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Considering the Future of CPI Workforce Development

Manufacturing job openings are expected to increase significantly — the current manufacturing workforce is aging and many late-career employees are retiring. Plenty of workers are available to fill vacancies, but the skills of those employees do not necessarily match the current needs of manufacturers. The production environment is increasingly automated and technologically advanced, requiring revisions to some job descriptions.

To bring the workforce up to speed, operators, technicians, and engineers will need more training in new technologies, including design and operation of intensified and modular processes, modeling and simulation, advanced controls, automation, and more. Some of these new concepts are already integrated into vocational training programs and engineering curricula. However, many tools and techniques, particularly those related to advanced manufacturing, are not part of formal university or technical training programs. The 14 Manufacturing USA institutes are working to fill those gaps with new educational tools and workforce development programs.

RAPID, for example, is working with its members to create and deploy educational content that ensures a healthy pipeline of appropriately equipped engineers, operators, and technicians. A critical part of promoting advanced manufacturing is developing and providing the educational tools to enable the process industries to adopt these technologies, which will require updates to the expectations of the workforce. To ensure these efforts align with national priorities, RAPID's workforce development efforts were included in an Oct. 2019 Congressional Briefing, "Workforce Development and Manufacturing Innovations to Enhance the Chemical Processing Industry." The briefing panelists highlighted innovation and workforce training as keys to solving national manufacturing challenges. They explained that skills-based learning and professional internships can connect professional societies, universities, and industry to equip the workforce with skills that the industry needs.

The RAPID internship program creates these connections. Engineering student interns at RAPID member organizations can join a virtual community and receive

online safety, technical, and leadership training, as well as professional development and mentorship. The program helps smaller organizations by giving them access to interns nationwide and by allowing their student interns to become part of a broad virtual network across the U.S. Not only does this create a sense of shared learning and community, it also offers interns the chance to network with other students at peer organizations. The combination of technical know-how and professional development gives interns the diversity of skills necessary to be successful in the workforce.

Other institutes have similar programs that serve their industries and help to develop the workforce of the future. The flexible hybrid electronics institute, NextFlex, developed the FlexFactor program to engage high school students and increase their interest in science, technology, engineering, and math (STEM) fields. The internship program at the Institute of Advanced Composites Manufacturing Innovation (IACMI) allows undergraduate and graduate students to complete research at partner sites.

Internship programs are only a part of a broad effort to train and develop the advanced manufacturing workforce for the process industries. The foundation for RAPID's efforts is a comprehensive curriculum map that clearly defines the knowledge employees need in different roles and at various stages of their career. RAPID follows this guide and works primarily with RAPID member organizations to create and deploy instructional materials on modular chemical process intensification. The target audience ranges from current engineering students to late-career process development engineers. RAPID provides this

content as skills-based learning opportunities virtually via webinars and e-learning courses and in person through hands-on classes and workshops. The content is available online: www.aiche.org/rapid/education-workforce-development/training.

Along with the other Manufacturing USA institutes and funding partners at the U.S. Dept. of Commerce, Defense Dept., and Dept. of Energy, RAPID plans to continue to find opportunities to expand training and development to build a strong pipeline of workers for the process industries of the future.



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