

8 Reasons to Use a Pre-Certified Safety RTOS

As the demand for robust and compliant embedded systems grows, considering functional safety from the start of your project is crucial for ensuring compliance and reliability. The following 8 benefits of using a pre-certified safety RTOS are based on SAFERTOS®, an IEC 61508 SIL 3 RTOS used in embedded systems.

1. Ease of Product Certification

The process of certifying SAFERTOS® in a product is simple and straightforward. All that is required is to follow the clear, concise instructions found within the safety manual on how to install, integrate and use SAFERTOS® within an application, and submit the resulting evidence to your auditors. Additionally, with our Design Assurance Pack (DAP), no re-testing on your target hardware is required, reducing your workload.

2. Lowers Risk

In many safety critical applications, the RTOS is the most critical component. The RTOS not only schedules the functionality of the software, it also schedules the operation of Safety Monitors and Safety Functions. Using a trusted component at the heart of your design shortens development schedules and de-risks the product certification process.

3. Isolation and Separation of Tasks

SAFERTOS® supports the isolation and separation of individual tasks using the processor's memory protection features. Reduce development and production costs in your designs by enabling safety-critical code to coexist with commercial-grade code in the same code space, while maintaining physical isolation.

4. Determinism

SAFERTOS® is designed to deliver extremely high levels of determinism. Features frequently found in commercial grade RTOS's that affect deterministic behaviour have been removed, such as dynamic memory allocation.

5. Compiler and Processor Combination

SAFERTOS® is delivered bespoke to your specific compiler and processor combination; this ensures no re-testing is required, and your path to certifying an application built on SAFERTOS® is as smooth as possible.

6. Robustness

SAFERTOS® uses a robust implementation, designed to comply with the most rigorous international design standards. A deterministic design, self-verification features, parameter validation and stack checking routines all contribute to ensure SAFERTOS® performs as expected.

7. Quality Assurance

WHIS is ISO 9001 certified, with SAFERTOS® being pre certified to ISO 26262 & IEC 61508, while also complying to IEC 62304, DO 178C. SAFERTOS® is delivered with full source code and a Design Assurance Pack (DAP). The DAP contains every Design and Verification artefact created for your specific SAFERTOS® port, and provides complete transparency over the full Design Life Cycle.

8. Proven in Use

SAFERTOS® has a 100% certification rate in applications to date. It has been independently certified many times on numerous platforms to IEC 61508-3 SIL 3, the highest possible SIL level for a software only component and ISO 26262 ASIL D.

8 Reasons to Use an RTOS From WITTENSTEIN

WITTENSTEIN high integrity systems (WHIS) are experts in embedded RTOS and Middleware technology with a specialization in safety certified software. Supplying advanced RTOS and Middleware components across a broad range of market sectors and applications, from basic embedded designs, up to complex safety systems demanding the highest levels of certification.

1. A Global Safety Company

WHIS is first and foremost a safety systems company with a history in aerospace. Our expertise is exemplified by SAFERTOS®, which is globally trusted and proven across a wide range of critical applications, from Safety Islands, Autonomous Systems and Battery Management Systems, in industries such as automotive, industrial, medical and aerospace.

2. Comprehensive Product Range

The WHIS RTOS ecosystem consists of:

- OPENRTOS®: A commercial license for FreeRTOS.
- SAFERTOS®: A safety critical RTOS pre-certified to ISO 26262 and IEC 61508. Compliant to IEC 62304 and DO 178C.

3. Partner Ecosystem

With FreeRTOS and SAFERTOS® sharing the same functional model, upgrading is seamless and reduces training costs for teams already using FreeRTOS. FreeRTOS, downloaded every 170 seconds in 2024, powers a massive global user base. SAFERTOS®, backed by strategic partnerships with silicon vendors and a range of supported platforms, offers unparalleled support for your next project.

4. Tool Support

SAFERTOS® is supported by a wide range of industry tool suppliers, including PLS Universal Debug Engine, Lauterbach TRACE32®, VectorCAST, Stateviewer, and Tracealyzer, ensuring efficient debugging, testing, and system optimization.

5. Quality

Built on robust quality systems and rigorously tested across diverse sectors, SAFERTOS® is a proven and exceptionally resilient solution for safety-critical applications. Supported by our Design Assurance Pack (DAP), SAFERTOS® delivers unmatched reliability and performance, ensuring it meets the highest standards in safety-critical environments.

6. Training, Consultancy and Support

Our additional services are crafted to support our customers by leveraging our expertise to enhance your final design, streamline your design processes, and facilitate a smoother path to certification. Additionally, WHIS can provide bespoke, in-depth training courses. For example, assisting with OS porting to your hardware (DCR) and providing continuous support throughout your project, including IDE updates.

7. Flexible Licensing

We aim to provide customers with the license model that best suits their needs, supported by a transparent pricing policy. Our standard licensing model uses a royalty free, perpetual license.

8. Part of an International Corporation

WITTENSTEIN high integrity systems is part of the WITTENSTEIN group, a global technology company established in 1949. With a presence in over 45 countries and a workforce exceeding 2,800 employees, WITTENSTEIN achieved a turnover of over 500 million USD in the 2022/23 fiscal year.

WITTENSTEIN high integrity systems

Worldwide Sales and Support
Americas: +1 408 625 4712
ROTW: +44 1275 395 600
Email: sales@highintegritysystems.com
Web: www.highintegritysystems.com



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