

Passenger use of PEDs in flight is certain to expand further as more airlines roll out connectivity and wireless IFE services. The result will be greater demand for charging facilities.

The increasing popularity of personal electronic devices on board can produce its own stresses, as the life fades from them en route. But help is at hand in the form of in-seat power, as Emma Kelly reports.



More power to your elbow

The in-seat power supply market used to be very much a two-horse race, with the horse in front, Astronics, being a fair way ahead of second-placed KID-Systeme in terms of market share.

But a number of new entrants are appearing in the market, keen to capitalise on the inflight bring-your-own-device (BYOD)/connectivity evolution. Rather than taking on Astronics and KID in the 110 V/60 Hz power system sector, some of the newcomers are focusing their activities solely on USB power, which is growing in popularity with both airlines and their passengers, while others are offering 110 V/60 Hz as well, but doing it slightly differently to the market incumbents.

A number of manufacturers have added a power option to their wider inflight entertainment and connectivity offerings. BAE Systems, for example, has a 110 V and USB power solution as part of its IntelliCabin product.

The company says its in-seat power solution is smaller, simpler and more efficient than other systems that can provide power to all seats. It costs 20% less than traditional offerings, BAE says, overcomes the starvation issues experienced with current systems and has a smaller in-seat installation footprint, because it doesn't rely on bulky hardware. It ensures that "all passengers who want power get power".

FRESH START

The system comprises a power control panel, variable frequency converter, smart junction boxes, 110 VAC and USB power outlets, and IFE power supply.

Tim Wells, IntelliCabin in-seat power system programme manager, explains, "We have benefited quite a lot from being able to start our product design with a clean sheet of paper and relying on BAE Systems' two decades of experience in power products for aircraft, locomotives and heavy vehicles."

He continues, "Our patented architecture is based around centralised power conversion, which provides cost and weight advantages over the distributed approach of power conversion at the seat – thus far, the only option the market has been offered to date. Then, of course, we blanket the power conversion architecture with control logic that provides optimal power usage and assurance that each passenger gets the power they need – not just what is left over after the first passenger plugs in."

In terms of securing sales of its in-seat power system, Wells says BAE is "actively engaged" with numerous airlines globally, although he declines to name names. "Market interest has been very strong. BAE Systems' heritage of designing and developing power conversion products to supplement our long-standing position of supplying flight-critical systems to the commercial aircraft industry makes us an attractive choice for many airlines," he adds.



A growing number of airlines are following the lead of carriers like Emirates and providing economy-class passengers with access to in-seat power.

Inflight Canada's 2.1 amp USB power solution came about precisely for that reason – airlines switching to Wi-Fi-only-based IFEC. President George Smallhorn says, "With the proliferation of the use of wireless IFE, which typically implies the removal of in-seat IFE systems, many airlines have found themselves in a position where their passengers no longer have control of reading/call lights/chimes [PSS] because everything in the seats has been removed."

GOOD RECEPTION

Inflight Canada's solution arose when a Boeing 767 operator came to it having exhausted other solutions, adds Smallhorn. "At that point, we embarked on a programme to create a brand-new PSS, but we decided to take it a bit further and, using today's technology, expanded it to also include a passenger entertainment system (PES) for the distribution of 32 channels of stereo and a +P system so that each passenger has access to USB power at 2.1 amps," he explains. The market reacted favourably to the product, and Inflight Canada now has 95-plus aircraft either flying with it, currently being fitted with it or on the order book.

"We were then contacted by a large airline which operates only narrowbody aircraft, thus having no need for the PSS feature, and asked to provide a technical/commercial proposal for the +P feature of 2.1 amps only," says Smallhorn. "This request prompted a reversal of our direction from adding features to now looking at reducing the features of the original PES/PSS+P system," he adds.

Smallhorn notes that its +P does not provide the 110 V/60 Hz power that Astronics

Meanwhile, digEcor has added 110 V/USB in-seat power to its modular seat-back Glide IFEC system, as well as offering a cost-effective USB standalone product, with its first installation imminent. "Passengers have access to both 5 V/10 W USB charging and 110 V for charging consumer electronic devices when integrated with our Glide IFE solution," it says. "Our standalone USB solution provides 5 V/10 W – 2 amp – at every seat, using existing seat audio provisions to avoid seat recertification costs. With around 80% of passengers bringing smartphones on board, they increasingly want the capability to recharge their devices during the flight. This requirement is intensified where Wi-Fi delivery of content to passengers' own devices is offered," digEcor adds.

