

DEFENCE

Operational Energy



GICAT

The French land defence and security
industry association



Operational Energy



The operational energy, a challenge for the armed forces and for the companies in support.

The GICAT set up in 2021 a committee dedicated to operational energy matters.

POL logistics

Since WW1, supplying the Armed Forces in fuel on the battlefield has been a key element of the logistics maneuver. The POL (petrol, oil, lubricants) logistics chain is at the heart of the operational planning process. Prepositioning storage capacities, pushing forward the fuel alongside the axes of advance of the forces, refuelling permanently military forces in order to secure their mobility, is a top priority for the commanders.

The French military department in charge has been the S.E.A. (service des essences des Armées), a joint organization, manned by specialists and handling a network of oil depots and a fleet of dedicated trucks and other assets in the national territory and overseas.

Since the 1980s, a professional organization, GILEP, has federated the French companies providing trucks, tanks and various POL material, products and services to SEA.

From POL to operational energy

The energy requirements can no more, nowadays, be fulfilled by fossil fuels, in defence matters as well as in civilian use. The age of energetic transition has come : the new sources of energy, bio-fuels, LNG, electricity, solar energy, to-morrow hydrogen based solutions, are on the scope of all the decision makers. Even if the operational readiness is always based, and will remain for long time, on the availability of kerosene and diesel fuels (which represent

75% of the MOD consumption), the French MOD defined in 2020 a global energetic strategy, which has been declined in 2022 in an operational energy policy¹. Facing the need of always more energy for the new connected military equipments (vehicles - *more and more equipped with hybrid engines* -, tanks, aircraft, soldier equipment, communication assets, camps, ...), the challenge is to insure resiliency and autonomy to our combat forces, while striving to reduce the energy footprint.

According to this major change of policy, SEA became in 2021 SEO (Operational Energy Department), tackling the new energetic challenges and reporting to a new Operational Energy Division in the Joint Staff.

Likewise, the 18 companies of the GILEP moved together soon after to the GICAT, to meet others companies involved in non-petrol energetic requirements (power plants, batteries, generators, ...). Now they are 24 in the Operational Energy Committee, working together, and with SEO and Joint Staff, to shape the future of the logistics chain of operational energy.



Séverine LE ROUX D'ORVEN
MAISONNEUVE CITERNE
Chairwoman of the
Operational Energy
Committee

¹ "consume safe, consume less, consume better".



TRUCK

GILEP companies can supply all kinds of vehicles for armed forces logistics for fuel, water and chemical products transportation. Specialized trucks for carrying and delivering oil and related products are the bulk of Defence POL logistics. Trucks are often designed to be employed in the tactical area in operations: robustness, autonomy, manoeuvrability in rough terrain are key factors of success.



TANKS

Relying on adequate mobile storage capacities is a key factor in POL maneuver, in operations as well as in the permanent posture of armed forces. Mobile refuellers of various capacities able to operate in hostile areas (rigid or semi-trailers units), containerized storage capacities air-lifted on operations theaters, aircraft refuellers and refuelling carts, hydrant dispersers are on the top of the dedicated GILEP companies catalogs.



STORAGE & HOSES

Defence POL logistics is mainly based on operating and maintaining ground tanks of various capacities: easily transportable (rubber bladders), more fixed (larger bolted tanks easy to assembly) or permanent (high capacity tanks, mainly on national territory) to deliver fuel and other oil products to the Armed Forces (vehicles, assault tanks, aircraft, ships). As a necessary complement to these capacities, a various set of hoses are needed as well in the permanent fuel depots as in the forward tactical deployments in land operations and on the logistics Navy ships.



EQUIPMENT & DISTRIBUTION

In Defence POL logistics, complex installations for storage and distribution, as well as trucks and trailers, need to be equipped with efficient, robust and reliable components, such as refuelling skids, filtration units, metering and loading solutions, fuel management systems, turbines, pumps, connectors, dry break couplings, filling nozzles,... Security of operators, protection of environment, accuracy of measurements and speed of implementation are taken in account by the GILEP companies supplying these key equipments.



SECURITY & SUSTAINABILITY

High protection of equipments and of the men operating them, ability to last in rough climatic and terrain conditions are strong requirements in the Defence POL logistics, especially on operations theaters. Firefighting equipments, protected or armoured vehicles, hardened equipments (fuel tanks, tires, wheels,..) are needed at any time. Additionally, a global logistic support for the military camps on operations theaters is supplied as well as water treatment systems and rapid deployment systems of tents to protect equipments and personal. The GILEP members dedicated to security and sustainability meet these requirements.



