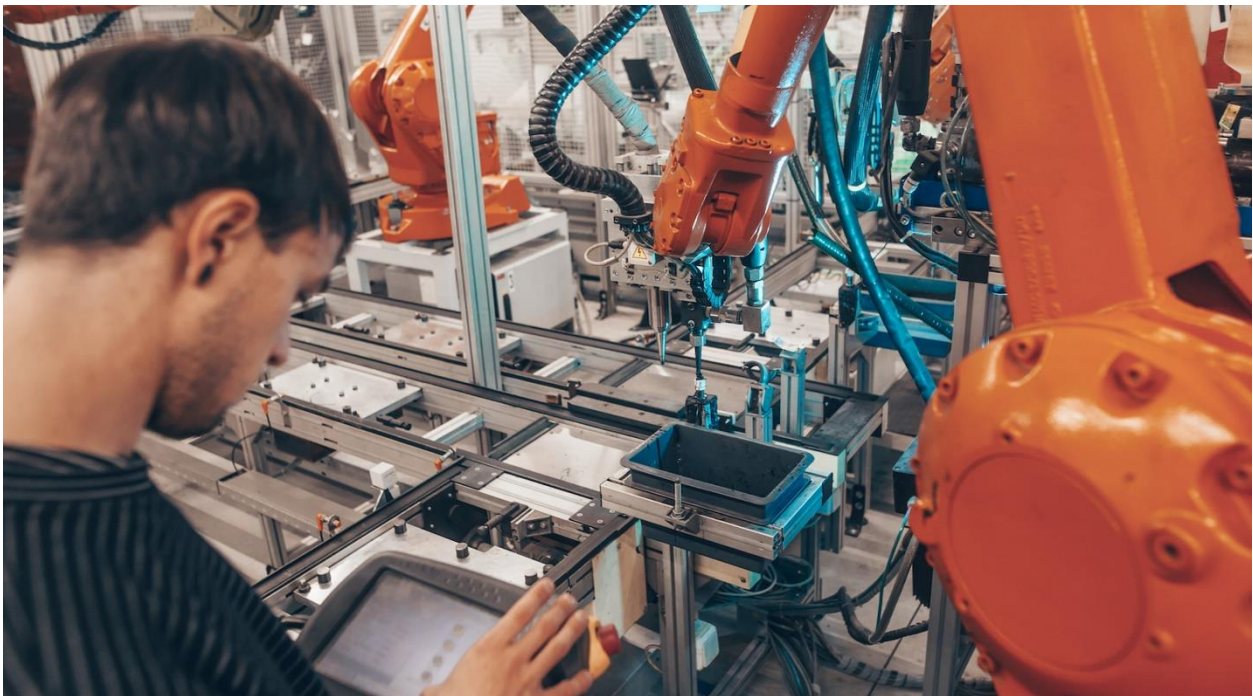


IndustryWeek®

Smart Factory Institute Aims to Usher in Industry 4.0

Roundtable discussion with stakeholders as Chattanooga area opens its Smart Factory Institute on National Manufacturing Day.



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Peter Fretty

On October 1, 2021, National Manufacturing Day, Chattanooga celebrated the opening of its first Smart Factory Institute. Peak Performance Inc. is operating the institute in collaboration with the Volkswagen Academy Chattanooga, the Deutsche Messe Technology Academy, the Tennessee Manufacturers Association and the University of Tennessee Chattanooga.

The Smart Factory Institute Chattanooga is a business-driven effort guided by the Tennessee Manufacturers Association driving innovation and technology in Tennessee and the southeastern United States. The Institute, operated by Peak Performance in collaboration and partnership with the Volkswagen Academy, is an exclusive U.S. institute providing manufacturers with connections, collaborative relationships, and

certifications for improving manufacturing processes by providing them with access to the latest technology in advanced manufacturing. While manufacturing is constantly evolving, Industry 4.0 will make marked changes on modern manufacturing and the manufacturing worker.

IndustryWeek had the opportunity to connect with many of the stakeholders to gain a little more understanding of the institute's goals.

IW: How do you anticipate this institute will benefit manufacturers? How will the different manufacturing sectors benefit from the Smart Factory Institute?

Bradley Jackson, president & CEO, Tennessee Chamber of Commerce & Industry: The Institute will enhance the manufacturing climate making Tennessee a destination of manufacturing innovation, collaboration, and providing rich learning and training opportunities. Technology and innovation are at the core of manufacturing growth and the Smart Factory Institute will contribute greatly to affording manufacturers opportunities to learn about how those can help their operations. We are excited to have it here in Tennessee which is a great location to draw in regional manufacturers. In addition, the Smart Factory Institute engages higher education institutions as well and draws from our existing assets to coordinate and ensure they are working together to enhance manufacturing.

