



Mission Ready Power Protection for Modern Defense

Reliable power is the backbone of every defense mission. In an era of evolving threats and unpredictable environments, energy resiliency is a strategic advantage. Eaton delivers advanced circuit protection and custom power distribution solutions that ensure operational continuity in the harshest conditions. Our Eaton Heinemann Hydraulic-Magnetic Circuit Breakers (HMCBs) are engineered for critical defense applications, providing safe and stable power distribution across platforms. Combined with Eaton's expertise in customized power systems, we

deliver integrated solutions that keep bases, vehicles, and weapon systems powered—even during extended outages or grid disruptions.

From design to deployment, Eaton is a trusted partner of defense OEMs and military operators worldwide. Our solutions meet stringent military standards, offering reliability and adaptability for every mission. Whether safeguarding sensitive electronics or enabling efficient power distribution, Eaton ensures defense organizations have the power they need, when they need it most.



Powering Business Worldwide

Defense-Grade Circuit Protection with Eaton Heinemann HMCBs

Eaton Heinemann Hydraulic-Magnetic Circuit Breakers form the backbone of defense power systems. These breakers perform under the most demanding conditions, providing precise and reliable protection, even for sensitive electronics. Unlike thermal breakers, HMCBs maintain consistent trip performance regardless of temperature fluctuations, making them ideal for defense environments.

Their rugged construction withstands shock, vibration, and exposure to humidity or airborne salt particles, ensuring long-term reliability in land and naval platforms. Compact designs and compatibility with

Remote Breaker Reset (RBR) systems allow easy integration into space-constrained systems. A wide range of configurations support tailored solutions for diverse applications—from missile launch systems to mobile command centers.

Eaton HMCBs **reduce downtime, minimize maintenance, and enhance operational readiness**, giving defense operators confidence in every mission. By combining durability with precision engineering, these breakers deliver performance that meets the highest standards of military reliability.



Why Eaton Heinemann HMCBs Excel in Defense Applications

Extreme Temperature & Vibration Resistance

- Maintains precise tripping characteristics from -40°C to +85°C (-40°F to +185°F)
- Shock resistance tested up to 100G for uninterrupted performance in rugged environments

Environmental Resilience

- Protection against humidity, dust, and saline exposure
- Tested to IEC 60068-2-52 salt mist standards and NATO corrosion requirements

Inrush Current Capability

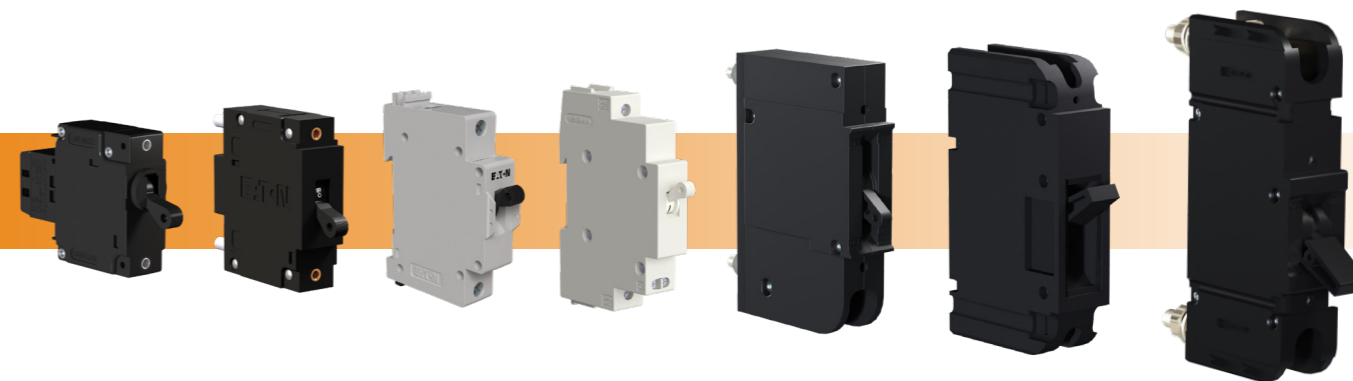
- Handles high inrush currents up to 25x without nuisance tripping - ideal for demanding start-up loads

