ADI Wins Open Automation and Digital Twin Project with the Digital Manufacturing Institute

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ADI announces the win of an Open Automation (OA) and Digital Twin (DT) Testbed project that will develop an Integration Test Environment (ITE) for process manufacturing to be installed on the MxD factory floor in Chicago, IL later this year. The ITE deliverable will run ADI's ADEPT industrial computing software platform and will enable the development and test of OA and DT concepts for industry members, and provide a real-time plug-and-play computing and connectivity framework to accelerate the deployment of these high-impact smart manufacturing technologies. The adoption of OA and DT concepts in process manufacturing operations has the potential to substantially reduce waste and increase safety and reliability on a global scale.

"ADI is excited to help enable the future of smart manufacturing by working closely with MxD, our project partners and the rest of the MxD membership to accelerate the adoption of open automation and digital twin technologies for the process manufacturing industry," says Scott C. James, ADI's President and CEO, adding "Rarely do the incentives for what is good for the planet align with the corporate profit motive. The benefit to the planet, combined with the immense scale of the market, make the Open Process Automation and Digital Twin technology movements and this technology demonstrator project tremendously exciting."

Open Automation

Traditional automation technologies have been developed and controlled by a single (or small group) of companies that require their version of hardware and software to be used. While this enables those companies to control quality, it creates single-source lock-in, which limits users' options for integrating new technologies, thus reducing competition and motivation for new entrants to address cutting edge challenges. Open Automation (OA) technologies allow products from multiple vendors to interoperate as a single, cohesive system, thus enabling increased options and competition for delivering future innovation.

Digital Twin

Digital Twin (DT) technologies are one such cutting-edge technology that promises to greatly reduce waste, increase safety and reliability. A DT is a virtual representation of a physical entity (e.g. component, equipment, manufacturing line, or entire production facility) that can be monitored and compared against the real thing. A DT can be used in real time, collecting data from equipment throughout the manufacturing line, to detect anomalies and predict failures before they occur, and it can also be used at an accelerated pace (and with many copies in parallel) in a completely virtual environment. When a DT is used in a virtual environment, it enables testing "what if" scenarios much more efficiently and safely (without the risk of harm to people or damage to the facility) and can provide insight that greatly improves quality, efficiency and safety. And since a DT is virtual, it can be tuned and improved over time to provide better feedback and more effective predictions.

ADEPT Plug-and-Play Industrial Computing and Connectivity Framework

ADEPT is an industrial data and control software platform built around the concept of a time-deterministic "data framework" comprised of industrial real-time Linux servers that operate as a single, coherent distributed resource controlled and managed via intuitive, drag-and-drop desktop tools. ADEPT is used in the largest, most demanding industrial data and control applications across the global aerospace and defense industry, but also scales down to work with low-cost computing hardware and open source real-time Linux. The open architecture nature of ADEPT allows users to leverage best-in-class COTS and open-source technologies in a common, project-based environment. ADEPT dramatically reduces the cost and time to deploy and operate industrial open process automation capability, providing comprehensive out-of-the-box capability built on a trusted technology platform.

Integration Test Environment

An Integration Test Environment (ITE) is a system made up of COTS computer equipment and other equipment used to implement a plug-and-play computing and connectivity framework using the ADEPT software. The ITE packages computer equipment and connectivity, e.g. switches, cabling interfaces, in an industrial packaging that is designed to provide ease of connectivity and interface flexibility for prototyping technologies. ADEPT allows you to connect an industrial process, such as a manufacturing line, through all interfaces necessary to perform closed-loop evaluation and validation of open process automation and digital twin technologies. ADEPT enables the ITE interfaces to be simulated, emulated or connected to the real equipment. Use of an ITE can greatly speed-up development and roll-out of smart manufacturing technologies. ADEPT and the ITE system can be an invaluable development and evaluation tool that provides a non-disruptive, monitoring/only prototyping environment that enables you to test out new ideas, technologies, and equipment. A portable ITE can also be an effective way to evaluate proof-of-concept solutions onsite, connected to the real manufacturing line of other industrial processes.

Process Manufacturing

Process manufacturing accounts for a significant portion of overall manufacturing, including the following industries: food and beverages, oil and gas, pharmaceuticals, personal care and cosmetics, plastics and metals. Process manufacturing operations have many different requirements than discrete manufacturing, but one significant difference is the support for continuous processes that require very long uninterrupted runtimes, sometimes up to 10 years or more. Without the luxury of planned downtime for maintenance and improvements, process manufacturing facilities require systems and equipment that can continue to operate throughout maintenance and improvement events. Open automation and digital twin technologies have the potential to greatly improve the process manufacturing operations. But to do so, they must overcome the unique challenges that process manufacturers face.

About MxD

MxD is where innovative manufacturers go to forge their futures. In partnership with the U.S. Department of Defense, MxD equips factories with the digital tools and expertise they need to begin building every part better than the last. As a result, our approximately 300 partners increase their productivity and win more business.

ADI APPLIED DYNAMICS INTERNATIONAL

About Applied Dynamics

Applied Dynamics helps companies make better use of data and control assets through all stages of product development, verification testing, demonstration, training, and maintenance. Applied Dynamics flagship product, the ADEPT Framework, is the most advanced real-time, industrial Internet of Things (IoT) software platform available, providing an agile, open architecture, feature-rich environment for the complete product lifecycle from development through integration, verification, validation, certification, deployment and sustainment. ADEPT embraces an open architecture and allows its users to leverage best-in-class COTS components. The ADEPT user base includes 14 of the global top 35 A&D companies and extends into marine, power systems, oil & gas, and the automotive industry.

To learn more about how ADI can help your team, visit www.adi.com or send an email to adinfo@adi.com.

Disclaimers

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