PRODUCTS / PROTECTION SERVICES & TRANSPORTATION

Defence POL logistics need high quality products: fuel itself, key factor of mobility for vehicles, assault tanks, aircraft and ships; lubricants and greases for various engines and equipments; industrial paintings and coatings for external protection of vehicles and other key Defence assets. Transportation of the POL equipments and vehicles to and from the operations theaters is also a critical point. All these challenges are met by the dedicated GILEP companies.



POWER PLANTS BATTERIES GENERATORS

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EQUIPMENT & DISTRIBUTION



ALMA

METERING & TRANSFER SOLUTIONS

Metering system dedicated to the loading/unloading of hydrocarbons

AIR-TRONIQUE

The Air-Tronique is a dedicated turbine measuring unit for metered distribution to aircraft refuellers. It allows the metered, with free-mode or pre-determined distribution of aviation fuels.

The Air-Tronique is MID compliant and its compact size allows easy installation on tanker distribution lines.

Its Microcompt+ calculator allows autonomous control of the various steps of distribution, ensuring successful transfers, and its ADRIANE turbine ensures high reliability, making this product a durable and high-performance solution.

You can also find our Mobicompt and terminal Microcompt+ solutions for fuel deliveries in oil terminals.

LOADING SKID

- Custody transfer turbine metering system for top or bottom loading of tank trucks
- Injection system for additives, dyes and biofuel blending

ALMA SERVICES

ALMA offers also an after-sales service with more than 60 technicians specialized in the maintenance and calibration of equipment for the metering field.

Thanks to its team, its 7 regional agencies and 2 subsidiaries, ALMA SERVICES covers the entire French territory as well as Guadeloupe, Martinique, French Guiana, Reunion and Mayotte.

OUR FIELDS OF INTERVENTION:

- Metering systems for tank trucks
- Metering systems for terminals
- Maintenance of tank trucks, terminals & private stations

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ALMA
ALMA GROUP
SECURE YOUR FLUID TRANSFER





SECURITY & SUSTAINABILITY

CaRaPACE



S3X Opex



ARMORIC HOLDING GROUP

ESSONNE SÉCURITÉ & SIDES COMPANIES OF THE ARMORIC HOLDING GROUP

ESSONNE SÉCURITÉ

ESSONNE SÉCURITÉ develops and produces ballistic solutions adapted to the needs of the Armed Forces. ESSONNE SÉCURITÉ offers protections on cabins or vehicles up to STANAG 3 level.

ESSONNE SÉCURITÉ works with major contractors through various projects that focus on:

- Design and integration of ballistic solutions on vehicles (foreign customers)
- Armoring adaptation for the SEO
- Maintenance in operational condition of the fleet

SIDES

SIDES is specializes in the design and manufacture of fire fighting vehicles, with the control of its own components (pump, dosing, control and projection) for Airports, Industries and Civil Security and the Service.

SIDES is strongly present on most of the air bases, naval air; and military camps but also in the Maintenance in Operational Condition of the entire Armed Forces Park. 440 multi-brand equipment (Army, Navy, Air and SEO) supported in mainland France in global MCO (on more than 60 sites).

OPEX equipment with technical assistance and spare parts supply.

Obsolescence tracking and vehicle reconditioning (over 20 years old).

French territory as well as Guadeloupe, Martinique, French Guiana, Reunion and Mayotte.

OUR FIELDS OF INTERVENTION:

- Metering systems for tank trucks
- Terminals

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TRUCKS



PRODUCTS /
PROTECTION
SERVICES &
TRANSPORTATION



ARQUUS

A CENTURY OF LOGISTICS

Arquus has been a major supplier of logistics solutions for the French Army since 1898 and its first military vehicle is a Panhard car designed for transport and liaison. Supplier of the Renault "Taxis de la Marne" and the Berliet "Trucks of the Voie Sacrée", vital to the defense of Verdun during the First World War, Arquus has written history alongside the Army.

Arquus has currently more than 10,000 logistics trucks in service, from the legendary VLRA to the GBC180, TRM2000, TRM10000, which have been the workhorses of the armies for decades, and which still take charge of a large part of the French Army logistics. Supporting the armies, Arquus still supports and modernizes these fleets. This know-how is also acknowledged abroad, as Arquus recently provided 1,700 trucks to the Canadian Forces.

A COMPLETE, NEW LOGISTICS RANGE

This new complete range is available for all kinds of missions for the armies, from logistics and strategic transport to tank, troops, or systems transport, as well as breakdown truck missions. Depending on these missions, Arquus can offer different versions, including different levels of protection. Armis range is also designed to accommodate ring-mounted weapon, or remote-controlled weapon system as the Hornet, weapon of choice for self-defense, and weapon of the French Scorpion program.

