HALTERMANN CARLESS

Fuels for space & defense

High-performance fuel solutions for space and defense applications

“When defense applications require more than a standard fuel, Haltermann Carless delivers – combining uncompromising performance, full regulatory compliance, and flexible supply from small batches to scalable volumes. As the originators of ‘Petrol’, we bring a legacy of pioneering fuel innovation that enables mission-critical programs worldwide.”

Dr. Bruno Philippon, SVP BU Performance Fuels, Haltermann Carless

Haltermann Carless benefits at a glance:

- CAGE Code registered; compliant with applicable NATO, DEF STAN, and U.S. MIL-DTL fuel specifications
- European production and supply security supporting strategic autonomy
- Flexible supply models, from development quantities to long-term programs
- Certified quality, full traceability and compliance with defense procurement requirements
- Export-control and dual-use experience for sensitive programs
- Long-term partnership approach, aligned with defense lifecycles
- Future-ready portfolio, including sustainable fuel options

From development to deployment – across air, land, sea and space

Space and defense applications operate in high-stakes environments where failure is not an option and standards are uncompromising. To meet these demands, Haltermann Carless combines fuel science, engine-level understanding and a proven pioneering approach to support the most demanding requirements across air, land, sea and space. We invest continuously in advanced fuel technologies, including sustainable options, to support the evolving needs of future defense systems.

Our high-performance fuels are engineered for applications where standard solutions reach their limits. This expertise is rooted in decades of fuel development for sectors where precision, repeatability and operational reliability are critical. As a long-standing supplier of advanced, synthetic and specialty fuels, we understand what matters in defense applications: reliability, consistent performance and availability.

These capabilities translate directly into defense-relevant fuel solutions – from UAV propulsion and special operations equipment to advanced aerospace and next-generation propulsion concepts.

To reduce integration risk and ensure predictable performance across the full program lifecycle, Haltermann Carless controls the entire fuel value chain, from formulation and testing to blending and delivery. This enables us to provide high-purity fuels precisely tailored to technical and operational requirements, from first concept to full-scale production.

Whether developing next-generation UAV platforms, supporting naval or aerospace operations, managing long-term procurement programs or shaping defense policy, Haltermann Carless takes you further with technical depth, secure supply and assured compliance.

We were pioneers then. We are pioneers now.
Our mission is to help you succeed in yours.

Specialty kerosene and gasoline fuels

Unmanned Aerial Vehicles

Unmanned Aerial Vehicles (UAVs) play a crucial role in modern defense operations, from intelligence, surveillance and reconnaissance to tactical support missions.

Haltermann Carless supports UAV platforms with high-performing kerosene and gasoline fuels, as well as reliable, compliant supply chains for long-term programs. Our fuels are engineered with tight property tolerances, controlled volatility and high batch-to-batch consistency enabling repeatable engine testing, validation and operation. The low aromatic content of our fuels reduces injector fouling and fuel-system contamination, supporting stable combustion behaviour and extended maintenance intervals.

Haltermann Carless fuels ensure operational readiness, delivering predictable behaviour, consistent quality, and stable performance across altitude, temperature, and mission profiles.

Kerosene-type UAV fuels

Kerosene-type fuels are designed for medium and large UAVs performing long-endurance ISR (Intelligence, Surveillance, Reconnaisance) and tactical support missions.
Haltermann Carless kerosene-type fuels deliver high-energy density for endurance-optimised UAV platforms and feature high thermal and oxidative stability with low deposit formation enabling stable combustion behaviour and predictable engine operation across variable altitude and temperature conditions. Options with high flash point enhance safety for naval, carrier-based and forward-deployed operations. Extreme temperature fuels available.

