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Pascall carries out design, development and manufacturing operations at its facility on the Isle of Wight in the UK.

Power to the people

Pascall supplies the cutting-edge power solutions that make the provision of many IFEC and other cabin systems possible, as Piers Townley discovers.

With media file servers, wireless access points, seatback IFE systems, satellite communication terminals and cellular phone comms all clamouring for power on board an aircraft, Pascall Electronics has carved out a world-class reputation for delivering highly reliable and robust inflight power solutions.

With a custom-built 35,000 sq ft plant on the idyllic Isle of Wight, the UK-based company has responded to the convergence of satellite communications, connectivity and PED power into the IFE sphere. It is seeing a tremendous rise in interest in its cutting-edge power delivery products, with a growing focus on providing bespoke solutions, designed to meet

specific customer requirements, for the modern aircraft cabin.

Pascall airborne power solutions are broadly categorised as line-replaceable units (LRUs) or embedded power supplies, which are typically integrated by customers into their own equipment. Both the LRU and the embedded types are subject to industry-specific performance and qualification requirements. When supporting line-fit applications by the major airframers, additional qualification criteria normally apply. Pascall also supports customers specialising in the retrofit sector.

The secret to Pascall's success in the industry is its impressive heritage, and the company's

excellent reputation for reliability and customer service built over many years, explains Phil Brace, manager of IFEC and airborne power solutions. Founded back in 1977, Pascall has expanded significantly over the past 38 years. Company growth in IFE applications took off in the early 1990s with the development of relationships with GEC Marconi and Boeing for the design and manufacture of power supplies for IFE systems on the first 777s to enter service. Pascall powered the cabin file servers and in-seat video displays with its first power solutions specifically developed to meet the demanding regulatory requirements for airborne systems.

TARGET MARKET

From that point on, IFE became a major area of focus for Pascall. "With the capability and experience that we developed with those first IFE designs, we moved heavily into power for in-cabin systems, promoting our capabilities to the industry leaders of the time. It's when the market really opened up," says Brace.

Contract wins followed in support of next-generation IFE systems from some of the companies at the forefront of the industry during that period. "Hughes-Avicom, Sony Transcom, Airshow, Formation and Electromagnetic Sciences were all customers that Pascall developed tailored power solutions for," notes Brace. "We're very proud of the products and support we provided to those companies and their staff, many of whom



Pascall employs the latest computer-aided design and simulation tools.

we continue to work with to this day in their new ventures.”

Pascall carries out design, development and manufacturing operations in-house at its Ryde facility. From computer-aided design and simulation in the design and drawing offices to on-site manufacturing, testing, qualification and distribution, Pascall is ideally placed to maintain complete control over its products.

“There’s very little that we have to subcontract out,” says Brace. “We use local test houses for some of our certification processes, but most of what we need we have right here under one roof.” Pascall maintains an on-site vibration cell, thermal chambers and an extensive testing lab with electrically shielded rooms for certain EMI characterisations.

BUILDING BLOCKS

It’s the heritage aspect of the business that Brace refers to when discussing the way that Pascall’s airborne business has developed and how the company has built an industry awareness of its capabilities. “Everything that we have developed and manufactured can be linked to support which we provided on prior programmes,” explains Brace. “Our abilities to support complex embedded power supplies for satcom terminals, direct broadcast satellite TV and GSM telephony LRUs were built one step at a time.” It’s what has given Pascall the edge in its chosen markets and as a partner to the industry leaders in IFEC today.

Brace also cites Pascall’s response to changing customer demands, and how the company has evolved to offer both standardised and bespoke power solutions. “Cost is always an element, but there’s always a balance in supplier capability, experience, flexibility and costs, including the long-term costs of ownership, which are not always properly considered,” he explains.

“Also, and very importantly, innovation and time to market – customers want to see that you

not only have the best solution, but you’ve also got the best intellectual property behind the solution. When developing partnerships, they want to see beyond your ability to develop this particular equipment, they want a road map for the future and how your capabilities will add value to their products. That comes with experience.” It’s this experience that seems to set Pascall apart and helps to explain why business is booming. The company has a strong order book and expansion planning is ongoing.

The biggest recent change to the industry in relation to power, according to Brace, is the surge of passengers wanting to connect with their personal electronic devices (PEDs), something airlines and the industry as a whole are having to react to very quickly.

“We’ve seen the actual output power requirement on a typical seat box power supply go up from about 60 W to about 80 W due to the demand for charging PEDs,” he says. “What you are seeing now is that IFE system power requirements at the seat are not changing for what they *are*, rather for what they’ve added for customer convenience. At the server end, the requirements of those systems have also increased, but the balance here is that developments in processing capability have offset a proportional increase in power needed.”

It’s the expectations of the airline passenger that drive the requirements of the customer and thus end up influencing the specification supported by Pascall. Like the rest of the industry, the company is having to bear in mind that passengers increasingly expect the same level of connectivity and, of course, power to their devices as they have at home – “to be able to connect as if we’re sitting in our own lounge”, Brace acknowledges. “Whilst some aspects of that may seem unrealistic, it’s not unreasonable for a customer to want that.

“We are very impressed with the increases in passenger bandwidth being developed and introduced, and we are very pleased to be a part of this evolution, in providing power for the high-speed terminal equipment,” he says.

High-power USB is a key growth area for Pascall. The company is currently shipping record levels of power solutions for this

specific charging purpose and has seen this as the perfect way to break into the area of PED power.

“USB power is another specific market segment. If you cannot support high-power USB from the IFE system, you can provide it externally,” Brace notes. Pascall has developed an optimised LRU for this purpose, with USB sockets and integration services provided by well-known industry partners.

MULTIPURPOSE SOLUTION

Another application for seat power is seat actuation, typically found in first- and business-class seats. These usually have about six or so actuators that configure a seat for passenger comfort. “If you’ve already got a power supply in the seat to drive the actuators, then you have opportunities for USB charging or even IFE power through that seat power supply,” Brace explains.

The fact that the actuators only need power when a passenger configures the seat makes these seat power solutions a very dynamic, efficient and interesting product, according to Brace.

This particular type of unit throws up challenges to the company to marry up duty cycle considerations, quiescent efficiency and basic economics. “We can propose to a customer that there is an opportunity to combine the actuation and other in-seat power needs if that would be beneficial to them,” he says. “There is a certain amount of redundancy when you have multiple units. It’s about understanding who supplies what to whom, weighing up the overall efficiencies, regulatory aspects, and working collaboratively in an industry partnership.”

Brace points to some of the latest integrated seating innovations on show at the recent Aircraft Interiors Expo in Hamburg, and notes that when it comes to power, Pascall’s solutions continue to evolve to enable a holistic approach combining all the IFEC, PED and actuation requirements into the seat design.

He concludes, “Completely integrated seats need a complete solution for supplying power to those seats. System-level solutions are the way things are developing.” ■