This new Armis range benefits from Volvo Group's civil innovation, adapted for military trucks by Arquus. This provides decisive advantage in operational context.

All Arquus vehicles are manufactured in France and specifically designed for military applications, with the company's historical know-how. To get closer to the armies, Arquus also benefits from a dense global logistics network, best in class in France and overseas. This network extends worldwide, thanks to local Arquus services centers or partners.

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**PRODUCTS /
PROTECTION
SERVICES &
TRANSPORTATION**



**POWER PLANTS
BATTERIES
GENERATORS**



BREN-TRONICS

POWER & ENERGY SOLUTIONS DESIGNER & MANUFACTURER

DESIGN, ENERGY STORAGE, SMART CHARGE

BREN-TRONICS focuses on bringing armed forces around the world the latest and most efficient expeditionary power solutions for uninterrupted autonomy in the field since 1973.

Bren-Tronics' expertise remains focused where no one can compromise safety, reliability and performance. We offer the next generation of Li-Ion batteries as an advanced energy solution for use in multiple applications including tactical radiocommunication, optronic, electronic warfare, weapon system, robots and more.

When it comes to helping military vehicle manufacturers and customers, Bren-Tronics answers three basic needs with the Li-Ion 6T format battery: Energy, weight and space. With this solution, they can drastically optimize their autonomy during silent watch missions.

POWER SOLUTIONS FOR VEHICLES

An intelligent battery - a real system

Building a safe and capacitive battery requires a real expertise. Our 6T Lithium-ion incorporates

multi superior electronic protections and safety features as well as a CAN BUS data access to monitor all battery parameters at all times.

A solution for today's requirements with a reduced cost of ownership

Bren-Tronics' 6T batteries dramatically changes the operational capabilities of armored vehicles and the way in which military organizations manage the inventories of their vehicle batteries.

The battery cycle life is extended from hundreds of charging cycles to thousands of cycles compared to lead acid and the maintenance is reduced to only one complete charge every two years while in storage conditions.

Operational advantages

Bren-Tronics's 6T batteries offer the best trade-off between power and energy density. While the battery is able to sustain the vehicle pulse cranking requirement to start the engine, the battery can also be charged in less than one hour and provide enough energy to multiple loads. Several batteries can run in parallel for extended silent watch missions.

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PRODUCTS /
PROTECTION
SERVICES &
TRANSPORTATION



DAHER

TRANSPORT SOLUTIONS

A dedicated offer for aerospace and defense sectors

TRANSPORT

The Group offers transport solutions for exceptional and specialized loads, as well as associated services (reconnaissance of itineraries, customs engineering, chartering of aircraft, AOG).

A long-standing partner to the Defense sector, Daher is specialized in the transportation of sensitive equipment to and from theatres of operations for the Armed Forces.

MULTIMODAL TRANSPORT

- Aircraft chartering know-how: urgent flights (AOG), perishable foodstuff flights, specific equipment, oversized goods, dangerous products, hostile lands
- Vessel chartering solutions: voyage or time charter, full or part-charter, direct route without transshipment, regular liner operations

DEDICATED & PROVEN EXPERTISE

- Downed aircraft repatriation • Helicopter transport
- Engine packaging and transport
- Implementation of specific means (handling, lifting equipment) • Exceptional transport operations
- Service Desk / Engineering

EXPLOSIVE PRODUCT TRANSPORT

- Specialized multimodal transport solutions for munitions and explosives requirements
- Military or civilian
- In complete compliance with international transport regulations

CUSTOMS

- Authorised Economic Operator status guaranteeing state level recognition, simplifying customs clearance operations, and offering security and safety
- Central structure performing internal surveillance audit, regulatory monitoring, AOG committee function, advanced declarations, management and set-up of customs procedures (single and domiciled customs clearance procedure)
- Local structure with strong business expertise, handling relationships with customs offices, and with a good knowledge of customer processes

COMMITMENTS

- Security • Confidentiality • Reliability
- Back-up solutions

 www.daher.com

 **DAHER**





SECURITY & SUSTAINABILITY



PRODUCTS / PROTECTION SERVICES & TRANSPORTATION



DESAUTEL

FIRE PROTECTION

The Desautel group has been, since 1932, a major player in the industry dedicated to hazard. With more than 1,800 employees, the group generates nearly 290 million euros in turnover. It manufactures more than 500,000 fire extinguishers, more than 300 fire-fighting vehicles exports to around thirty countries. Drawing on its many years of experience, the DESAUTEL group deals with fire issues as a whole (military, tertiary, industrial, airport, chemical sectors, etc...).