Product Portfolio

- Avtag with FSII – DEF STAN 91-88 / NATO F-40 / US MIL JP-4
- Avtur – DEF STAN 91-91 / NATO F-35
- Avtur with FSII – DEF STAN 91-87 / NATO F-34 / US MIL JP-8
- Avcat with FSII – DEF STAN 91-86 / NATO F-44 / US MIL JP-5
- RP-1 UAV

Gasoline-type UAV fuels

Gasoline-type fuels are optimised for small to large UAVs using 2-stroke or 4-stroke engine powered drones, where ignition quality, fast throttle response and vapour control are critical.
Haltermann Carless gasoline-type UAV fuels provide high octane numbers for maximum efficiency and performance. Anti-vapour-lock characteristics and tightly controlled volatility ensure stable combustion across temperature and altitude ranges. Partly and fully sustainable options support future-oriented UAV concepts.

Product Portfolio

- EN228 Unleaded Gasoline – NATO F-67
- EN228 Unleaded Gasoline R100 (fully sustainable)
- 100LL Aviation Gasoline – NATO F-18

Why UAV manufacturers choose Haltermann Carless

- Small-batch flexibility for prototype and test fuels combined with industrial-scale supply capability
- Excellent cold-flow properties for extreme operating conditions (altitude, temperature, maritime)
- Low-aromatic fuels keep injectors and fuel systems clean, reducing fouling and supporting extended maintenance intervals
- In-depth fuel-engine interaction expertise that reduces integration and performance risk

Specialty fuels

Space & rocket propulsion systems

Rocket propellants are critical enablers of modern aerospace and defense capabilities. They provide the primary source of thrust for satellite launch vehicles, enabling payload delivery to orbit; power hypersonic propulsion systems as boosters or combined-cycle propulsion elements; and drive military and tactical rockets, where rapid, high-thrust release is essential for precision, range and mission effectiveness.

Haltermann Carless supports space and rocket propulsion systems with RP-1-type and advanced RP-1+ fuels, offering higher purity and tighter specification control than conventional RP-1. Our fuels are fully compatible with established RP-1-based engine architectures and existing ground infrastructure, enabling low-risk integration from development through operational deployment.

High-energy density for performance-critical applications, combined with high thermal and oxidative stability and low deposit formation, supports engine durability, repeatability, and predictable combustion behaviour. Controlled purity improves storability and enables clean engine operation.

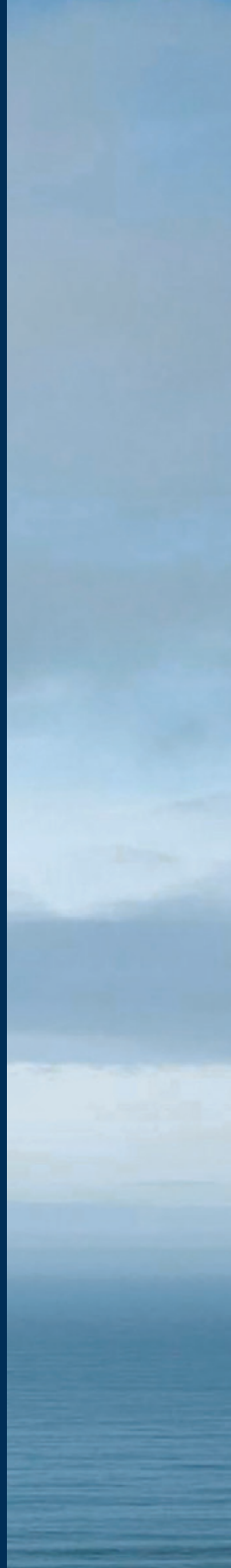
Haltermann Carless fuels ensure operational readiness across satellite launchers, rocket engines, boosters, and tactical propulsion systems, delivering reliable performance in high-altitude environments, long-term storability, and assured availability over extended programme lifecycles – including support for reusable engine concepts.