Denise Rice, president & CEO, Peak Performance Inc.: As a former plant manager, I am keenly aware that keeping up with technology offerings is an ongoing challenge for manufacturers. The Smart Factory Institute with its global reach to technology partners will enable access and ease the transition to newer technologies. While specific manufacturing processes differ among the industry sectors, all manufacturers strive to safely deliver a high-quality product at a competitive price while providing a modern work environment and being a positive force in our communities. Manufacturers have more in common than differences and the Smart Factory Institute will allow us to share our knowledge and best practices to ensure that manufacturing in America is strong and resilient.

Mary Beth Hudson, executive director of Smart Factory Institute, Peak Performance Inc.: The Smart Factory Institute is part of the global network of Deutsche Messe Academies. We are planning joint conferences with Deutsche Messe Academy in Germany, giving manufactures the opportunity exposure to international technical partners as well experience technology at the Smart Factory Institute in Chattanooga.

Mario Duarte, director, Culture & Organizational Development, Volkswagen Group of America, Chattanooga Operations LLC: Our expectation at VW, is that the Smart Factory Institute will help bridge the gap between future technology and manufacturers. By sharing expertise and providing additional access to a variety of training, the Smart Factory can become a hub for all types of new technology. This is a way to centralize providers and create experimental or training displays for manufacturers to learn about them.

Chris Cunningham, Ph.D., UC Foundation professor of psychology, University of Tennessee at Chattanooga: Coming from the perspective of industrial and organizational psychology, the transition to new methods and models of manufacturing has been focused so far on technology and automation. Most of this development has been done without explicit consideration of how these advancements will affect the human workers and managers who are also needed to keep these organizations running. A major benefit of this institute is the effort to provide a more comprehensive understanding and approach to optimizing the connection between worker and machine, the development of “smart workers” to align with “smart machines” and “smart manufacturing technologies”. This is essential for near- and long-term workforce planning and for the ongoing management of talent within manufacturing organizations.

IW: What type of technologies will be initial focus areas?

Rice: Technologies demonstrated at the institute covers all aspects of I4.0 and are focused in 7 major categories; System Integrations, Cloud Computing, Collaborative Robotics, Additive Manufacturing, Augmented & Virtual Reality, Big Data & Analytics and Cyber Physical Systems. We will also include workshops and trainings on new working methods such as SMART TPM and Agile Working.

Hudson: We are focusing on advanced technologies that will help regional manufacturers such as advanced robotics, optical inspection, diagnostics and simulation, digitalization, deep learning, and technology supporting electronic vehicle manufacturing. The Smart Factory Institute will help regional manufacturers create and implement their Industry 4.0 roadmap through the adoption of Industry 4.0 technology.

Thomas Rilke, CEO, Deutsche Messe Technology Academy GmbH: The Deutsche Messe Technology Academy promotes knowledge transfer worldwide in the fields of automation, robotics, and Industry 4.0, thus covering almost all areas that deal with the challenges of digitization in industry. The exchange between suppliers and users of these innovative key technologies for the optimization of production processes is the core objective of the company, in which the Volkswagen Group Academy and Deutsche Messe are equally involved.

IW: Could you dive into some of the best practices the institute will offer up?

Reinhold Umminger, director global business, Deutsche Messe Technology Academy GmbH: Since its foundation in 2008, the Technology Academy has built up a comprehensive network of leading medium-sized industrial suppliers, research institutions, industrial policy initiatives and trade publishers. This network also aims at collaborative international marketing of the unique production knowledge from Germany. For example, in the past 3 years we have collaborated with the University of Hanover on a project that accompanies small and medium-sized enterprises on their way to digital production.

Hudson: We will facilitate collaboration between technical partners, and manufacturers to identify technology best suited to improve specific production processes. Manufacturers will be able to see technology solutions in operation at the Smart Factory Institute and events will provide an avenue for networking and collaboration. Our partnership with the University of Tennessee Chattanooga's Industrial-Organizational Psychology program creates the ability to incorporate workforce training best practices into the implementation of technology solutions.

Rice: Many of the events planned are specifically designed for best practice sharing among manufacturers. Already scheduled is a Symposium in October for manufacturers from all sectors to convene and share best practices, with topics that include; "Developing your Technology Roadmap", "Creative Solutions to Supply Chain Challenges" and "The Smart Worker for the Smart Factory". For 2022, we will offer a Global Robotics Congress in February and a Global Battery Innovations for Electric Vehicles conference in April. These Global conferences will span multiple time zones and countries. Additionally, we will provide a local Smart Solutions for Smart Factory Expo and a conference on The Smart Factory Workforce. There will be periodic technology training offered (both in person and virtually) for the incumbent workforce to upskill and ensure that they stay current with the new technologies.

