, and problem solving on large capital projects.