Product Portfolio

- RP-1 UAV
- RP-1+

Why space & launch system manufacturers choose Haltermann Carless

- Higher purity and reduced deposit formation compared to conventional RP-1, supporting engine durability
- High-energy density and net heat value, enabling more propellant mass within constrained volumes
- Thermal and oxidative stability ensuring reliable performance during high-altitude operation and extended storage
- Fully compatible with established RP-1-based engine architectures and existing ground infrastructure



Specialty fuels

Naval systems

Naval systems operate in some of the most demanding environments in defense, requiring uninterrupted operational readiness, high safety margins and secure fuel availability across extended missions. Fuels used on surface vessels, submarines and ship-borne aviation must perform reliably under high humidity, salt exposure, variable temperatures and confined operating conditions, while meeting strict safety, handling and storage requirements.

Haltermann Carless fuels are engineered to support safe, reliable, and low-risk operation throughout the full lifecycle of defense platforms. Designed for compatibility with established naval engines and fuel systems, they combine tight property control and optimised volatility with stable combustion behaviour, enabling consistent performance.

High flash-point formulations reduce ignition risk in shipboard and carrier environments, while controlled purity and cleanliness ensure reliable operation in confined engine rooms and sensitive onboard systems.

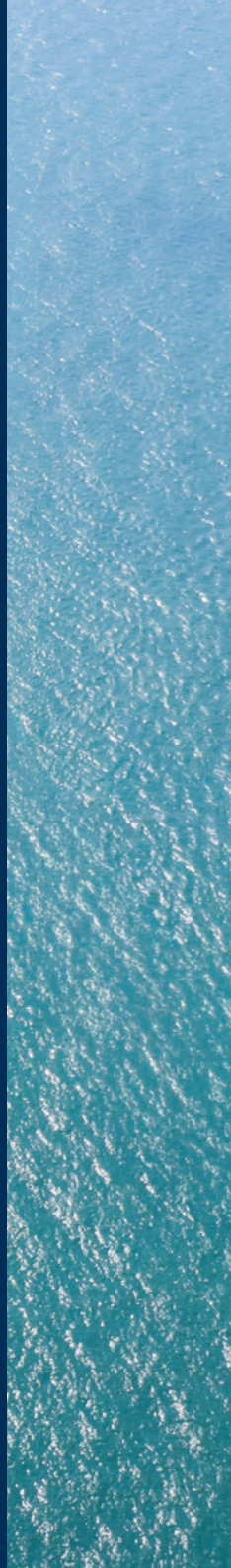
Haltermann Carless fuels ensure operational readiness by meeting stringent safety requirements, providing assured availability and long-term storage stability, and delivering predictable performance under harsh maritime and climatic conditions.

Product Portfolio

- Avcat with FSII – DEF STAN 91-86 / NATO F-44 / US MIL JP-5
- Naval Distillate – MIL-DTL-16884 / NATO F-76
- Naval Distillate, Low Pour Point – DEF STAN 91-004 / NATO F-75
- Arctic Diesel – Arctic Grades

Why naval system manufacturers choose Haltermann Carless

- High flash-point formulations enhance safety in shipboard, carrier and confined naval environments
- Controlled volatility and stable combustion behaviour support reliable engine and auxiliary system operation
- Low deposit formation reduces injector fouling and contamination in confined engine rooms and onboard systems and enables long-term storage
- Compatibility with established naval engines and fuel systems enables low-risk integration and long-term fleet deployment



Specialty fuels

Aviation & ground operations

Operational aviation and ground fuels form the backbone of daily defense operations, powering military aircraft, helicopters, UAV ground support equipment, tactical vehicles and mobile power units, often across dispersed locations and under harsh environmental conditions.

Haltermann Carless fuels are engineered for aviation and ground operations, ensuring stable operations from testing and qualification through long-term fleet deployment. Designed for compatibility with established engines, vehicles, and infrastructure, they deliver controlled combustion behaviour and reliable system integration.

Our portfolio includes test and reference fuels for ground testing, calibration and homologation, as well as extreme-weather and arctic variants with optimised cold-flow properties. Strict quality control ensures high batch-to-batch consistency and full traceability, enabling reproducible test results and predictable system behaviour.

