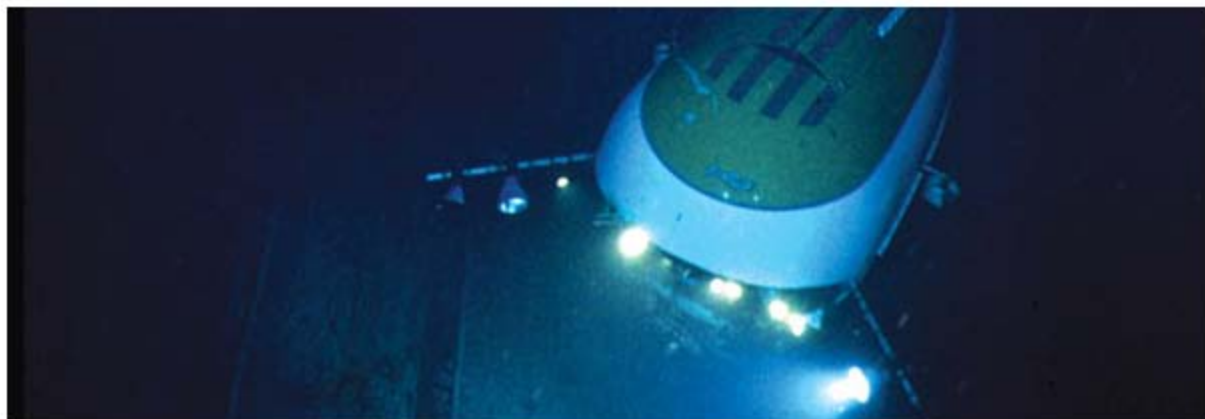


Creating sophisticated deep water electronics



The deep-water ocean floor is a hostile place

Super cold, dark and under tons of sea water, it's far from the ideal environment for complex lighting and power systems.

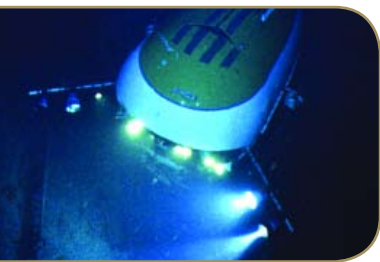
This is the domain of DeepSea Power & Light, who develop advanced exploration and cinematography projects for deep-diving submersibles. For DeepSea, keeping up with technology is a priority.

And that meant introducing FPGAs into the electronics design flow and PCB design environment – but without taking a backward step in productivity.

[Read the story >](#)

DeepSea Power & Light

Specialized oceanographic equipment manufacturer DeepSea Power & Light has undergone a valuable sea-change by migrating from P-CAD to Altium Designer.



“I am very happy with the change, and as I am getting used to the system I like it more and more. The tech support has been exceptional and has been one of the highlights – it makes the whole transition much better. I am happy with the switch and I would recommend other people going the Altium Designer way.”

Jeff Robinson

Principal Technical Officer
BAE Systems Australia

The need

Underwater power specialists DeepSea Power & Light has designed and manufactured high-quality oceanographic products for over twenty years. During that time the company has created innovative power and lighting equipment for a broad range of deep-water applications, including support systems for exploration and cinematography projects involving deep diving submersibles and iconic ocean wrecks such as the Titanic and Bismarck.

The company has always recognized the need to maintain innovation by harnessing the latest in electronics design technology and techniques, and has successfully used Altium's P-CAD board-level design suite over many years. Recently, DeepSea Power & Light began investigating affordable, large-scale FPGAs with regard to the devices' potential to accelerate the design process and provide them with greater design flexibility.

While P-CAD offered the company all it needed in terms of board-level design, its engineers realized that moving forward they would increasingly need to integrate programmable devices into their design flows. Without dedicated FPGA design expertise at their disposal, the company decided to look at what tools were available to help them. In a nutshell, the company required a highly-capable, comprehensive electronic product development system to take them into the future and allow them to maintain innovation at the board level while fully harnessing the potential offered by high-capacity programmable devices.

The challenge

While there are many FPGA design solutions on the market, most focus purely on the design of the FPGA without regard to the board-level integration issues. Likewise, most PCB solutions are blind to the programmable nature of FPGAs. DeepSea's challenge was to find a system that could allow them to take advantage of the potential of FPGA technology at both the programmable and board level without requiring them to adopt new and foreign design flows and spend time integrating disparate toolsets for each part of the design process.

