

Kinetics

Delivering Combat-Proven Solutions

Power Systems
& Management

Electronics
Cooling

CBRN Protection

HVAC

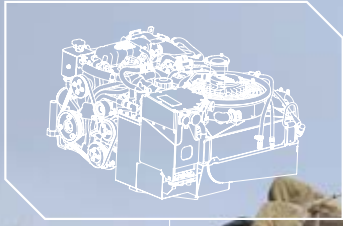


Photo by Michael Mass

Power Systems & Management

Kinetics' APU (Auxiliary Power Unit) empowers the modern battlefield with uninterrupted, stealthy and efficient power for every mission

Kinetics' next-generation smart-control Auxiliary Power Units (APUs) are specifically designed for heavy-duty military applications.

These tailor-made, rugged and reliable solutions, deliver a comprehensive military-grade power system engineered to meet today's battlefield demands, even under extreme temperatures, vibrations and shocks.

Compact and powerful, these units power all onboard systems while the main engine is off, enabling crews to continue fighting and operate vehicle systems effectively under any conditions.

Field-proven worldwide, Kinetics' solutions have logged thousands of uninterrupted hours in harsh operating and combat environments over many years of service.

By enabling silent-mode operation with low acoustic and thermal signatures, our APUs enhance crew performance and reduce fatigue by minimizing exposure to noise, heat and vibrations.

The fully automated, independent APU integrates seamlessly into fuel and electrical systems.

Main Benefits



Rugged Combat-Grade Design

- Built to military standards and extreme environment conditions.
- Delivers maximum power density in any given volume.
- Permanent-magnet, liquid-cooled six-phase alternator mounts directly on the engine flywheel, no belts or couplings.



Advanced Power Management

- Proprietary multi-phase controller balances loads, auto-switches modes under peak demand and delivers low-ripple, clean power.
- Automatic start/stop saves fuel and engine hours, no operator intervention required.
- Direct support for lead-acid, Gel and Li-Ion batteries; battery-less operation for direct load powering.



Versatile and Modular

- Compact, self-contained form factor adapts to any military platform.
- Dual operation mode: current share mode, enabling APU operation in parallel to other power source, or stand-alone mode.
- Flexible user interface by full integration to main vehicle computer.



Unmatched Efficiency & Low Emissions

- Over 90% DC conversion efficiency maximizes range and minimizes fuel logistics.
- Native Li-Ion charging and intelligent sharing with the main generator.
- Digital PID speed control ensures ultra-stable voltage with real-time protection.



Predictive Maintenance & Maximum Uptime

- Continuous health monitoring of temperatures, pressures, voltages, vibrations and shocks via onboard sensors.
- Built-in test routines and event logging enable early fault detection.
- Machine-learning diagnostics extend service intervals beyond 250 hours, eliminating periodic calibration.



Field-Proven Worldwide

- Over 3,000 APUs are in operation globally.
- Wide output ranges from 1.7 to 20kW.
- Based on 4 decades of knowledge and experience, offering unique customized features.





Actor portrayal. Model used for illustrative purposes only.

CBRN Protection

Improving crew survivability and performance

Kinetics unites full-spectrum CBRN defense and precision HVAC into a single, modular Life Support System, ensuring your crew breathe safely, stay focused and remain mission-effective, no matter the threat or environment.

Subsystems can be deployed independently or fully integrated to match any armored vehicle architecture.

Kinetics NBC/CBRN Protection System provides comprehensive NBC protection to Armored Fighting Vehicles (AFVs), as well as cabin ventilation during peacetime operation.

Cabin overpressure control in real-time, shields crews from sudden threats and severe climates.

The system offers three protection modes:

- Overpressure protection where the cabin is pressurized with filtered air.
- Individual protection where filtered (and optionally conditioned) air is provided to each of the crewmen's facemasks/overalls.
- Hybrid protection combines cabin overpressure and individual protection.

Main Benefits



Mission Assurance

Seamless CBRN protection and advanced climate control keep crews mission-ready.

The overpressure system continuously fills the cabin with purified air, ensuring comfort and safety without the burden of wearing masks.



Platform Versatility

Adaptable by design, our systems support multiple power sources; engine-driven, electrical or hydraulic. The modular architecture enables seamless integration with any armored chassis. From compact, self-contained subsystems to fully integrated life support solutions, each configuration is tailored to your mission needs and ready for immediate deployment.



