



CASE STUDY /

Ansys + Subaru

Automotive leader automates 95% of development processes to achieve unrivaled accuracy, speed and cost savings of ECU for complex hybrid/electric control management.

"While SCADE solutions save valuable time, they also support Subaru's long-standing commitment to delivering high levels of product quality and passenger safety."

Yuji Kawakami
Senior Engineer / Subaru

In the race to launch new hybrid and electric vehicle models, Ansys SCADE has emerged as a valuable strategic tool for Subaru over the past decade, supporting the automaker's commitment to uncompromising safety and quality. The time saved during the end-to-end development of the electronic control unit (ECU) managing the hybrid/electric engine control — without sacrificing the accuracy of its control software — has been crucial to Subaru's ability to introduce innovative, new technologies.

/ CHALLENGES

The ECU that lies at the heart of every hybrid and electric vehicle ensures all of the car's electronics are integrated safely and securely. ECUs are supported by millions of lines of underlying embedded software code and subject to strict regulatory oversight.

For the Forester e-BOXER, which features an innovative, horizontally opposed engine, the ECU delivers added intelligence that balances optimal driving conditions with high fuel efficiency. This adds new complexity to the control logic and places additional demands on Subaru's engineers to ensure the ECU's accuracy and tight control.

/ TECHNOLOGY USED

- Ansys SCADE

/ ENGINEERING SOLUTION

Subaru has relied on Ansys SCADE solutions to develop the software code that underlies the electronic control units (ECUs) for its electric car program.

SCADE is a specialized tool for developing embedded software code. Its model-based environment and its ISO 26262 ASIL-D certified code generator eliminate the potential for human error as it translates the control logic for the ECU.

By leveraging SCADE, Subaru engineers can quickly and accurately generate the mission-critical code that keeps electric vehicles running safely and smoothly, no matter how complex their technology architecture.

/ BENEFITS

- The amount of automation increased to 95% for the code. This significantly improved productivity and reduced costs for the Subaru development team.
- Highly reliable, automatically generated code dramatically accelerated the time, effort and documentation required for final code verification.
- The code automatically meets automotive industry standards, such as ISO 26262 at the highest levels of safety (up to ASIL D).
- A closed-loop software engineering process enables Subaru's developers to modify the ECU's logic and architecture much more frequently and easily as they explore continuing design innovations.

/ COMPANY DESCRIPTION

Subaru Corporation has a longstanding commitment to delivering high levels of product quality and passenger safety. Subaru has been at the forefront of hybrid and electric vehicle design, beginning with its hybrid engine design for the Subaru XV in 2013 and continuing with its fifth-generation Forester SUV introduced in 2018, supported by a second-generation hybrid engine called the e-BOXER.



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