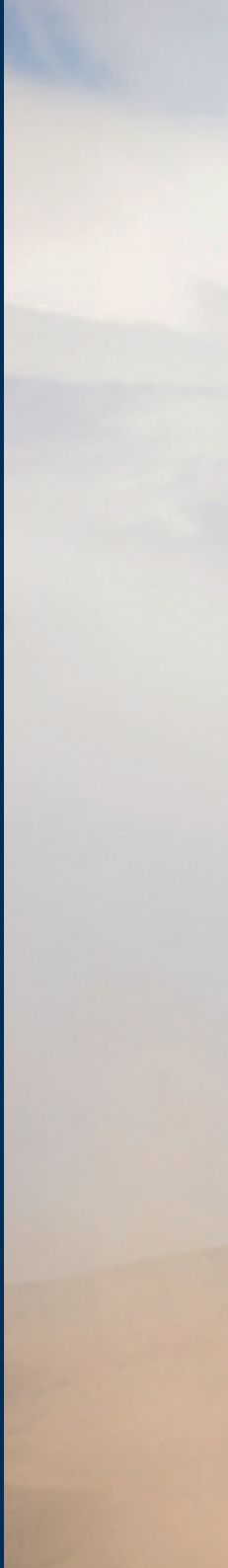
Haltermann Carless fuels support operational readiness by delivering predictable system performance across climates, enabling reliable operation under demanding conditions, and ensuring assured supply – even in small volumes to mission-critical locations.

Product Portfolio

- Avtag with FSII – DEF STAN 91-88 / NATO F-40 / US MIL JP-4
- Avtur – DEF STAN 91-91 / NATO F-35
- Avtur with FSII – DEF STAN 91-87 / NATO F-34 / US MIL JP-8
- Avcat with FSII – DEF STAN 91-86 / NATO F-44 / US MIL JP-5

Why aviation & ground system manufacturers choose Haltermann Carless

- Flexible small-batch and small-volume supply support development programs and mission-critical deployments
- High batch-to-batch consistency supports reproducible testing, qualification and operational performance
- Optimised cold-flow and extreme-weather variants ensure reliable operation in harsh and arctic conditions
- Test & reference fuel expertise for ground testing, validation and homologation



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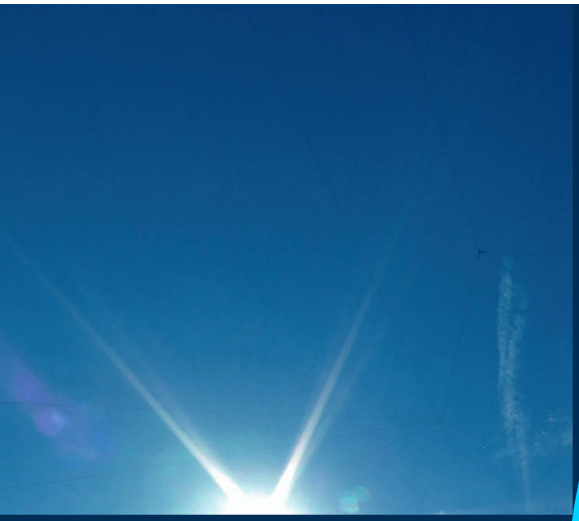

More about our specialty fuels:

www.haltermann-carless.com/defense
www.haltermann-carless.com/blog

Haltermann Carless – Pioneers in hydrocarbons since 1859

Haltermann Carless is a leading international supplier of high-value hydrocarbon solutions in Mobility, Life Science, Industrial and Energy.

We develop tailor-made products using advanced technologies, exploring new feedstock sources, and collaborating with business partners, research institutes, and universities. The portfolio includes Performance Fuels, Solvents, Pentanes, Middle Distillates as well as Energy Products & Services.

As one of the oldest chemical companies in the world, Haltermann Carless continues its legacy with a global team of 500 employees across seven locations and production sites in Germany, France, the UK, and USA. The commitment to sustainability and responsible business practices is recognised through multiple certifications, including the EcoVadis award, ISCC EU and ISCC PLUS and the prestigious FIA Three-Star Environmental Accreditation.

www.haltermann-carless.com

05.2026