Case Study: Artesyn's collaboration with China Railway Signal & Communication Corporation Limited

Interlocking, Tram Point Controller and Automatic Train Protection Applications all built on SIL4 COTS ControlSafe Platform

China Railway Signal & Communication Corporation Limited (CRSC Wanquan), a leading rail integrator, has collaborated with Artesyn Embedded Technologies for the development of rail signaling solutions based on Artesyn's ControlSafe™ Platform. CRSC Wanquan has developed applications for computer-based interlocking (CBI), tram point control and automatic train protection (ATP) using the ControlSafe™ Carborne Platform. All three CRSC Wanquan applications have obtained SIL4 certification and at least two are in deployment.

ARTESYN™
EMBEDDED TECHNOLOGIES

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CBI for Pakistan Power Station

The first application is a CBI train signal control system for the private sidings of the Sahiwal coal power project in Pakistan. This large energy project, which will fill up to 25% of the country's energy gap, was completed in just 22 months. The private sidings will guarantee the efficient transportation and operational safety of large-volume and multi-batch cargo in this large-scale power plant. The signaling system was deployed ahead of schedule under the strict deadline of the owner, which won praise and recognition for China's key energy projects in Pakistan.

Network Diagram of Pakistan Railway Interconnection Project

Hainan Tram Point Controller

Artesyn's ControlSafe Platform was chosen as the core safety platform for a tram point controller (TPC) application after review and comparison in order to meet the urgent project delivery cycle requirements and the efficient use of project investment for the Hainan Sanya Rail Transit Project.

The application required a custom I/O board to interface with the host system. Thanks to Artesyn's ControlSafe security architecture documentation, CRSC Wanquan was able to complete the development of this custom I/O board in just three months. CRSC Wanquan was further able to secure SIL4 safety certification of the application system based on the ControlSafe platform just a few months later. This SIL4 approval can take many years and cost millions in engineering time, but Artesyn's SIL4 certification of the ControlSafe Platform meant that CRSC Wanquan was able to significantly speed its own certification process.

The adoption of the ControlSafe platform has helped the owners to significantly shorten the product development and project deployment cycle, greatly improve the operational efficiency of the project capital, and make efforts to improve the efficiency of the city's operation and management.

Field Installation, Sanya City, China

About the Artesyn ControlSafe™ Platform

Artesyn's ControlSafe Platform is designed to meet rail functional safety, reliability and availability requirements, which makes it ideal for deployment in safety application environments to protect investment in rail infrastructure.

The first three platforms in the family, ControlSafe Platform, ControlSafe™ Expansion Box Platform and ControlSafe™ Carborne Platform, have been certified to SIL4 by TÜV SÜD, one of the most trusted certification bodies worldwide. The latest platform in the family, Artesyn's ControlSafe™ Compact Carborne Platform, is pending SIL4 certification. A shared safety architecture makes it easy to transfer applications between them and deploy as a common platform. An innovative data lock-step architecture and hardware-based voting mechanism supports high performance modern processors, and is modular, scalable and designed to seamlessly accommodate additional I/O interfaces as well as new processor architectures that will be required throughout the product life cycle.

About China Railway Signal & Communication Corporation Limited

China Railway Signal & Communication Corporation Limited (CRSC) is the provider of railway signal and communication technology, products and services, the precursor and leader in the China rail transit control industry, one of the biggest rail transit system solution provider. In 2013, CRSC invested and increased capital into Zhejiang Wanquan, the CRSC Wanquan is now the secondary enterprise of CRSC.

CRSC Wanquan is qualified national high-tech enterprise with a provincial high-tech R&D center and tram signal R&D institution in Hangzhou. CRSC Wanquan products cover applications for urban public transportation, railway traffic and industry depots. Most of the key products have patents and have been inspected and tested by authorized departments to insure the products' advantage and reliability. CRSC Wanquan is one of the industry leaders in tram signal systems, having started R&D in tram signal equipment and systems from the year 2000, CRSC Wanquan is the only company who has the reference of exiting project with a localization rate of 95%. CRSC Wanquan tram signal systems have been used in Daliang, Tianjin Binghai and Shanghai Zhangjiang. In May 2012, Wanquan won the Shenyang Hunnan tram projects with 4 tram lines. All of the projects were completed in August 2013.

http://www.crsc.cn

About Artesyn Embedded Technologies

Artesyn Embedded Technologies is a global leader in the design and manufacture of power conversion and embedded computing solutions for a range of industries including communications, computing, consumer electronics, medical, military, aerospace and industrial.

Leveraging over 30 years of expertise in developing highly reliable and available embedded computer systems, Artesyn is a premier supplier of commercial off-the-shelf (COTS) fault-tolerant computer systems to rail system integrators and rail application providers.

With that long experience comes a deep understanding of our customers' requirements for on-time, consistent and high quality product coupled with excellent customer support. We deliver on all counts from our own world-class factory and seasoned support experts.

Artesyn strives to speed our customers' time to revenue and make your development process as easy as possible. Products features are supported globally with local system architects and FAEs to keep you on schedule.

We're very flexible and agile. We recognize that you may need your system to have your own unique branding. No problem. We're used to that. We have services that allow you to define the look and feel that's consistent with your company's branding and aesthetic standards.

Our flexibility isn't just limited to look and feel. Integration services, unique support requirements, longevity of supply, drop shipments and many more services are designed to make it easy to do business with us and quick for you to get to market and deploy smoothly.

For more than 40 years, customers have trusted Artesyn to help them accelerate time-to-market and shift development efforts to the deployment of new, value-add features and services.

Headquartered in Tempe, Arizona, Artesyn has over 15,000 employees worldwide across multiple engineering centers of excellence, wholly-owned world-class manufacturing facilities, and global sales and support offices.

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