Defense-Grade Compliance

- MIL-STD-202, Method 213 (shock and vibration)
- NCAGE Number for NATO compliance
- UL-listed for global safety assurance
- Available for 400 Hz applications in telecom, aircraft, and naval systems
- Minimal obsolescence risk for long-life defense programs

High Customization

- Full rated current values starting from 0.02A
- Options for handles, internal circuits, poles, inserts, terminals, and mounting styles
- Adjustable time delays and multiple certifications
- Tailored solutions for unique defense specifications



Maximum performances of HMCBs

- Current range: 0.1 to 1 200 A
- Voltage: up to 250 VDC and 600 VAC
- Frequencies: 50/60 Hz, 400 Hz or DC
- Up to 100 kA interrupting capacity
- Up to 25x In inrush protection

For more information, visit [Eaton.com/HMCB](https://www.eaton.com/HMCB)



Components Designed With Defence in Mind

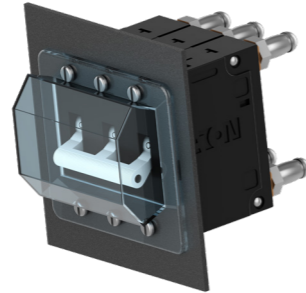
AER/JES breakers

Rugged, sealed-front breakers with IP65 certification, resistant to dust and water spray in harsh environments.



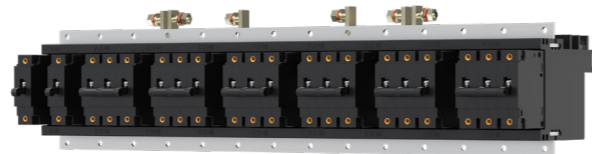
Protective Boots

Upgrade Heinemann breakers with an IP65-rated protective cover for enhanced water and dust resistance in outdoor applications.



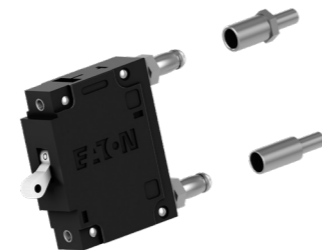
MDBS

Flexible power distribution system with a modular busbar design, enabling protection of multiple electrical loads and hot-swapped circuit breakers for mission-critical applications.



Bullet terminals

Tool-free breaker replacement: snap-in/snap-out design enables rapid swaps in remote locations.



Remote Breaker Reset Series: Efficient operation, remote capabilities

Eaton's Remote Breaker Reset (RBR) technology enhances operational efficiency by enabling remote resetting of hydraulic-magnetic circuit breakers without manual intervention. This feature improves safety, reduces downtime, and supports automated power management in critical applications such as defense, rail, and industrial systems.



Field-Tested Solutions

Eaton's customized power distribution systems and Heinemann Hydraulic-Magnetic Circuit Breakers (HMCBs) have been **proven in the most extreme conditions** and trusted by some of the world's leading defense OEMs. Our solutions deliver uncompromising reliability for mission-critical applications.



Advanced radar systems



Missile launch platforms



Military vehicles



Microgrid installations



Modular Busbar System (MDBS)