Its local establishments in France (27 DESAUTEL agencies) and abroad allow it to provide a very good support to partners and customers in the study of needs and the responses provided. This meshed network also makes it possible to carry out preventive and corrective maintenance of equipment, systems and vehicles.

Alongside the departmental fire and rescue services, army rescue services, industrial rescue services, the DESAUTEL group is evolving and expanding its skills.

The group is also a historical supplier of the armies in the field of oil refueling. Established in the Lyon region, the group has manufacturing sites located in France.

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**POWER PLANTS
BATTERIES
GENERATORS**



HENSOLDT FRANCE

HENSOLDT ENERGY SOLUTIONS

For the past ten years, HENSOLDT has been actively participating in the energy transition by becoming part of the hydrogen ecosystem in France and by carrying out deployment actions on the international scale.

The innovative solutions developed by HENSOLDT for the production of on-board energy, for the autonomy of isolated sites and for the decarbonization of the energy supply of buildings provide significant performance gains leading to proven operational advantages in both Defense and Civilian fields.

MICROGRID SOLUTIONS

- Small power storage stations connected to the grid for the decarbonization of eco-districts or buildings
- Zero-emission port energy barge providing any ship in port with electrical energy (cold ironing in port).

OFF GRID SOLUTIONS

- Small to medium power energy generation and storage station for isolated civilian or military sites, islands, radar or telecom infrastructures.
- Medium to high power energy generation and storage station with associated logistics for camps in operation with the need for discretion

MOBILE SOLUTIONS

- Multimodal HDS Container 20ft High-Cube for hydrogen logistics: transport and distribution of hydrogen for applications such as vehicle dispensers or power generation on board ships.
- On-board hydrogen storage solutions for constrained environments: aeronautics, defense (drones, soldiers...)

GREEN LONG-LASTING SOLUTIONS

- No carbon emissions nor noise pollution unlike generators
- Total autonomy: production, storage and consumption on a single site. No fuel needed, and thus no transport costs
- Energy can be stored for several months
- Return on investment: sustainable and competitive solutions compared to batteries (for storage above 1 MWh only)
- Longer service life compared to batteries alone or generators
- Robust and reliable: continuity of services, solution adapted to integration in harsh conditions
- Adaptation to surface constraints: limited space, poor accessibility (air access)
- Reduced maintenance, remote expertise available

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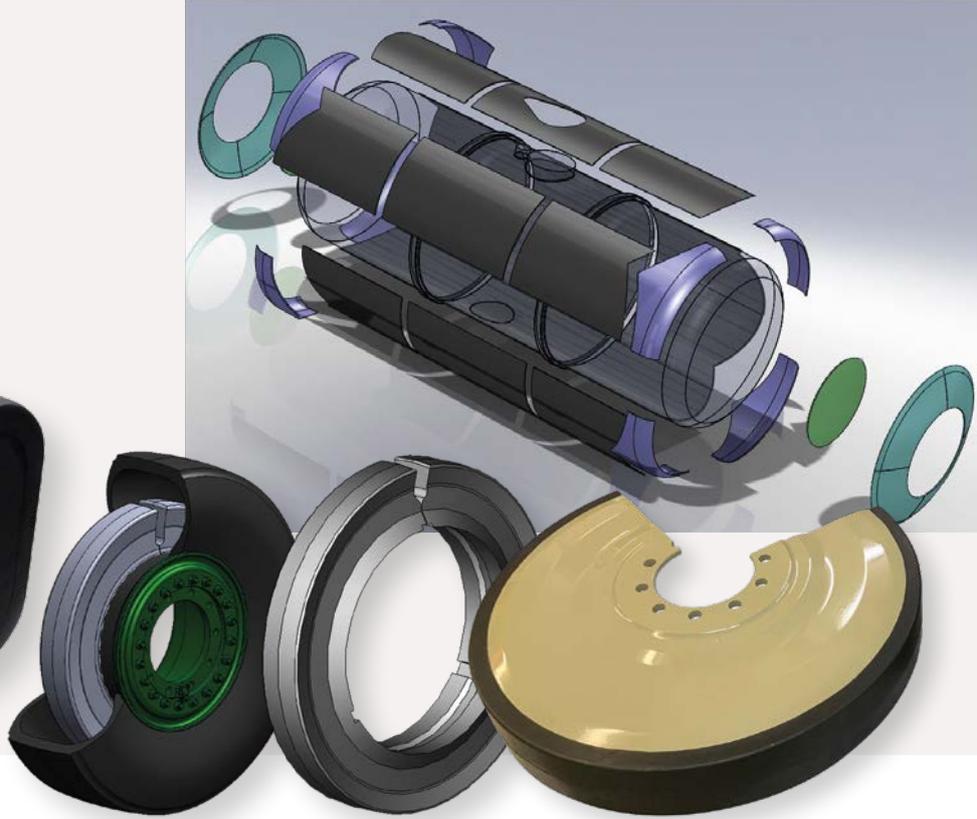
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HENSOLDT