FAVOURER FEATURE

The company found in its 2014 passenger survey that an in-seat power outlet to power personal devices was the second most desired feature in an IFE system, which led to it developing USB and 110 V options. Its USB solution fits each seat with an illuminated USB outlet. Each seat group has a low-profile USB power distribution unit, and each seat column a power supply unit, which is typically mounted behind the rear seat row. Each power supply can feed up to 120 USB outlets, and each outlet can be turned on and off by cabin crew, creating an ancillary revenue opportunity for low-cost carriers.

In digEcor's 110 V solution, a single power unit can support up to four 110 V outlets, with

the unit mounted on the seat leg, sidewall or under the seat pan.

The company acknowledges it is entering a market dominated by Astronics. "Astronics has some valuable patents in this area that they protect vigorously. We have a different architecture, which leads to simpler and more cost-effective solutions," digEcor says.

The manufacturer says there are several points of difference between its in-seat power products and others on the market. For example, its USB power option converts the power to a lower voltage and distributes that to each seat. "This leads to a lower overall system weight and a much lower seat box weight. This makes the system more power efficient and reduces or eliminates seat recertification costs," digEcor explains. At 0.4 kg (0.8 lb) per typical seat, it is also one of the lightest, as well as best-priced systems on the market, the company adds. The same seat box can also provide all passenger services system (PSS) functions – call bell and reading light control – for widebody aircraft transitioning to Wi-Fi-only IFE.

“

With around 80% of passengers bringing smartphones on board, they increasingly want the capability to recharge.

”



BAE Systems has added in-seat power to its IntelliCabin product range.



The ability to plug in their laptops in flight is something that premium-class passengers have long taken for granted.

or KID-Systeme does, but for an airline looking for a solution to their PSS problem, the +P is “simply a tag-along at a very minor incremental cost, because all of the infrastructure for the PSS is sufficient for USB power as well”.

He continues, “We are finding that with the proliferation of personal electronic devices (PEDs) that no longer require 110 V/60 Hz, the far less costly solution of USB power is now becoming far more popular.

“Another interesting trend we have noticed is that more and more airlines have asked for AVOD/in-seat power systems upfront in the premium class and overhead video/PES/PSS+P in economy class, with wireless IFE/connectivity throughout. Working with other OEMs, Inflight Canada’s PES/PSS+P system fits right in with their requests.”

An airline can select any one or combination of these features depending on what it wants to offer passengers and on the type of aircraft being equipped.

SIMPLE SOLUTIONS

Britain’s Inflight Peripherals (IFPL) plans to launch its new USB Power and Data Jack at this year’s Aircraft Interiors Expo in Hamburg, Germany, in April. IFPL is the longest established audio jack supplier in the industry (since 1996), supplying to both IFE manufacturers and direct to airlines. Since 2013, it has been involved in the in-seat power sector, firstly with its Remote Power Outlet, which offers a simple solution for powering

devices like smartphones and tablets and is compatible with most countries’ plugs.

Last year, the company launched a 2 amp USB Power Jack. “Every day, passengers are carrying more and more personal devices onto aircraft, which increases the need for airlines to provide power facilities at the seat,” notes the company. “IFPL’s Power Jack offers a simple retrofit for airlines to address this need for smartphone and tablet devices, as it will accept between 12 and 42 V DC from the aircraft. The jack outputs 5 V DC power via a standard USB connector, allowing passengers to use their standard charging lead,” it explains.

The new USB Power and Data Jack “not only charges USB devices and allows fast data transfer, it also has a reversible USB port,” says marketing executive Jason Davies. “Therefore, no matter which way round the passenger inserts their plug, it will work. In addition, both USB jacks have the option of having a light guide,” he adds. Further developments are in progress, he says, declining to reveal these just yet.

