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New COTS Fail-Safe System Designed to be Certified to SIL4 for Train Control and Rail Signaling

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Innovative ControlSafe™ Platform enables rail application developers to accelerate time-to-market by removing potential high costs and risks of SIL4 system development and certification

Berlin, Germany. [23 September, 2014] —At the Innotrans exhibition today, Artesyn Embedded Technologies announced the ControlSafe™ Platform, one of the first embedded computing systems to use commercial-off-the-shelf (COTS) components to create a fail-safe computing platform designed to be SIL4 certified for a wide range of train control and rail signaling applications. The ControlSafe Platform enables rail application developers and system integrators to substantially accelerate time-to-market without being deterred by the potentially high costs and risks associated with the stringent SIL4 system development and certification process. Designed to deliver best-in-class system availability as high as six nines (99.9999%)1, Artesyn's ControlSafe Platform is designed to meet all the functional safety, reliability and availability requirements mandated by rail standards and specifications. Reliability, availability, maintainability and safety (RAMS) processes are designed to be certified to EN50126, all safety-related software to EN50128, and hardware to EN50129. This makes Artesyn's ControlSafe Platform ideal for deployment in safety application environments to protect investment in rail infrastructure. It uses a data lock-step architecture that supports high performance modern processors, and is modular, scalable and designed to seamlessly accommodate additional I/O interfaces as well as upgraded processors that will be required throughout the product life cycle. Shlomo Pri-Tal, vice president ControlSafe Platforms, Artesyn Embedded Technologies, said: "Artesyn's new ControlSafe Platform leverages 30 years of expertise in developing highly reliable and available embedded computer systems based on open standards. With this new launch, we are providing rail industry customers with an unmatched, highly reliable platform with 15 years of planned product life and 25 years of extended support and service. ControlSafe will help to improve our customers' competitiveness by allowing them to focus their development efforts on differentiating end applications." The ControlSafe Platform consists of two redundant ControlSafe Computers (CSCs), each of which delivers fail-safe operation. They are linked by a Safety Relay Box (SRB) that monitors the health of the two CSCs, designates one as active and the other as standby, and

controls fail-over operation between the two CSCs to deliver a fail-safe fault tolerant computer system. At the core of each CSC are two identical CPU boards that run in data lock-step mode and implement a two-out-of-two (2oo2) voting mechanism. Proprietary extensions to Wind River's VxWorks 653 operating system assure loose synchronization of the two CPUs. The Artesyn ControlSafe Platform includes I/O modules that provide interface to a range of communication protocols such as CAN, Ethernet, Ethernet Ring, and UART, with additional communication interfaces planned for future releases. All I/O modules have a common architecture based on the same Freescale CPU core and the same Wind River VxWorks 653 operating system, simplifying the software development environment, delivering high performance, energy-efficient processing, and supporting the extended life required by rail equipment. All I/O modules are accessed over Ethernet allowing a seamless distributed architecture where additional expansion can be contained in a remote chassis. All modules support remote on-line software and fi-rmware upgrade without risk of rendering a system inoperable. 1 For Artesyn provided hardware and software and assuming 4 hours mean-time-to-repair (MTTR) About Artesyn Embedded Technologies Artesyn Embedded Technologies, formerly Emerson Network Power's Embedded Computing & Power business, is a global leader in the design and manufacture of highly reliable power conversion and embedded computing solutions for a wide range of industries including communications, computing, medical, military, aerospace and industrial. For more than 40 years, customers have trusted Artesyn to help them accelerate time-to-market and reduce risk with cost-effective advanced network computing and power conversion solutions. Artesyn has over 20,000 employees worldwide across nine engineering centers of excellence, four world-class manufacturing facilities, and global sales and support offices.