

Powering ahead on new defence programmes

Based in Ashford, Kent, XCEL Power Systems has been providing high reliability power conversion equipment for the UK defence market for over 20 years. In the air, XCEL products are in service on the RAF's Hawk, Jaguar, Tornado, Nimrod and Eurofighter Typhoon.

On the ground, our power supplies are found in armoured vehicles, including the UK Main Battle Tank, and in both fixed and mobile command posts; while at sea, we support the Astute Submarine programme, the new Type 45 Destroyer, and a number of other currently operational naval radar and communications systems.

Applications vary tremendously, from airborne radar and imaging equipment, to pilot displays, high definition cameras, data communications and encryption equipment, missile systems, defensive aids and decoy systems.

Recent development contracts have been awarded to XCEL to provide power supplies for the next generation of defence equipment. Among these were two contracts for vital aspects of the UK MOD's Watchkeeper Unmanned Aerial Vehicle (UAV) programme, which will provide the UK Armed Forces with an essential Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) capability.

Our design philosophy

While it is true that standard 'off-the-shelf' products are used much more widely in today's defence industry, it is sometimes impossible to find exactly what the application demands. As a result of this, there continues to be a demand for semi-custom or full custom designs. XCEL is able to offer customers a tailored solution, using an extensive library of proven existing design topologies, either as a full custom design, or in conjunction with readily available DC-DC converter bricks.

Customers regularly challenge us with the most demanding performance and environmental requirements. Our engineering team works very hard to optimise the need for high performance with manageable heat dissipation, and a low noise characteristic, in many cases with limited space available. The team carries out all aspects of the development, from conceptual design, through PCB layout and thermal management, to the validation testing and proving of prototype models. We work closely with our customers' system engineers to ensure the final product meets specification and performs as expected 'in-system'. We continuously review the design for manufacturability to keep production costs to a minimum.

We validate our designs using our extensive in-house environmental testing facilities, for operational temperature range, simulated altitude and mechanical stress. Aside from all of the environmental stresses, clearly the products must not interfere in any way with the operation of any other equipment in the vicinity. This requires the design to be effectively shielded to reduce electro-magnetic interference (EMI) emissions to a minimum. Again, in-house facilities are on hand, allowing us to highlight and eradicate any noise issues.

Our manufacturing commitment

Our manufacturing facility is flexible enough to be able to produce anything from a one-off up to 10,000 sub-assemblies per annum. We have in-house facilities for surface mount and through hole PCB population, for building coils and transformers (which are critical components in any custom power supply design), for machining of metal parts, and for conformal coating and encapsulation. This enables us to offer a fast turnaround for prototyping, without relying upon external resources,

A strong pedigree...



and is economical for small to medium batch quantities.

In addition to our own designs, we offer this manufacturing facility as a turnkey subcontract solution to customers requiring a high level of reliability in the assembly of their products. This is not restricted just to the defence business, but to many transport, oil and gas and industrial applications.

In order to keep our manufacturing costs competitive, we operate a policy of continuous improvement, using skills adopted from our lean manufacturing programmes to increase the effectiveness of our processes and reduce both costs and cycle times.

In short, XCEL provides the complete solution, from design, through validation, qualification, manufacturing, and long-term product support – partners in power for the UK defence industry.



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