Toward Zero™

**For immediate release**

# CESMII Names Toward Zero Smart Manufacturing Innovation Award Winner for Results in Connecting Legacy Machine Tools

*Toward Zero proves how manufacturers can reduce the cost and complexity of connecting manufacturing equipment to the IIoT, to enable gains in business performance, manufacturing quality, supply chain agility, and equipment reliability.*

**Pittsburgh, Pennsylvania and Centennial, Colorado**, June 8, 2022: Toward Zero, in partnership with Rensselaer Polytechnic Institute (RPI), was awarded the Smart Manufacturing Innovation Award for SM Innovation Center Growth by CESMII, the United States' national institute on smart manufacturing (SM). CESMII honored Toward Zero for its work with RPI's Smart Manufacturing Innovation Center (SMIC) to fully integrate more than 15 legacy manufacturing machines with CESMII's SM Innovation Platform (SMIP). Toward Zero performed the work under a grant from CESMII, which is supported by Manufacturing USA and the U.S. Department of Energy. Under the grant, Toward Zero developed Apogean™, a low-cost, easy-to-install Edge solution to collect machine data for smart manufacturing, and implemented the solution at RPI. The most significant achievement by Toward Zero and RPI under this grant was proving how small and mid-size manufacturing companies can use Apogean™ to quickly and affordably capture the massive amounts of data required to take advantage of smart manufacturing technologies.

Toward Zero's innovation with Apogean™ enables low-cost connectivity and the inherent ability to contextualize data coming from manufacturing equipment. Companies of all sizes have struggled to capture data from older CNC machines in their shops. However, small and medium manufacturing companies largely make up the machine tool market, and collecting machine data from older equipment has been economically impractical for them. The result is that until now, small and mid-size manufacturers have been unable to fully leverage smart manufacturing technologies like OEE systems, manufacturing execution systems (MES), energy monitoring and optimization, predictive maintenance, tool analysis, advanced planning and scheduling, quality systems, manufacturing analytics, and many others.

"CESMII has recognized Toward Zero with this award for two compelling reasons," explained John Dyck, CEO of CESMII. "First, Toward Zero has enabled low-cost connectivity, the inherent ability to contextualize data coming from machine tools which are among the most challenging and costly assets to connect, and the ability to fully leverage CESMII's smart manufacturing equipment profiles. Second, Toward Zero has eliminated the cost and effort barriers that prevent small and medium manufacturing companies from investing in digitalization. Toward Zero has given them a path to quickly and inexpensively connect their machine tools, so they can fully take advantage of the value of Industry 4.0 and drive USA competitiveness in a global market."

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According to Craig Dory, CESMII SMIC Director at Rensselaer Polytechnic Institute, “The first step in smart manufacturing is acquiring process data, with the context necessary to make that information self-explanatory, both from a user perspective as well as a software (application) perspective, which is very difficult. The ultimate goal is to use that data to analyze and optimize manufacturing processes to make the enterprise more efficient and competitive. That is the value of smart manufacturing. Apogean™ by Toward Zero makes it possible to solve the machine connectivity problem once, with unparalleled context, and repeat it across many assets in our facilities.”

Aaron Muhl, President, and Founder of Toward Zero, accepted the award on behalf of the entire Toward Zero team during CESMII's Smart Manufacturing Experience event in Pittsburgh, PA. During his acceptance speech, he recognized the Rensselaer professors, researchers, and graduate students that collaborated with Toward Zero to refine, improve, and implement Apogean™ at RPI. “Craig Dory, Sam Chiappone, Larry Oligny, and many RPI grad students at RPI helped us implement and refine our innovative Edge solution across many types of machine tools, brands, controllers, and connection styles. Their domain expertise, industry insights, and deeply engaged collaboration allowed our machine connectivity engineers to validate Apogean across countless real-world situations and environments. As a CESMII Smart Manufacturing Innovation Center (SMIC), RPI is a highly visible and credible industry force with particular expertise in machine tool operation and management. Craig’s, Sam’s, and Larry's involvement helped us build an even better product and, more importantly, prove how small and medium manufacturers can collect machine data quickly and inexpensively.”