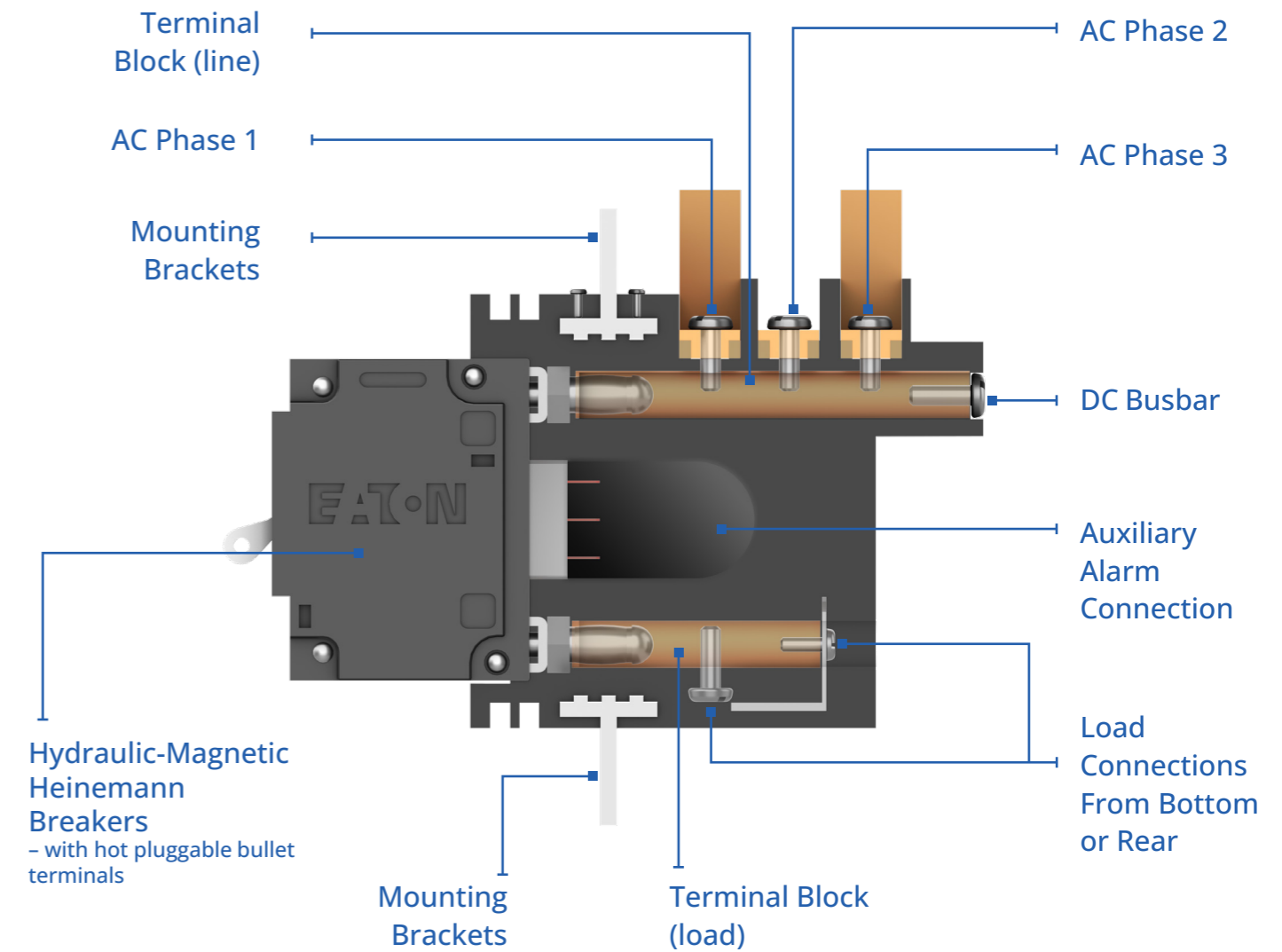
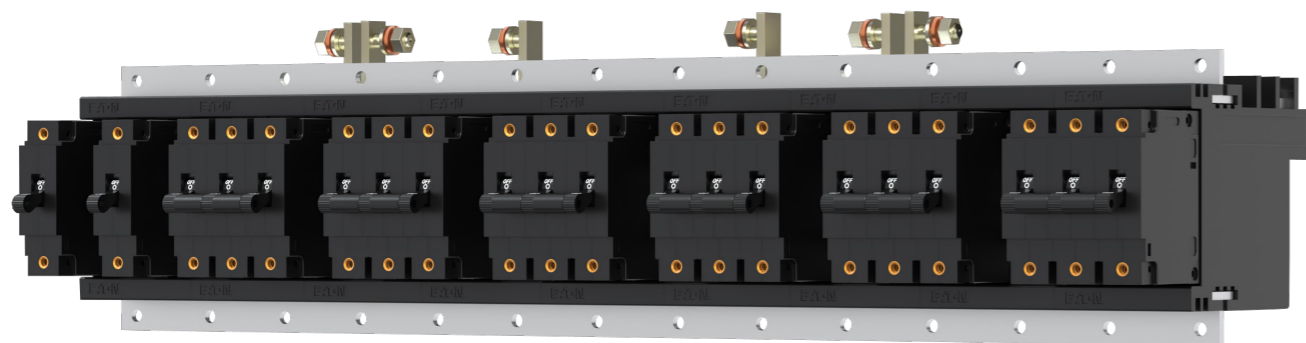
Similar to CPS, Eaton's Modular Busbar System (MDBS) is a flexible and compact solution for power distribution within control and distribution panels. It ensures maximum efficiency, safety, and ease of installation.

