

Astronics AES leads the charge for premium cabin power

This is a special feature from the [September 2025 APEX Global EXPO](#) issue of *PAX Tech*, on [page 41](#).



Astronics EmPower Type-C in-seat power outlets

The higher usage demands of business travelers mean that in-seat power supplier [Astronics AES](#) must take a unique approach to planning for the premium cabin. Premium cabin seats often require higher power capacity as passengers are more likely to use and charge multiple high-powered devices simultaneously. To accommodate this, Astronics designs premium cabin power systems with higher wattage capabilities to ensure each seat can handle a greater cumulative power load while avoiding overload.



Dennis Markert, Director Business Development, Astronics AES

“The electrical power allocated to aircraft cabins is divided among various systems and amenities, including in-seat power. Effectively managing this power allocation between different classes of service and passengers is a key part of our value at Astronics,” Dennis Markert, Director Business Development, Astronics AES, tells *PAX Tech*.

The power in planning

Markert adds that power load planning for the premium cabin must consider the simultaneous use of all available outlets per seat, including 110VAC power plugs, USB Type-A, USB Type-C ports and, often, wireless charging pads.

Calculating this total power demand using Electrical Load Analysis (ELA) for the in-seat power systems in First and Business Class cabins requires considering the increased power demands compared to Economy Class.

Ultimately, Markert says the power available to each passenger is determined by the airline, allowing the carrier to dictate the level of service and customize the power solution. This includes selecting specific power outlet configurations and capacities that align with the carrier's branding and passenger demographic.

Astronics AES EmPower® in-seat power systems use a scalable architecture, coupled with hardware and software to monitor and regulate power consumption locally.

"By carefully strategizing and implementing these enhanced power load plans, Astronics ensures that premium cabin passengers enjoy a seamless and reliable in-seat power experience, reflecting the service expected in these higher-tier cabins," he explains.

Evolving demands in Business Class

Premium passengers increasingly expect an inflight entertainment and connectivity experience akin to their home comforts. In response, Astronics is actively implementing strategies to evolve its EmPower in-seat power system to accommodate the growing demand for streaming media services and other high-bandwidth activities provided by airlines, which necessitate passenger device charging inflight.

Markert says Astronics is continuously developing power systems with higher efficiency (greater than 93 percent) and greater power output capabilities to support the increased volume of PEDs and power-hungry electronics, ensuring passengers can charge multiple high-powered devices simultaneously, without compromise. The EmPower system architectures include multiple levels of power management with advanced algorithms that monitor and distribute power efficiently for safe charging.

He also notes that Astronics monitors the commercial product market to stay ahead of the latest technologies and devices that passengers carry onboard. The company's forward-looking research and product development involves its team purchasing a diverse range of popular electronic devices, including international brands, to assess the individual charging performance and power demand.

Customization for the premium cabin



Astronics EmPower UltraLite G2 in-seat power system with 18 Type-C outlets

Modularity and customization play a crucial role in Astronics' in-seat power systems for premium cabins, enabling the delivery of tailored, flexible and future-proof solutions that meet the specific needs of premium travelers.

As Markert tells *PAX Tech*, “With EmPower, airlines have the flexibility to customize the power configurations offered in Business Class, aligning with the airline brand and meeting passenger expectations. This level of customization allows airlines to offer a differentiated and tailored inflight experience.”

EmPower can be scaled depending on the power requirements of the cabin. Markert highlights two possible configurations: the Seat-Centric System (where each seat row contains an individual power supply) and the UltraLite G2 Zonal System, which provides power to multiple rows using a single ultra-high-power supply for improved efficiency and reduced weight. This flexibility allows airlines to adjust power provisions based on passenger demand and usage patterns.

“Astronics' commitment to modularity and customization in our in-seat power systems ensures that we have a solution to meet the needs of every airline. Through scalable and flexible designs, we provide future-proof power systems that adapt to evolving technologies and passenger needs, reinforcing our position as a leader in premium in-seat power solutions,” concludes Markert.