



Case Study -

Siemens Karlsruhe selects Altium Designer

Summary

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“Altium Designer is a fully-featured, cost-effective solution that has allowed us to take control of our board development needs. Capabilities such as advanced pin swapping backed up by excellent customer support have allowed us to improve our productivity while reducing costs.”

Hans-Jürgen Strohbach
I&S IT, Siemens Karlsruhe AG

The need

Industrial automation specialist Siemens Karlsruhe Automation and Drives (A&D) develops complete systems for advanced control of factory operations and processes. Based in Karlsruhe, Germany Siemens Karlsruhe A&D has risen to prominence in the global industrial control market by offering innovative automation solutions that encompass the entire production chain from incoming materials through to manufactured goods.

Key to this success is the information technology expertise delivered by the Industrial IT division of Siemens Karlsruhe automation, which develops advanced software and hardware systems that harness the latest IT techniques within the industrial automation domain.

The challenge

The extremely complex and highly-networked automation systems used in today's large industrial environments has introduced the need for the specialized network gateway and system simulation units created by Siemens Karlsruhe Simulation & Testing (S&T) division. Typically a year in development and based on Xilinx FPGAs with embedded PowerPC processors, the network gateway and simulation projects offer a high level of on-board intelligence, embedded Linux OS and interfaces to advanced industrial ethernet (field bus) systems such as Profinet.

By electing to move the major electronic design tasks in-house, the challenge for Siemens Karlsruhe S&T was to find a design system that would provide the latest technology and design techniques -- such as efficient FPGA pin optimization -- while offering low TCO and high productivity.

The solution

In preference to competing systems already in use within the Siemens Karlsruhe group, Altium Designer was the division's design solution of choice. Altium Designer was selected for its in-house design and board layout capabilities. Compared to competing solutions, Altium Designer offered a high ROI through its competitive pricing and comprehensive feature set, while the advanced FPGA capabilities and unified design flow provided the design efficiencies required to meet tight development schedules.

Along with advanced IO management and design synchronization, Altium Designer's unified design environment provides a natively efficient system for pin swapping with FPGA devices. This is of particular advantage with designs utilizing large-scale FPGAs -- such as those typically developed by Siemens Karlsruhe S&T -- where pin-position optimization can deliver substantial reductions in board real estate and number of layers. With Altium Designer, board-level pin swapping data is efficiently passed to the FPGA place and route process leading to better design within shorter timeframes.

The result

Since introducing Altium Designer for their in-house electronic design and board layout, Siemens Karlsruhe S&T has successfully completed advanced designs for network gateway devices, automation emulation boards and simulation units.

Although extremely complex, the Siemens Karlsruhe SIMBA PNIO simulation unit was the first project developed with Altium Designer – it was fully developed and manufactured within deadline and to budget. It now forms a key component in Siemens Karlsruhe complete industrial automation simulation process for operator training, system commissioning and preliminary factory acceptance tests.

Along with Altium Designer's advanced board-level capabilities featuring native data connectivity with FPGA-based designs, Siemens Karlsruhe S&T engineers have also benefited from the system's intuitive user interface, productive unified design flow and Altium's customer support services, described by staff as "excellent". Ultimately, Siemens Karlsruhe S&T division's evaluation and subsequent choice of Altium Designer as its preferred design system has delivered the company productivity and technology gains that exceed the initial requirement of reducing project development costs.

The project

Siemens Karlsruhe concept of Totally Integrated Automation – based on its SIMATIC range of PLC platforms and supporting technology – is designed to solve process and manufacturing automation tasks for the entire production line through advanced open-platform hardware and software systems. To facilitate operator training, testing and factory acceptance tests, Siemens Karlsruhe offers network-based process simulators such as the SIMBA PNIO. Behaving as a 'factory in a box' the SIMBA simulator appears as distributed process IO on the network, or in practical terms up to 256 programmable actuators, switches and sensors.

The FPGA-based design connects to a range of data systems including the Profinet field bus, offers four independent network channels and typically features integrated PowerPCs, Linux OS, 2GB of RAM and fast, real-time simulation capability.

About Siemens Karlsruhe

The Siemens Karlsruhe Automation and Drives group supplies complete automation, drive, circuit and installation engineering solutions to the manufacturing and process industries. Along with a wide range of technical services, the Simulation and Testing (S&T) division of Siemens Karlsruhe Industrial IT supplies advanced systems for factory process simulation, commissioning and testing.

For more information visit: <http://www.siemens.com>