- Modular design – enables quick expansion and customization without drilling or complex assembly.
- High current capacity – supports nominal currents up to 1 600 A with optimized heat dissipation.
- Safety and protection – fully insulated system with covers to prevent accidental contact and reduce arc risk.
- Fast installation – withdrawable feature enabling quick installation and replacement, without tools and without shutting down the entire PDU.
- Compatibility – standard 60 mm busbar spacing for integration with circuit breakers.
- Applications – ideal for Critical Power Systems (CPS), data centers, industrial facilities requiring high reliability and modularity.



Technical Parameters

Parameter	Value
Nominal Current	Up to 1600 A
Busbar Spacing	60 mm
Profile Type	Flat or Profiled Copper Bars



Success Story:

Microgrid Protection for Military Operations

Application: PDU protection for Microgrid environment

Customer Location: USA

Key performance highlights:

- Fuel Efficiency: Reduced fuel consumption by 30%, saving over 1'300 gallons (≈4'920 liters) per day.
- Rapid ROI: Achieved full return on investment in less than two weeks.
- Defense-Grade Compliance: Built to NATO and MIL-STD specifications for long-term reliability.
- Environmental Resilience: Maintained continuous power under harsh battlefield conditions.



Customer Challenge

Forward operating bases rely on mobile power systems that must endure constant transportation shocks, vibrations, and extreme temperature fluctuations. These conditions expose critical equipment to failure risks, while traditional generator setups consume thousands of gallons of fuel daily, creating logistical strain and mission vulnerability. Protecting sensitive electronics and ensuring uninterrupted power in such harsh environments is essential for operational success.

Solution

Eaton engineered a customized Power Distribution Unit (PDU) powered with Eaton AR Series Heinemann Hydraulic-Magnetic Circuit Breakers (HMCBs). This solution provided unmatched protection for mission-critical equipment, maintaining precise trip performance regardless of temperature extremes and resisting shock, vibration, humidity, and saline exposure. Integrated with intelligent load management, the system optimized generator output and prevented grid collapse—while supporting renewable energy integration for future scalability.

