Advanced Air Mobility Solutions
Advanced Air Mobility

A revolution within the commercial air industry is quietly taking place. A new breed of urban air taxis is nearing reality. There are numerous hybrid electric and all electric aircraft concepts and demonstrators in the works. A new era of supersonic flight will soon bring back the days of the Concorde. And unmanned aerial vehicles (UAVs), or drones, are quickly expanding beyond military and hobbyist use to a wide variety of uses including security, agricultural, delivery, 3D mapping, surveillance, search and rescue, high altitude pseudo-satellites (HAPS), and data collection.

And regardless whether these new aircraft are piloted or not, an unprecedented level of autonomy will operate the aircraft. In like manner, all new aircraft will see an increased level of electrification.

There are several drivers of these initiatives. The first is the need for readily available, affordable, intercity or short regional flights driven by long commute times within our metropolises. The second is the increasing numbers of environmentally concerned citizens who are not just asking for, but demanding, low emission alternatives.

These new advanced air mobility initiatives are redefining the long held commercial air practices, regulations, and technologies. Everything from how airspace is defined and controlled, to systems and practices that can manage a mix of visual, instrument, and autonomous flight air traffic in this airspace, to the vehicles themselves.
Bell Nexus Flying Taxi

Airbus Vahana

Airbus, E Fan 2.0

MQ-25 Stingray
Reliability Is Paramount

Traditional piloted aircraft are designed with double redundancy across all systems. With autonomous aircraft, this increases to triple or higher redundancy given the ever-greater need for ultra-high reliability. AirBorn has always applied this triple or higher redundancy across our products. All our connectors, for example, employ contacts with 3 or more points of contact to ensure operation in the most demanding, high-vibration, high-shock applications.

Power-to-Weight Ratio

Engineers are continuously working to reduce size and weight of all the components of an aircraft to increase the power-to-weight ratio. With hybrid or electric aircraft, the weight of batteries and the supporting power systems need to be offset elsewhere. AirBorn offers a variety of interconnect options to reduce size and weight of onboard electronics.

Flexible circuit assemblies are an excellent alternative to cable jumpers, cable assemblies, and PC boards. Flexible circuits can be combined with rigid flex to integrate the PC board to the flex assembly, optimizing the overall performance, weight, and size by eliminating additional connectors and connect points.

Our rugged micro-miniature Series 360 circular connectors are a great alternative to the ubiquitous but bulky 38999 interconnects used on traditional aircraft, saving over 50% of space and weight.

AirBorn’s Airstrip connectors are “minimalist” style PC board and cable mount connectors to optimize space and weight while delivering the rugged, reliable, durable performance AirBorn is known for and aircraft demand.

Where space and weight are an absolute premium, rugged connectors don’t get much smaller than AirBorn’s Nano-D connectors. Proven on aircraft of all kinds including many beyond earth’s orbit.
High-Bandwidth & High-Density Data Performance

Data rates and bandwidth needs are also increasing with increased use of autonomous systems, increased real-time communication between aircraft, controllers, and pilots, and increased services provided to passengers.

AirBorn’s verSi open-pin field connector solution, designed for board-to-board, cable assembly, and flexible circuit assembly applications supports all current protocols in a high density and highly reliable design.

New to market is AirBorn’s FOCuS fiber optic copper solution. These new Rugged Active Optical Cable (RAOC) assemblies combine the field reliability and familiarity of copper connectors with the high-speed data rates, transmission distances, and space and weight savings of fiber. They are ideal for connecting the various electronic components within the airframe.

Reliable High-Altitude Power

New forms of electric and hybrid architectures are driving up power needs. With these higher power levels, safe maintenance on the ground and safe operation at high altitudes is critical.

AirBorn has decades of experience designing power supplies, converters, and inverters for high-altitude aerospace applications and our experienced power systems engineers can work with you on designing and building power supplies and inverters for your next aircraft design.
Applications

Engine Control Units

Engine control units (ECUs) interact with flight controllers and are electronic units that control a series of actuators on an internal combustion engine to ensure optimal performance. ECUs range widely in size but are increasingly smaller and lighter to deliver greater power-to-weight ratios. ECUs must be extremely reliable and handle the altitude, shock, vibration, humidity, and temperature conditions of flight. Increased autonomy and increased integration of hybrid electric technology into fuel propulsion systems require longer and more complex algorithms. Thus, the processing power and performance of ECUs is also increasing, with a broad range of inputs and outputs.

Inertial Navigation Systems

Inertial navigation is a self-referential method by which a system may track its own position, orientation, and velocity without the need for external references. An Inertial Navigation System (INS) provides roll, pitch, and heading information which are fused with GPS or GNSS data (GPS/INS or GNSS/INS) for real-time robust navigation, even in challenging conditions such as near buildings or power lines. INS devices are what make autonomous, unmanned flight possible, so their operation is crucial! They tie into the flight management system or flight computer. As with ECUs, there are wide varieties, types, and sizes of INS devices available in military-, industrial-, and commercial-grades.

