Preventing Costly Downtime in Advanced Manufacturing Machinery with Field-Proven COTS Modules

CURTISS-WRIGHT

DEFENSE SOLUTIONS

Challenge

- Semiconductor inspection system running 24/7 needs highest reliability and performance

- Need for high-caliber replacement for end-of-life solution

- Major repercussions stemming from production downtime in the event of a technology malfunction

Solution

- High-performance, field-proven COTS boards to power production-critical machinery

- Latest technology for increased performance

- Lifecycle management services for added longevity

Results

- Highly productive system to maintain competitive edge

- Reliable hardware protects against expensive downtime

- Lowered risk of obsolescence and DMS challenges

Challenge

For firms in the most demanding areas of electronics manufacturing, such as semiconductor production and advanced packaging, technology plays a critical role in operations. For example, the semiconductor manufacturing process involves swift, repetitive and careful procedures performed on delicate materials. A single semiconductor wafer contains hundreds to many thousands of individual IC chips, and automated inspection equipment is used to examine and analyze these wafers for visible defects.

Companies that develop equipment for semiconductor manufacturers to use in their production lines, therefore, face challenging objectives. Machinery used in semiconductor manufacturing must enable rapid and reliable manufacturing, and provide 24/7 availability to handle grueling production

schedules. Any downtime can have major product delivery and financial repercussions, meaning any technological component powering a piece of machinery has the potential to cause major disruption and must be carefully selected.

A firm that manufactures machinery for semiconductor production turned to Curtiss-Wright after a VME computing module powering equipment in its product line abruptly went obsolete, looking for a new solution that could not only replace the old, but also provide upgraded functionality, such as enhanced vision processing and improved throughput. Three key pieces of criteria were quickly identified: the solution needed to deliver higher levels of performance, the highest levels of reliability and a low-risk product lifecycle.
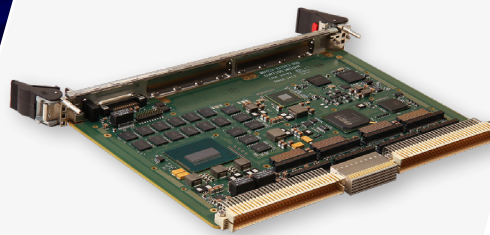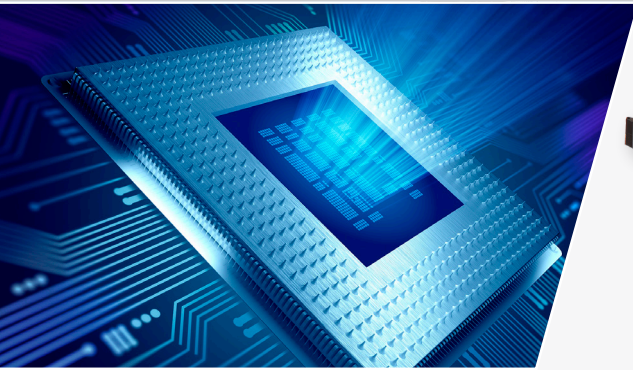
VME-1909
6U VME 5th Gen Intel Core i7 SBC

Solution

To meet these criteria, the customer chose Curtiss-Wright's VME-1909, a single board computer (SBC) built to the same VME form factor as its existing solution but with powerful, modern enhancements. Delivering high performance at a low cost, the VME-1909 is designed to bring increased processing power and longevity to embedded systems, making it a perfect replacement for older SBCs.

With a high-speed, dual-channel DDR3 memory supporting up to 32 GB SDRAM, the VME-1909 is able to maximize the performance of its quad-core Intel® Core™ i7's multiple processing cores and AVX2 floating-point processing units used to accelerate math intensive workloads. And, its large amount of on-board SATA SSD storage enables the VME-1909 to handle applications with demanding storage, data logging and sensor processing requirements.

The VME-1909 incorporates Curtis-Wright's Helix VME Interface, an FPGA-based technology that offers full VME bus access and functionality while eliminating future VME bus component obsolescence. Combined with Curtiss-Wright's lifecycle management services, the VME-1909 offers a low-risk solution to organizations with product longevity concerns.

Results

With the VME-1909 replacing its now obsolete computing solution, Curtiss-Wright's equipment manufacturer customer can continue delivering its highly reliable production equipment without any sacrifice in performance. In fact, the machine's increase in processing speed has resulted in a significant improvement in overall throughput – a definite benefit for its end customers. The VME-1909's reputation as a trusted, reliable solution – even in demanding military and aerospace environments – proved true, holding up to the rigorous demands of a 24-hour production cycle and delivering peace of mind that operations will continue soundly.

And, with Curtiss-Wright's Total LifeCycle Management™ the continued supply, support and longevity of its chosen solution for years to come. The TLCM program is designed to mitigate any challenges associated with leveraging COTS technology for systems requiring a long lifespan. With direct access to a dedicated team of Lifecycle Specialists, real-time health analysis reports and a variety of product longevity solutions, TLCM helps Curtiss-Wright customers proactively manage obsolescence challenges and mitigate financial risk.