For almost a decade, Toward Zero worked with manufacturers of all sizes to achieve the promise of smart manufacturing. Part of the struggle for those companies has been a simple, cost-effective way to solve the machine connectivity problem – access to contextualized manufacturing process data. Large manufacturers hired Toward Zero to send machine connectivity engineers because getting the data out of machine tools is time-consuming and requires highly specialized knowledge. Aerospace, defense, and automotive companies with deep pockets could afford engagements like that. That kind of investment was out of reach for small and medium manufacturers, which drove Toward Zero to invent Apogean™, a low-cost, low complexity smart manufacturing edge solution to collect machine and process data.

**ABOUT TOWARD ZERO**

We're experts at deploying and integrating smart manufacturing systems and supply chain solutions – on time and within budget. Our #1 concern is making sure they work the way they're supposed to so your company gets the ROI you expect. Our global team of supply chain experts, smart manufacturing engineers, data and applications architects, and manufacturing business consultants consistently apply our proven implementation and integration methodologies and disciplined project management practices, helping you manage change in the plant and throughout the entire business. Every one of our team members is a deep domain expert in their chosen field, and we apply our understanding of your industry, so projects take off on the first try and keep getting results. Our clients consistently achieve technology investment ROI and, as a result, dramatically improve operational performance and profitability. For more information, visit Toward Zero or connect with us.

**ABOUT RENSSELAER POLYTECHNIC INSTITUTE (RPI) AND THE CESMII SMIC LOCATED AT RPI**

This SMIC, located at Rensselaer Polytechnic Institute, is a highly visible, credible, high value, regional extension of CESMII. The SMIC is an independent organization with strong industry engagement and core competencies related to advanced manufacturing, composites and modeling, high speed

computing and scientific computation, and computational innovations. The SMIC provides CESMII with a national reach across these competencies.

Located in Rensselaer Polytechnic Institute's George M. Low Center for Industrial Innovation the Manufacturing Innovation and Learning Lab (MILL) is a School of Engineering forward-looking manufacturing learning environment for undergraduate and graduate education. Leveraging the instructor expertise, industrial partnerships, and industry-grade equipment students can bridge engineering theory to application and master manufacturing processes and systems. In the MILL, students undergo the same design, process engineering, technical documentation, and systems deployment methods used by industrial research and industry engineering and manufacturing development teams.

Founded in 1824, Rensselaer Polytechnic Institute is America's first technological research university. RPI encompasses five schools, 32 research centers, more than 145 academic programs, and a dynamic community made up of more than 7,600 students and more than 100,000 living alumni. RPI faculty and alumni include more than 145 National Academy members, six members of the National Inventors Hall of Fame, six National Medal of Technology winners, five National Medal of Science winners, and a Nobel Prize winner in Physics. With nearly 200 years of experience advancing scientific and technological knowledge, RPI remains focused on addressing global challenges with a spirit of ingenuity and collaboration.

**ABOUT CESMII**

CESMII is the United States' national institute on Smart Manufacturing, driving cultural and technological transformation and secure industrial technologies as national imperatives. By enabling frictionless movement of information – raw and contextualized data – between real-time Operations and the people and systems that create value in and across Manufacturing organizations, CESMII is ensuring the power of information and innovation is at the fingertips of everyone who touches manufacturing.

Founded in 2016, in partnership with Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE), CESMII is the third institute funded by EERE's Advanced Manufacturing Office. The Institute is accelerating Smart Manufacturing (SM) adoption through the integration of advanced sensors, data (ingestion – contextualization – modeling – analytics), platforms and controls to radically impact manufacturing performance, through measurable improvements in areas such as: quality, throughput, costs/profitability, safety, asset reliability and energy productivity. CESMII's program and administrative home is with the University of California Los Angeles (UCLA).
www.CESMII.org

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