



AgustaWestland Uses Wind River VxWorks 653 Platform to Deliver Futuristic Aircraft in Record Time

Aerospace and Defense Company Designs, Develops, Builds, and Tests an Innovative-Configuration, All-Electric Rotorcraft in Six Months

AgustaWestland

Industry

Aerospace and defense, unmanned vehicles

Solutions

- Wind River VxWorks 653 Platform
- Wind River Professional Services

Benefits

- Designed, developed, built, and successfully tested an innovative-configuration, all-electric rotorcraft in six months
- Reduced program risks and improved engineering productivity by using proven Wind River technology

AgustaWestland, a helicopter company owned by the Italian company Finmeccanica, is a leading supplier of military and commercial operators around the world. The company offers the widest range of advanced rotorcraft for both military and commercial applications.

AgustaWestland collaborates with major European and American helicopter companies and leading aerospace and defense companies to constantly deliver stronger products and increase global reach.

The Challenge

Project Zero is an unmanned, all-electric tiltrotor aircraft designed by Agusta Westland that hovers like a helicopter and converts to a fixed-wing aircraft in forward flight. The project offers a look into the future of advanced rotorcraft and is the result of close design and manufacturing collaborations with other Finmeccanica companies, including Selex ES, a Wind River® customer.

The AgustaWestland design team faced several challenges when embarking on this project. First, they were designing and building a large all-electric vertical-lift aircraft in a size and creative configuration that had never been attempted before. Second, they set a challenging target to start testing Project Zero aircraft six months after the project began. Third, they needed to carefully manage development costs and deliverables.

“Working with Wind River enabled us to develop “Project Zero” in record time with a revolutionary approach by leveraging market-leading technology.”

—Dr. James Wang, Vice President of Research and Technology, AgustaWestland

The Approach

AgustaWestland selected Wind River VxWorks® 653 Platform for its high performance and reliability, as well as to minimize program risks and ensure successful program completion.

“Our colleagues from the avionics department recommended Wind River for our project, because they were really satisfied by the technology and the level of support and competence provided during past projects,” says Dr. James Wang, vice president of research and technology at AgustaWestland. “Wind River offered proven solutions for avionics, combined with professional services expertise.”

The industry-leading VxWorks 653 Platform delivers the stringent integrated modular avionics (IMA) foundation aerospace and defense companies need to address the safety and security requirements of mission-critical applications, as well as the portability and reusability requirements of noncritical applications.

VxWorks 653 Platform is part of the Wind River portfolio of trusted systems and is compliant with ARINC 653. Using an open standards-based approach and with the help of the Wind River Professional Services team, AgustaWestland was able to design, develop, build, and test its avantgarde rotorcraft in six months.

The project team used the High-Integrity Flight Control Computer (Hi-FCC) platform developed by Selex ES, based on a Freescale Power Architecture® processor and VxWorks 653 Platform. This allowed the design team to use a mature, efficient platform combined with a high-quality software stack, with great support from both companies. It also helped reduce the overall development and deployment time.

“We reduced our development time by applying our model-based control algorithms to a VxWorks 653 application partition,” Wang explains. “This enabled us to isolate our main control functions from the rest of the control system, making debugging easier and allowing a faster integration in the main flight control system. This reduced our risk, eliminated our learning curve for integration and development, increased our productivity, and gave us more time to test and debug the solution.”

Future Plans

Project Zero is a fast-paced technology incubator program.

“Working with Wind River enabled us to develop Project Zero in record time with a revolutionary approach by leveraging market leading technology,” Wang concludes. “We saved a tremendous amount of time during the development process by using Wind River technology because it offered hard real-time, portability, reusability, and robustness characteristics, as well as a strong ecosystem. The Wind River team is also very professional and pleasant.”

AgustaWestland plans to use Wind River technologies and services in future projects.