Radar Systems

Radar systems have always been a critical component of aircraft and are increasingly so. New radar technologies such as active electronically scanned arrays and Lidar process images very quickly in detecting weather, other aircraft, and obstacles.
Avionics continue to advance with fly-by-wire operation, full glass cockpit displays, and advanced weather and positioning avionics. Augmented reality overlays night vision and terrain over the real visual image in heads up displays, providing enhanced visibility in marginal VFR or IFR flight propulsion systems.

The area of propulsion is where most innovation is happening today. There is a space race of sorts around developing new efficient electric-fuel hybrid platforms and all-electric propulsion systems. Environmental concerns, noise, and fuel costs are driving the need to develop more environmentally and noise friendly solutions. Even supersonic developers have set a challenging goal to limit the ‘sonic boom’ to be no louder than the sound of a closing car door. Air taxis incorporate several electric motors into a distributed DC power architecture, requiring new power components and systems not seen in today’s aircraft.

Flight Computers
Flight computers act as the brain of the aircraft, monitoring all these different systems, presenting information, and translating inputs into actions. In semi-autonomous and autonomous systems, the flight computers either augment or replace the human pilot, making decisions and taking actions in flying the aircraft.

System Integration
AirBorn is well known for high reliability connectors, flexible circuit assemblies and cable assemblies. We also design and build rugged power supplies, inverters, and converters specifically for aerospace use. And we can build most any other electronic box to your design simplifying the overall supply chain and lowering costs. If you can design it, we can probably build it!
Series 360 Circular Connectors
As rugged as 38999 connectors but much smaller and lighter. Ideal I/O option for all aircraft electronics.

PA Series Power Connectors
Our PA Series power connectors support your power needs up to 23A for both board and cable mount applications.

verSI High-Speed Connectors
Rugged, high density, and high bandwidth. A perfect solution for aircraft of all types.

AirStrip Strip Connectors
For those connections where you need high reliability but not all the ‘extra’ options of a rugged connector, our AirStrip product is an excellent choice.

RC Series Stackable Connectors
Want to really reduce weight, save space, and increase reliability? Consider taking a stacked motherboard approach with your electronics using our RC connectors.

Power Supplies, Inverters, and Converters
Our power systems are designed for high altitude use and are currently used in high performance aircraft such as the F15, F16, and several UAVs.

W Series Rectangular Connectors
Relied on by aircraft designers for decades, our rugged, W Series, plastic-body, rectangular connectors offer a wide range of options at an economical price.
Flexible Circuit Assemblies
Flexible circuit assemblies are a great alternative to cable assemblies and PC boards to reduce space and weight. We can work with your design or design for you.

Active Optical Cable Assemblies
The ruggedness of copper cable assemblies, with the weight, space, EMI and bandwidth benefits of fiber cable assemblies. Ideal for use within airframes.

Z Series Compression Connectors
Used in high vibration helicopter environments, our Z Series solderless compression connectors provide reliable connections in the tightest spots.

Micro D & Nano D Connectors
More rugged and smaller than D-sub connectors, our Micro D and Nano D connectors are ideal for INS devices, actuators, and avionics. High temperature options are perfect for ECUs and other high-temperature applications.

RocKet Macro D Connectors
A rectangular option to 38999 connectors, our RocKet Macro D product will help you save significant panel space over traditional 38999 circular I/Os.

R Series Rectangular Connectors
Our rugged, plastic-body, rectangular R Series connectors offer an excellent balance between density and costs for applications not needing a metal body.

Cable Assemblies
We can build to your design, or work with you in designing for optimum mechanical, electrical, and signal integrity performance.
AirBorn’s engineering group specializes in new product design and development for OEMs across the globe. Our team of 50+ degreed engineers are the most innovative and committed to solving our customer’s challenges, but that’s only the beginning of where we can help!

Customers can leverage our design and manufacturing expertise throughout the entire product development process. From Conceptual Design, Prototyping, Pilot-Runs through to Mass Production, our teams work efficiently to cut down your program’s time to market.

A Global Solutions Company

AirBorn has a local presence in the US, Canada, the UK, France, Germany, India, and China as well as 11 manufacturing facilities in the US, Canada, and the UK — including our corporate headquarters in Georgetown, Texas.
Because Product Reliability Is A Matter Of Life Or Death

Because Dependability Is Vital To The Mission’s Success

Because Superior Design & Durability Ensures We Stay Safe

Because You Need Out-Of-This-World Accuracy

Because Rugged Components Keep You Running & Profitable

Partner With AirBorn
The AirBorn Advantage

- Rugged Power Systems
- Photonics/Optoelectronics
- Flexible Circuit Assemblies
- Cable Assemblies
- FUZE & Ordnance Assemblies
- Active Optical Assemblies
- Rectangular W Series
- Rectangular R Series
- Micro D M Series
- Nano D N Series
- Rectangular 25Gbps verSI
- Z Axis Interposer Z Series
- Hybrid-Keyed Micro D microQUAD
- High-Speed Micro D microSI
- Stackable RC & RCII Series
- Circular Series 360
- Strip Connector AirStrip
- Macro D RocKet

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