Operational Readiness

Stay mission-ready with rapid mode switching. The automatic bypass peacetime filter activates instantly upon hazard detection, with manual override available via electrical control or mechanical handle. Low-noise operation and long-lasting, proven filters ensure vehicles remain combat-ready at all times.



Total Cost Efficiency

Built for durability and low lifecycle costs, our rugged design features maintenance-free cyclone filters and long-lasting activated carbon that minimize downtime and replacement needs. Quick-change filters and centralized diagnostics streamline servicing, while multi-filter interfaces support customer-defined NBC cartridges, NATO-standard filters and peacetime dust elements — delivering maximum flexibility with minimal overhead.

Key Features

- Water trap at the fresh-air intake removes water drops
- Brushless motor blower with higher MTBF, provides variable speed and adjusts automatically to cabin overpressure
- IPS (Inertial Particle Separator) two stage cyclone pre-filter, removes up to 97% of dust before main filter
- Heater strips humidity ahead of the NBC filter to extend service life
- NBC filter compliant with NATO or US standards, with swift replacement capability
- Peacetime bypass valve with built-in fail/safe protection, ensures continuous cabin overpressure
- Fully automatic interface to CBRN detection and alert system





Power, Air-Condition, NBC Protection

All-in-one unique design

Kinetics' state-of-the-art design integrates power, air conditioning and NBC protection.

The system can be operated independently and/or simultaneously while the main engine is running.

In silent mode, the APU provides power to the onboard electronic equipment, as well as to the HVAC and NBC/CBRN protection system, to allow full performance of all onboard functions.



Key Benefits

A unique combination of 10kW APU, 14kW cooling and NBC protection

-  Cost-Effective
-  Reduced Size & Weight
-  High-Energy
-  Cooling Efficiency



HVAC Solutions for Shelters

Lightweight and compact, MIL-STD HVAC systems for shelters qualified for harsh environmental conditions, allowing energy efficiency, improved serviceability and reliability.

Key Benefits

- ✓ Vertically mounted shelter HVAC range
- ✓ Meet MIL-STD requirements: high and low temp, humidity, vibrations, EMI
- ✓ Digital monitoring of shelter AC units: 2+1, 4 in 2 zones and malfunction diagnostics
- ✓ Integrated fresh air system
- ✓ Serviceability and reliability
- ✓ Accessible service doors
- ✓ Cleanable air filters external access
- ✓ Refrigerant R134a - high ambient temp. (55°C)
- ✓ Easily accessed air filter
- ✓ High energy efficiency w/micro channel heat exchanger
- ✓ Cooling capacity: 18 - 43 kBTU/h



Electronics Cooling

Precision cooling for mission-critical electronics

From sophisticated radar and electronic warfare systems to next-generation high-energy laser weapons, today's advanced military electronics generate extreme heat while operating under strict size, weight and power (SWaP) constraints. In combat, failure is not an option; thermal management becomes the difference between mission success or mission failure.

Kinetics delivers precision cooling solutions engineered for the harshest environments. Our compact, rugged systems are built to withstand shock, vibration, dust, moisture and corrosive conditions, ensuring uninterrupted performance across land, sea and air. By combining high-efficiency thermal performance with robust design, we safeguard mission-critical electronics and extend their operational life.

For next-generation weapon systems, including High-Energy Laser platforms, Kinetics provides cooling

capacity of up to 500kW, supporting both solid-state and fiber-optic laser technologies.

An integrated APU supplies up to 800 VDC for peak demands, enabling seamless deployment on both airborne and land platforms.

Our tailor-made liquid-flow systems manage multi-kilowatt heat loads within SWaP-constrained enclosures, while ruggedized structures ensure resilience under extreme conditions and high vibration. Advanced algorithms and multi-sensor arrays provide real-time monitoring and adaptive thermal control, optimizing performance in dynamic battlefield environments.

Every solution is designed for multi-platform integration, from armored vehicles to naval vessels and airborne systems, featuring EMI shielding, dust-proofing and corrosion resistance. Forces gain the confidence that their electronics will remain cool, reliable and combat-ready, no matter the mission.

Main Benefits



Tailor-Made Liquid-Flow System

Custom-designed liquid-flow cooling architectures that deliver unmatched heat-flux capacity. Using micro-channel cold plates and phase-change modules, our systems dissipate multi-kilowatt thermal loads even within the strictest SWaP envelopes.

