Acsia

Technology that drives Tomorrow

AUTOSAR Stack Integration in Powertrain for a Global OEM's Autonomous Driving Project In 2023, a leading Tier-I supplier was assigned the responsibility of integrating an AUTOSAR stack to an autonomous driving project for one of their OEM partners. They partnered with Acsia to manage the configuration, integration, and testing. This case study details how Acsia's solutions led to meeting production deadlines, achieving compliance standards, and enhancing customer satisfaction.

Technology & Business Landscape

In 2023, several key trends significantly impacted the automotive industry, particularly in the realms of Battery Management Systems (BMS), AUTOSAR standards, and DC-DC converters.

Battery Management System (BMS)

The BMS market saw notable advancements, especially with the rise of electric vehicles (EVs) and hybrid electric vehicles (HEVs). One of the most significant trends was the development and adoption of wireless BMS. This innovation reduces the need for extensive wiring, simplifying installation, cutting costs, and minimizing the risk of wiring errors.

AUTOSAR (Automotive Open System Architecture)

AUTOSAR continued to dominate as the primary software architecture standard in the automotive sector. In March 2023, there was a heightened focus on AUTOSAR Adaptive, which caters to the development needs of autonomous and connected vehicles. This version supports the complex requirements of modern vehicle software systems, enhancing flexibility and scalability.

DC-DC Converters

DC-DC converters in the automotive industry experienced significant improvements with the integration of silicon carbide (SiC) technology. This advancement offers higher efficiency and reliability. Key developments included integration with high-voltage systems and enhanced fast-switching capabilities, leading to better power conversion efficiency in EVs. There was also a strong emphasis on sustainability, with the development of converters that have a low environmental impact and advanced digital features for improved monitoring and control. Increased demand from emerging markets, particularly in the Asia-Pacific region, further spurred innovation and market growth.

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Customer Problem Statement

The customer, a Tier-I supplier collaborating with the leading OEM, needed to integrate the AUTOSAR stack in a power train domain for a BMS program for a highly autonomous driving project. They required a partner with expertise in AUTOSAR for the development and maintenance of the product.

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Acsia Solution

Acsia was chosen due to its deep expertise in AUTOSAR configuration, integration, testing, and validation, as well as Functional Safety (FuSa) responsibilities, handling ASPICE V model requirements. Our responsibilities included:

- Derivation of System and SW requirements for Tier-I product.
- Integration of Vector Boot Loader with Tier-I algorithm.
- Integration of OEM specific application SW components with Tier-I stack.
- Development and integration of diagnostic services as per UDS ISO 14229.
- Development and integration of OBD services according to OBD on UDS protocol involved in the system and software test life cycle, including the development and validation of test cases according to ASPICE standards.
- Software test automation and execution on HIL environment



Business Outcome & Impact

Met Production Deadlines

By successfully integrating the DC-DC module with the AUTOSAR stack, Acsia ensured that the customer met their production deadlines. This timely delivery was critical for the OEM's production schedule, leading to enhanced customer satisfaction and trust.

Improved Customer Satisfaction

The project's success in meeting deadlines, achieving compliance standards, and providing a robust solution significantly improved the Tier-I supplier's satisfaction. This positive outcome fostered a stronger relationship between Acsia and the customer, paving the way for potential future collaborations.

Key Learning

Extensive Knowledge of Vector Tools

Through this project, Acsia's team gained a comprehensive understanding of Vector tools, such as VTestStudio, DaVinci configurator and developer which are crucial for configuring and testing AUTOSAR-compliant systems. This knowledge is instrumental for future projects that require precise and efficient software and hardware integration.

V Model Expertise

The project solidified Acsia's ability to handle stages SYS2 to SYS5 and SWE1 to SWE6 of the V Model. This includes system engineering, software engineering, and ensuring all components

meet the necessary quality and safety standards. This expertise is vital for managing complex automotive projects that involve multiple stages of development and rigorous testing protocols.

Proficiency in BMS Architecture

Acsia demonstrated its capability to manage balancer module projects within the BMS architecture. This involves the intricate task of balancing cell voltage within a battery pack, ensuring optimal performance and longevity of the battery. This skill is particularly relevant as the automotive industry continues to innovate and develop more advanced and efficient battery systems for electric vehicles.

Expert Speak



Gururaj Gopal Kulkarni Delivery Leader

"Our partnership with the Tier-I supplier was a testament to Acsia's ability to deliver complex projects on time and to the highest standards. The successful integration and testing of the Tier-I module with the AUTOSAR stack was a critical milestone, demonstrating our commitment to excellence and customer satisfaction. This project not only showcased our technical prowess but also reinforced our role as a trusted partner in the automotive industry."



Vignesh Anantha Rao SME

"Integrating the part of the BMS module with the AUTOSAR stack for this project required meticulous attention to detail and advanced technical expertise. Our team excelled in configuring AUTOSAR BSW modules with OEM stack, which was crucial for the safety and reliability of the autonomous driving system. This project highlighted our ability to handle complex functional safety analyses and deliver robust, high-quality solutions that meet stringent automotive standards."

About Acsia Technologies

Acsia is a global leader in automotive software powering Digital Cockpits & Displays, e-Mobility, and Telematics. We use our expertise to develop solutions that simplify complex problems and create safer, sustainable, and more compelling driver and passenger experiences. With a presence across the United States, Germany, Sweden, Japan, and India, we collaborate with top carmakers and Tier-I suppliers.