Cunningham: The involvement of the industrial and organizational psychology graduate degree program at UTC is itself, a major best practice, as this brings expertise and knowledge regarding workforce development, recruitment, training, retention, management, etc. into the picture. The team from UTC will be able to provide guidance and expertise pertaining to the human element of institute training and development programs. We will also provide evaluation support to ensure that the work of this institute is monitored over-time. We will also be able to provide background research and ongoing data analytics support to ensure that the efforts of this institute are grounded in strong evidence and that the effects and impacts of this institute can be clearly defined and well-documented.

IW: To what extent will the institute draw from real life experiences from manufacturers like Volkswagen?

Jackson: The SFI recognizes manufacturers have needs to ensure their future growth and success. Technology and Innovation is accelerating rapidly and manufacturers have to adopt and know about Industry 4.0 and how that will impact their operations. Ultimately technology is going to be a key player in the success of manufacturers and the SFI will provide a venue for them to learn more and specific technology that will enhance their operations.

Duarte: We see this as an opportunity for industry to work together to develop skills, promote and share expert knowledge through co-creating solutions to industrial manufacturing challenges that they face in their day-to-day operations. This information could be used to identify and showcase technological advances, creating a learning spiral that could bring continuous improvements to our operations.

IW: What are the challenges in ensuring the institute is a success? What does success look like for the Smart Factory Institute in general.

Cunningham: One challenge to this institute is helping manufacturers appreciate the critical importance of developing a smart workforce to match and fit the smarter workplaces and technologies/tools that are being developed for manufacturing work. Another challenge is proving that the programming and initiatives of this institute are effective at raising awareness, educating employers, and training workers so that those participating in the institute are more ready to move forward with the human-technology augmented manufacturing reality that is upon us. At a high level, success in meeting these challenges will be observed in evidence of participation of organizations and employees, effectiveness of institute trainings/programs, and adoption of the techniques and strategies emphasized by the institute.

Hudson: Success will ultimately be defined by increasing the competitiveness of manufacturers through the adoption of smart technology operated by a highly skilled workforce. While COVID-19 creates challenges with holding large in-person conferences and workshops, our ability to offer hybrid in-person and virtual events enables us to reach a wide audience.

Rice: Success is defined by how many manufacturers (large and small) that have benefited from the Smart Factory Institute, whether it is that they found an affordable solution that solves a productivity or reliability issue, or their employees receive the micro certifications that increases their technical proficiency to be able to meet the increasing skills required for today's advanced manufacturing processes.

IW: Why have you chosen Chattanooga as a location for this Smart Factory Institute?

Rice: With manufacturing advancing rapidly in the Southeastern United States, Chattanooga is an ideal location being centrally located to 75% of the US population.

Umminger: There are different reasons why we chose the location here in Chattanooga for the first Smart Factory Institute on American ground. One is certainly Volkswagen's location here in the USA and the opportunities offered by this long-standing collaboration. And secondly, the southern states of the United States are now among the strongest production regions in the country. An ideal location, therefore, for the establishment of such an institution. The most important factor, however, is that here in Chattanooga we have a super-motivated team at our side in the person of our colleagues from Peak Performance, who will take our joint idea to the market.

IW: Any parting thoughts?

Hudson: The Smart Factory Institute's partnerships with the global Deutsche Messe network of academies and the University of Tennessee's Industrial Organizational Psychology program provides a unique opportunity for manufacturers to evaluate a

range of options and successfully implement the optimum technology solutions in their operations.

Rilke: Our many years of investment in building relationships with our partners ultimately encouraged us to establish an international network of academies. At the individual locations, the academy team helps its medium-sized network of companies from Germany to advance knowledge transfer across many areas of state-of-the-art production technologies through cooperation with partners who are strongly networked in their respective industrial regions. Our goal is to build up a network of 15-20 academies worldwide in the next 5 years, all of which are in exchange with each other via a common portal.

Cunningham: This institute is a great example of a public-private partnership involving local and international industry, private small business, higher education, and governmental entities to address a developing and increasingly critical need. The work this institute is undertaking is particularly important for the Chattanooga region, given the important role that manufacturing plays in our regional economy. The lessons learned here and the work done by this institute will also likely translate and transfer very well beyond this region.