The solution

After evaluating several alternative design systems, DeepSea Power & Light selected Altium Designer to replace its existing P-CAD board design solution and to provide the company with a platform to service its current and future programmable design needs. Altium Designer was the most cost-effective solution that offered the required capabilities, and indeed the only single solution to cover both the PCB and programmable design needs of the company.

Altium Designer's unique, unified environment allows the company to take a design from concept through to completion within a single application, while offering a cohesive platform for unified hardware, programmable hardware and software and development. Altium Designer's hierarchical design capabilities and advanced library management features allows the company to create a more effective design flow for their expanding team, while the system's unified programmable device and embedded software support provides DeepSea Power & Light with the capabilities to meet both its current and future demands.

Importantly, along with incorporating the required features, Altium Designer also provides the company with a comprehensive set of P-CAD migration features to help ease the transition. While moving from one design environment to another is always disruptive, Altium has focused substantial development efforts on creating systems to help ease that process, with features ranging from intelligent design and library translation wizards to P-CAD hotkey duplication.

Also, moving to Altium Designer from P-CAD allows DeepSea Power & Light to maintain its successful relationship with Altium, and seamlessly continue the maintenance investment with Altium Designer that it has made over the years with P-CAD.

The results

DeepSea Power & Light reports that the transition from P-CAD to Altium Designer has been relatively smooth and productive, with board-level designs being successfully completed in the new system within the first couple of months of introduction. The company's

Altium enabling next-generation electronics design



engineers – including experienced P-CAD designers – noted that while both systems are from Altium, they are very different design systems. That said though, they also estimate that they reached a comparable level of productivity in Altium Designer within around five weeks. Once they became comfortable with Altium Designer's board layout capabilities, many of the design staff recognized that its board-level features gave enhanced functionality over those offered by P-CAD.

For DeepSea Power & Light, the migration from P-CAD to Altium Designer has ultimately proved to be a most productive decision. The company believes that it is now in a much better position to move into the future and tackle the design challenges ahead.

Altium's support processes and transition tools, such as intelligent design import, have proved critical to DeepSea Power & Light's changeover to Altium Designer. Altium's Global Customer Care team and support services have eased the transition while minimizing disruption to the company's design productivity.

Changing major design platforms is never easy, but Altium's highly-capable staff are there, as they have been with DeepSea Power & Light, to ease the path toward the future of electronic product development with Altium Designer.

Product information

Equipment manufactured by DeepSea Power & Light has been used in the Imax film *Titanica*, the theatrical release of *Titanic*, and *Ghosts of the Abyss*, also by the *Titanic Expedition*, *Bismark Expedition*, National Geographic Society, Woods Hole Oceanographic Institution, Lockheed, Oceaneering, Scripps Institution of Oceanography, and on the deep diving submersibles *Alvin*, *Sea Cliff*, *Jason*, *Turtle*, *Nautille*, *Mirs I & II*, *Kaiko*, and the *Shinkai 6500*.

Customer information

DeepSea Power & Light was founded in 1983 with the goal of providing high quality, innovative products to the oceanographic community. Initially manufacturing deep water power systems, the company's expertise and product line has grown to include underwater video and lighting systems.

DeepSea Power & Light is headquartered in 65,000 square feet of high tech manufacturing space. Included in the plant are environmental and pressure testing facilities, complete machine shop, Computer Aided Drafting stations, electronics lab, cable shop, and production facilities.

For more information, visit www.deepsea.com

Altium's solutions implemented in the oceanographic equipment manufacturing industry

About Altium

Altium Limited (ASX:ALU) provides world-leading unified design solutions that break down the barriers to innovation, and help organisations easily harness the latest devices and technologies, to create their next generation of electronic products.

Altium's solutions are unique because they unify the separate processes of electronics design, all within a single electronics design environment, working off a single data model, which links all the aspects of electronics product design into one process.

Founded in 1985, Altium has headquarters in Sydney, Australia, sales offices in the United States, Europe, Japan, China, and resellers in all other major markets. For more information, please visit www.altium.com