Business Outcome

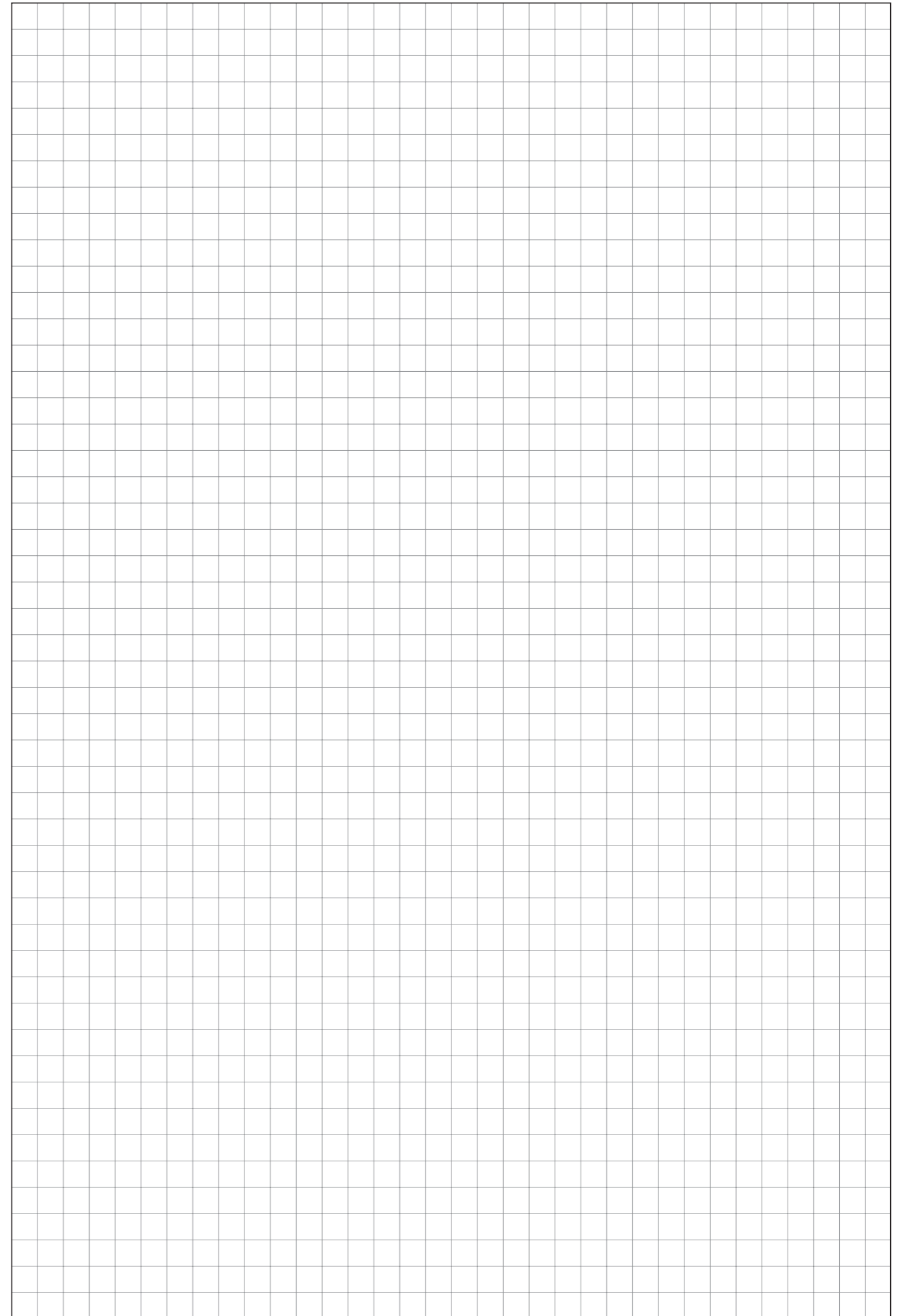
This deployment not only delivered immediate operational benefits but also established a proven platform for defense OEMs. The success story became a benchmark for similar applications, enabling Eaton to offer a scalable, field-tested solution for microgrid environments across global defense programs.



About Eaton Heinemann

Eaton is a global leader in power management technologies, serving defense and aerospace sectors for decades. Whether you need rugged circuit breakers for advanced defense systems or customized power distribution solutions, Eaton provides the expertise and technology to keep your mission continuously powered.

Contact us: LeLieuSwitzerland@eaton.com



We make what matters work. *

* At Eaton, we believe that power is a fundamental part of just about everything people do. Technology, transportation, energy and infrastructure—these are things the world relies on every day. That's why Eaton is dedicated to helping our customers find new ways to manage electrical, hydraulic and mechanical power more efficiently, safely and sustainably. To improve people's lives, the communities where we live and work, and the planet our future generations depend upon. Because that's what really matters. And we're here to make sure it works.

See more at [Eaton.com/whatmatters](https://www.eaton.com/whatmatters)

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