Advanced electronics, from radar arrays to high-energy laser weapons, remain stable, efficient and combat-ready under the heaviest operational environments.



Real-Time Adaptive Thermal Management

Equipped with multi-sensor arrays and predictive control algorithms, Kinetics' cooling systems continuously monitor and adapt to changing thermal loads.

By dynamically balancing coolant flow, they eliminate hot spots, prevent delamination, and reduce thermal-cycle fatigue. The result is long-term reliability, optimized performance and reduced maintenance cycles, even in the most unpredictable combat conditions.



Modular, Standards-Based Design Plug-and-Play Compatibility

Cooling solutions built on a modular, standards-based framework guarantee plug-and-play compatibility across platforms. With rapid retrofit kits, legacy systems can be upgraded in the field through drop-in assemblies, without costly redesigns or extended downtime.

This flexibility allows armed forces to extend the life of existing assets while seamlessly integrating next-generation capabilities.

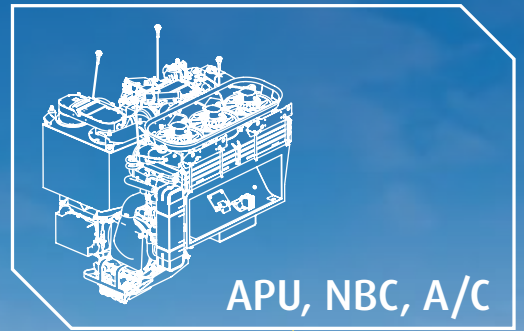


Ruggedized for Any Environment

Designed for land, maritime and airborne platforms, our systems are fully MIL-STD qualified to withstand shock, vibration, dust, moisture and extreme temperatures.

Integrated EMI shielding and corrosion resistance, ensure that mission-critical electronics remain protected and operational in the harshest condition.





APU, NBC, A/C

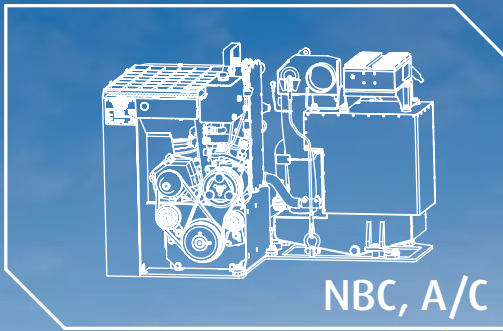


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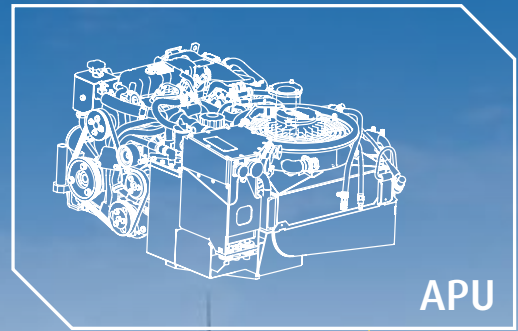
Delivering Combat-Proven Solutions.

Engineering the Modern Battlefield.

Kinetics empowers the modern battlefield with the most advanced combat support systems, delivering innovative and reliable solutions that meet the highest standards of performance.



NBC, A/C



APU



As a global leader and center of excellence within Elbit Systems, Kinetics designs and manufactures cutting-edge solutions in the fields of Auxiliary Power Units (APUs), Smart Power & Energy Management Solutions, HVAC (Heating, Ventilation and Air-Conditioning) systems, CBRN (Chemical, Biological, Radiological and Nuclear) Protection systems, Electronics Cooling solutions and additional innovative systems.

Operating 24/7 in real battlefield conditions, tens of thousands of Kinetics systems are deployed worldwide across military platforms on land, at sea and in the air, serving our valued global customers.

Proven in the harshest operational environments and adopted as standard by leading global OEMs, these tailor-made, off-the-shelf systems meet the most demanding military standards. Trusted by the Israel Defense Forces and armed forces worldwide, Kinetics delivers mission-critical capabilities that keep forces ready, resilient and ahead of the threat.



SCAN ME



Elbit Systems - Kinetics Ltd.
E-mail: kinetics@elbitsystems.com | www.elbitsystems.com
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