Suppliers in the sector believe the interest in and take-up of USB will only increase as airlines turn to BYOD and connectivity solutions. “Our opinion is that the increasing desire for onboard PED usage will drive requests for in-seat USB power, especially for flights of a longer duration – two hours plus,” says Phil Brace of Pascall Electronics’ IFEC and airborne power solutions division.

Pascall supplies custom power solutions for the IFEC market, including high-power USB. It

does not supply the USB sockets which passengers connect to, but rather the power units that convert and condition aircraft bus power (115 V AC, 360 Hz to 800 Hz) to 28 V DC. “There are typically a number of our power units fitted through the cabin, and the 28 V output of these is wired to the USB sockets that are fitted in the seat armrest or seat back. The sockets perform a local ‘point of load’ power conversion to step down the 28 V supply efficiently to the 5 V required for USB charging,” Brace explains.

NATURAL PROGRESSION

The company also provides power units to the IFE system integrators. “These IFE systems have USB sockets integrated into the seat-back display unit or passenger interface module. In these cases, our power units are powering the seat display and also the USB charging via the integrated USB socket, typically at 500 milliamps to 1 amp, as opposed to the high-power capability [2.1 amps] of socket-only installs,” he adds.

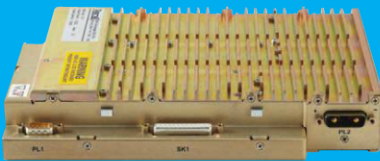
Pascall supplies its products to IFE system manufacturers – most of the tier one IFE system suppliers and many of the tier two suppliers – and connectivity hardware providers, as well as companies that specialise in providing engineering services in the cabin retrofit sector. It has “many thousands” of units operating. With its well-established background in supplying power solutions for the aerospace and military industries, in-seat power was a natural progression for the Isle of



Pascall

COME AND SEE US AT
EXPO BOOTH
3G20
IFE ZONE

Reliable Airborne Power



Applications for Pascall Power Solutions

- High Power USB
- Satcom
- DBS TV
- Seat Actuation
- Seat Displays
- Media Servers
- Cellular Comms
- Cabin Lighting

Pascall Electronics Limited

Tel: +44 (0)1983 817300

Email: enquiries@pascall.co.uk

www.pascall.co.uk

AS9100 : REV C

ISO9001 : 2008

ISO14001 : 2004

Wight, UK-based company. Pascall has been involved in the sector since “the common inception of in-seat power via IFE systems”, with most focus over the last five years.

The company continues to develop its power products, particularly focusing on efficiency improvements, says Brace. “Specifically for in-seat power, we have a well-optimised power unit with a high power density and flexible output options. This enables our customers to develop layout of passenger accommodations plans optimised for the aircraft type concerned, minimising the loom work required, and improving install times and the efficiency of maintenance procedures.”

Brace reports that the company has seen increasing interest in in-seat power, and “this interest has many times, but not always, been transitioned into an upgrade programme where our power units have been used”.

In particular, Pascall is seeing a lot of developments in the narrowbody market. “Narrowbody provides the best opportunities for BYOD IFE implementation through Wi-Fi connectivity, managed by airline-specific apps,” explains Brace. “Increasing gate-to-gate PED usage can only mean that the requirement for in-seat power will increase,” he adds.

CLEAR TREND

Brace says Pascall would like to see all new aircraft provided with some in-seat connectivity and power options, especially when a fixed IFE system is not installed. “We certainly see the ongoing trend to equip business and first-class cabins with 110 V/60 Hz power and USB power, and economy cabins with USB power. However, we are realistic. Aircraft are purchased to support many different operator business types/models. For

some, their focus will remain providing the best A to B travel costs with no frills. For others, they will evolve their seat offerings as they determine that their customers are making choices because of these things,” he says.

With the growing interest in in-seat power in the narrowbody market, including from low-cost carriers, it was inevitable that such cost-savvy operators would look at making in-seat power a source of ancillary revenue. Asian low-cost carrier Scoot has become the first airline to do just that, charging economy-class passengers on its new Boeing 787-9 Dreamliners \$5 for short-haul flights and \$8 for long-haul flights, while in-seat power is free for ScootBiz passengers.

Time will tell whether passengers are willing to pay to plug in, and whether other airlines will follow suit, but charging devices on board definitely has staying power. ■



There's little doubt that in-seat power is a popular feature for many passengers.