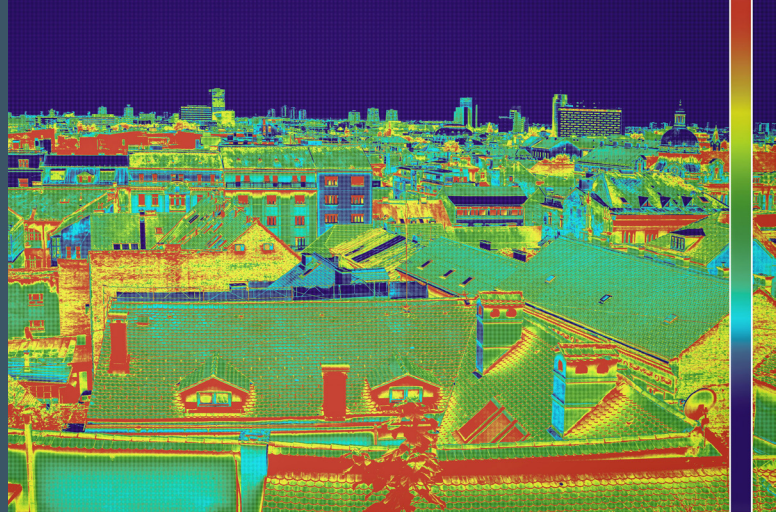
VICOR

Case study: EO/IR Airborne thermal imaging



Upgrading thermography systems without taking up extra space and weight

Customer's challenge

Airborne thermography systems are constantly evolving to offer greater value by integrating new functionalities and enhancing critical performance parameters: resolution, range, sensitivity, and accuracy. This involves incorporating new components like LEDs, sensors, and motors, but implementation without increasing the system's weight or size is challenging. It requires a power solution capable of supporting higher power demands and complexity while mitigating any potential size or weight increases. The key challenges were:

- Implement new functionalities without adversely affecting overall size and weight
- Minimize noise interference to improve video systems
- Ensure reliable solution for operations in harsh environments

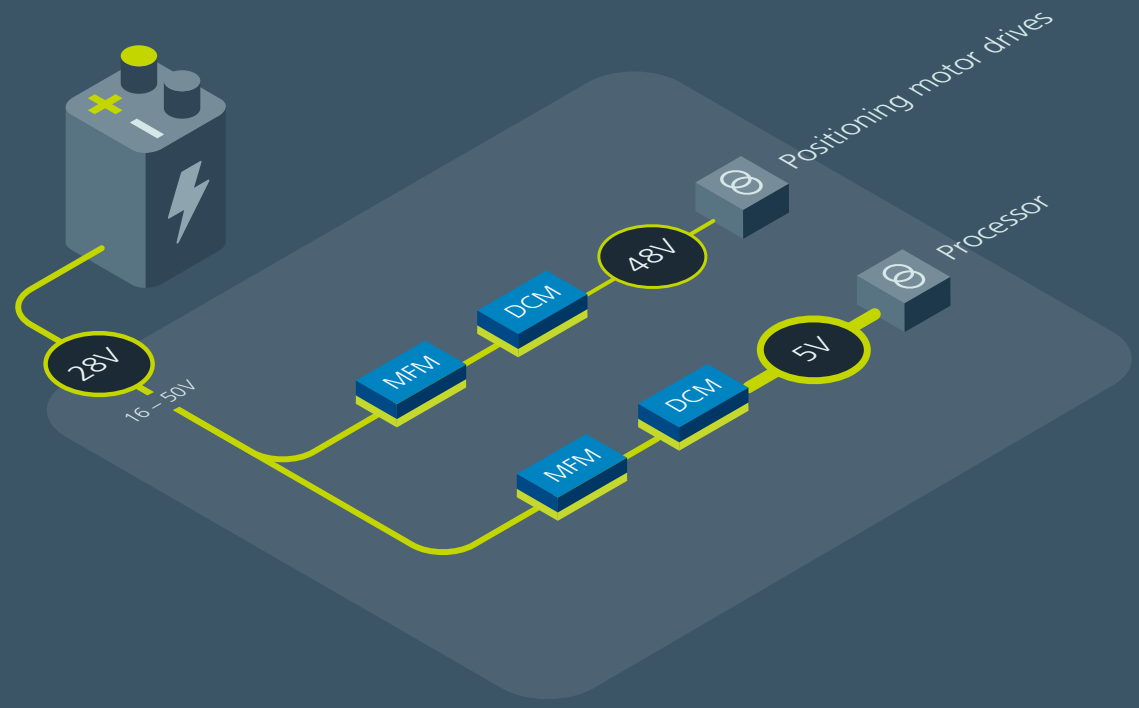
The Vicor solution

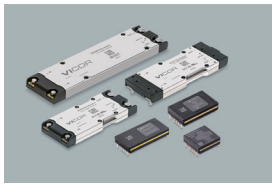
Vicor MIL-COTS DC-DC converters offer exceptional efficiency across all load ranges, reducing heat generation and optimizing power consumption. Their low-profile design provides superior power density, allowing for maximum flexibility when integrating new features in space-constrained airborne systems. Low-noise power modules ensure signal integrity and reliable operation with minimal electromagnetic interference, which is crucial for sensitive video processing systems. The key benefits were:

- High reliability of rugged power modules maximizes run time
- Power density optimizes space and weight on the vehicle
- Low EMI reduces interference and improves thermal imaging functionality

The power delivery network

From a MIL-STD-704 source, two rugged MIL-COTS DCM™ DC-DC converters in an array provide a high power 48V rail for the positioning motors, allowing reliable operation in the harsh environments faced by helicopter-borne systems. An additional DCM™ provides a low noise 5V supply for the video processing system. MFM DCM™ filters are DC front-end modules used in conjunction with DCMs and provide EMI filtering and transient protection to meet MIL standards.





MIL-COTS DCM™ DC-DC converter

Isolated regulated

Input: 28, 30, 270V

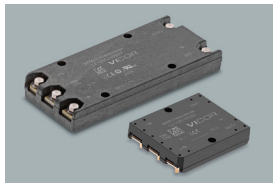
Output: 3.3, 5, 12, 15, 24, 28, 48V

Power: Up to 1300W

Peak efficiency: 96%

As small as 0.98 x 0.90 x 0.28in

vicorpower.com/mil-cots-dcm



MIL-COTS MFM™ filter

Input filter for DCMs

Input: 28V (16 – 50V), 270V (160 – 420V)

Current: Up to 22A

As small as 44.6 x 35.5 x 9.2mm

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