SECURITY & SUSTAINABILITY



HUTCHINSON

DEFENSE & MOBILITY DIVISION

Hutchinson is a global leader in vibration control, fluid management and sealing technologies. With 38,000 employees in 25 countries, we generated revenues of €3.879 billion in 2021. Our main goal is guaranteeing the comfort and safety of all Hutchinson customers.

Our Group stands out by offering a wide range of expertises in a variety of markets. In other words, our teams can design customized materials and integrated solutions for each customer and our achievements in one market can be transferred to others through Hutchinson synergies. Cross-fertilization is the cornerstone of our excellence.

Hutchinson Defense & Mobility Systems is a division of Hutchinson Group and is the leading manufacturer of engineered mobility components for vehicles within the defense, security and commercial industries. Our product offerings include rubber and composite runflats for all size vehicles and performance specifications, internal dual-sided beadlocks, light-weight aluminum two-piece and one-piece wheels with integrated CTIS valves, tracked vehicle road wheels, advanced design steel track, segmented composite rubber track, Tire Saver Shield™ to prevent sidewall punctures, and Safetank light-weight self-sealing fuel tanks.

Innovative design and development concepts allow Hutchinson to meet the demands of tomorrow's lighter more survivable vehicles.

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SECURITY & SUSTAINABILITY



LOSBERGER DE BOER BACHMANN RDS

RAPID DEPLOYMENT SYSTEMS DIVISION

Our Rapid Deployment Systems (RDS) division specializes in the design and installation of **rapidly deployable modular tents and large-span structures** for the protection of military forces and their tactical equipment in war zones and military bases.

With a wide range of features designed to **facilitate maintenance operations and improve storage conditions on the field**, our membrane covered hangars and mobile shelters are conceived to be rapidly installed, dismantled and relocated, to allow for fast deployments and demobilisations wherever you are.

Commonly used by the French Army, our tents and structures are designed to provide durable and effective protection for both short- and long-term uses, and to cover a vast array of applications, such as **mobile command posts, aircraft maintenance and storage hangars, field camp systems, CBRN COLPRO and decontamination, camouflage and missile protection, field hospitals, etc...**

With over 70 years of experience, our expertise relies on **bespoke designs and high manufacturing standards**, a professional and experienced workforce, and the use of the highest quality materials. our long experience in dealing with Armed Forces has allowed us to approach challenges differently, and to become a solution-oriented company. We offer **fully integrated solutions**, from initial design through to manufacture, delivery to site, installation and long-term maintenance.

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BACHMANN RDS





TANKS

PRODUCTS /
PROTECTION
SERVICES &
TRANSPORTATION



MAGYAR

MILITARY TANKERS

Founded in 1945, G. MAGYAR designs and manufactures in **France** more than 1 400 tanks per year for customers in **45** countries. As a European Leader, our company uses the latest technology to ensure high quality and reliability.

We market tanks for the transportation of all liquid products (edible, chemical or petroleum) by road (rigid tankers, drawbars tankers or tank semi trailer) or intermodal (swap tanks or tank containers) and by rail (tank wagons).

Defence is a strong focus for MAGYAR. In the last 20 years, we have delivered more than 800 tanks to various European and NATO armies.

Our range of products for defence includes :

- Tactical aircraft refueller
- Refueller
- Transport tank
- Water storage, treatment and distribution tank
- Tank for liquid radioactive waste

Tanks are built in full respect of regulations (ADR, health and safety ...).

Those tanks can be air, sea, rail transportable, have off-road capacities, measuring units, water treatment system, extreme working temperatures (-32°C +49 °C)...

Our after sales department and European repair network of skilled professionals are at your service to maintain your tankers all through their life.



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Constructeur





TANKS



PRODUCTS /
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MAISONNEUVE CITERNE

REFUELLERS & WATER TREATMENT SYSTEMS

Maisonneuve Citerne, a Benalu Group company, is one of the leader in design and manufacturing of equipments for fuel and water logistic support.

Located in normandy, with a total of 60 000 m² workshop area, Maisonneuve Citerne is able to supply according to special needs requested by military forces.

REFUELLERS

- Semi trailer with high mobility, off road designed, to operate in France and all over the world for most hostile operations.
- