SOLUTION BRIEF

How the ControlSafe™ Platform is Being Deployed in China

Solution Highlights

- Major Chinese rail provider seeks to deploy SIL4 on a budget and with a tight timeframe
- Implementation of Artesyn SIL4 TÜV SÜD CBI platform saves 2 years development time
- Flexible safety critical architecture scales and accommodates custom I/O

One of the largest train control and rail signaling integrators worldwide has significantly shortened its development cycle and gained a competitive advantage by adopting the Artesyn ControlSafe™ Platform as the core safety processing engine for its next generation computer based interlocking (CBI) solutions.

As the Chinese government strives to increase economic growth and sustain the rapidly increasing urbanization of its population, it must also reduce greenhouse gas emissions and the dependence on automobiles and fossil fuels. The country's ambitious goal to build the world largest modern rail transportation network is an integral part of this vision.

According to the 13th Five Year Plan starting from 2016 and as a testament to this commitment, China plans to invest more than $100B annually in its rail infrastructure through the year 2020.

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The Problem

In the context of the current market conditions, Artesyn's customer has been facing a few challenges when it addresses business growth opportunities:

- SIL4 capability to protect passengers and freight requires significant development cost and time
- Budget constraints and downward price pressure from competition demand cost-effective solution
- Fast-growing market drives schedule challenge
- Scalability challenges arising from the traditional closed architecture

SIL4 capability to protect passengers and freight requires significant development cost and time

Along with other governments, China embraces and mandates the highest rail industry safety standard for safer railroad operation – SIL4 (Safety Integrity Level 4). SIL4 capable systems can effectively protect passengers and freight by preventing train accidents to a great extent. However, designing and producing a SIL4 certified safety system represents a formidable technical challenge and requires a stringent process that would cost rail integrators multiple years and millions of dollars to accomplish. To be certified, extensive documented evidence that comes from all phases of the lifecycle must be produced and reviewed, and a significant amount of statistical analysis must be performed to assure systems will comply with the required SIL level.

Budget constraints and downward price pressure from competition demand a cost-effective solution

The Chinese government emphasizes maximizing its investments through the highest quality and the lowest price which imposes budget constraints on new projects. In addition, the ever increasing competition in the China market also contributes to a downward price trend, and it is estimated that the overall awarded bids could be lower by 30% compared with the projects at a similar scope three years ago in China.

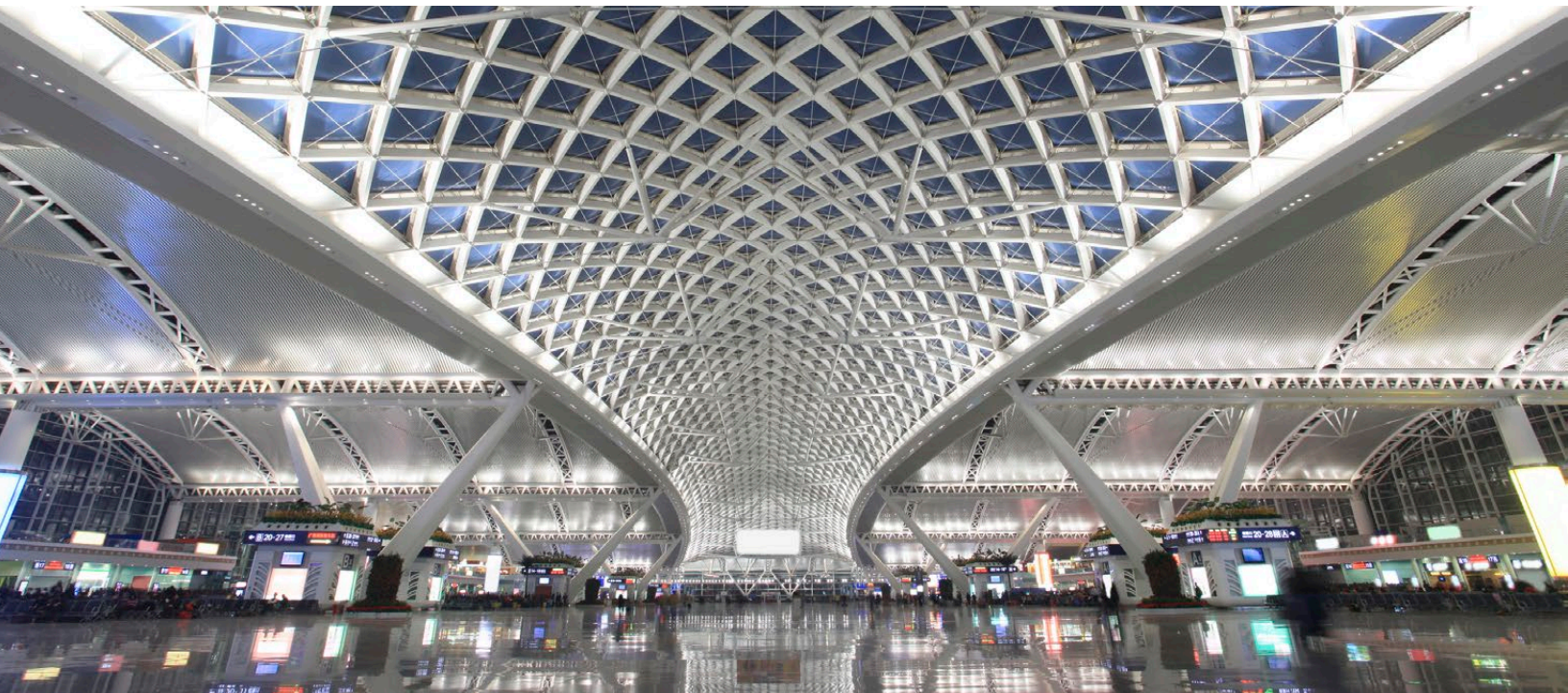
Fast-growing market drives schedule challenge

Although significant investment is being pumped into rail infrastructure and driving fast industry growth, solutions require long system lifecycles and have low refresh rates. Therefore, having next generation systems ready for technology insertion points when they happen means the fastest time-to-market is critical for Artesyn's customer to win business earlier as well as secure long-term growth. Especially in the fragmented and competitive urban rail sector, a quick response to the requirements from end customers can enable this company to amplify the first-mover advantage and augment its influence in that segment.

Scalability challenges arising from the traditional closed architecture

As opposed to open standards-based common safety platforms, traditional closed and proprietary systems have an intrinsic disadvantage that is hard to overcome as they are costly to upgrade when required to meet new requirements on higher processing capability and I/O capacity. For that reason, open common platforms are gaining popularity as they enable integrators to maximize the return on investment by increasing the transparency and scalability of applications. Artesyn is working closely with its customer to spearhead the implementation of a "common platform" product strategy to handle various applications easily.

Guangzhou Train Station — one of the biggest stations in China



Artesyn ControlSafe Platform

The Solution

In order to cope with these challenges, a leading rail integrator chose to collaborate with Artesyn to develop its next generation CBI solutions. Building its applications based on Artesyn's ControlSafe Platform that has been certified by TÜV SÜD, arguably the most trusted certification bodies worldwide, this customer has gained a great competitive advantage by leveraging Artesyn's over 30 years of expertise in developing highly reliable and available embedded computer systems.

Meeting the highest industry safety standards

Fully certified to EN 50126 for reliability, availability, maintainability and safety (RAMS) processes; EN 50128 for safety-related software; and EN50129 for safety-related electronic systems, Artesyn's ControlSafe Platform provides an application-ready safety platform including all necessary supporting evidence. This significantly simplifies the certification of customers' end products for the implementation in a SIL4 application environment.

Cost-effective, low risk solution to accelerate time-to-market

As opposed to designing and building one from scratch, adopting the ControlSafe Platform as the core safety processing engine enables customers to effectively reduce cost and risk by leveraging a SIL4 COTS platform and substantially accelerate time-to-market by focusing on its value-added offering and final certification for its end solutions.

Future-proof safety architecture with scalability

Adhering to Artesyn's future-proof development philosophy, the ControlSafe Platform is modular, scalable and designed to seamlessly accommodate additional I/O interfaces. Thanks to its innovative data lockstep safety architecture, the ControlSafe Platform can be implemented using modern high-performance processors which are not viable options for the systems built on hard lockstep. In addition, the ControlSafe Platform implements 2oo2 voting facilities in hardware to allow this customer to migrate its existing application software with minimal modifications.

Flexible I/O development strategy to accommodate specific business needs

The ControlSafe Platform is designed as a common base platform to enable various applications, through the continuous addition of Artesyn I/O modules. In addition, Artesyn offers customers the flexibility to develop I/O modules to meet its specific needs by providing all necessary technical specifications, product support and service.

Meeting the industry requirement on long lifecycle

Artesyn is committed to building long-term partnerships with customers, based on proven and reliable systems with consistent performance. The ControlSafe Platform further strengthens this commitment by providing an unmatched, highly reliable platform with 15 years of planned product life and 25 years of extended support and service available.

Growing portfolio positioned to support future business

Artesyn is focused on continued development to build a comprehensive product line to enable rail solution providers to seamlessly integrate the ControlSafe products in a variety of rail signaling applications. Artesyn's ultimate goal is to enhance its customers' competitive positions by allowing it to focus its development efforts on differentiating end applications.

Along with strong global engineering support from Artesyn, the ControlSafe Platform helped this customer to shorten its CBI solution development cycle from a typical 3-5 years to 1.5 years. Ahead of its competitors, the company has delivered an advanced next generation CBI system to its end customers for field deployment test and is well positioned to grow its business for many years to come.

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