



GaNJetPower

A high-density power converter/charger designed specifically for aeronautics

What is GaNJetPower?

As part of the European NENUFAR project, CEA has developed an innovative converter dedicated to aeronautical applications. It charges the aircraft's lithium-ion batteries and provides DC/DC conversion to power auxiliary components such as instrument panels, interior lighting and USB sockets.

Based on wide-band gap Gallium Nitride (GaN) transistors, this converter features four 2 kW modules that can be used separately or together. Its power density is twice that of existing solutions.

Applications

This converter supports the aeronautics sector's move towards higher-performance electrical technologies: lithium-ion batteries to replace lead-acid batteries, high power density, reduced conversion losses, etc.

It has two main functions:

- Low-voltage lithium-ion aeronautical battery charger
- DC/DC converter (270 V to 28 V) for low-voltage buses

It features analog controls that are impervious to software errors.

What's new?

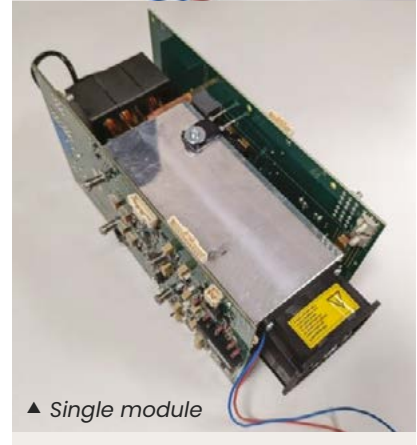
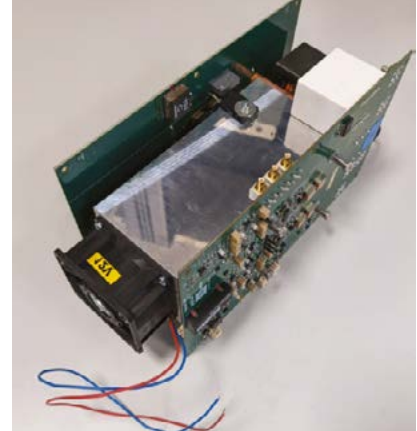
- Two functions with a single integrated converter:
 - Charge lithium-ion batteries
 - Generate low voltage for an aircraft's DC bus
- High power density thanks to optimized architecture: 2 kW/kg as compared to 1 kW/kg for existing solutions
- Record efficiency: 96.5% versus 95% for existing conversion solutions, equivalent to a 30% reduction in losses
- Longer service life thanks to a modular architecture that reduces stress on all components



▲ Converter test with battery



▲ Complete converter with four parallel modules



▲ Single module

What's next?

This innovative converter can be adapted to specific projects and offers greater efficiency, higher power density and lower costs.

Transfer to other industrial partners such as players in the automobile industry can be achieved within two to three years.

Interested in this technology?

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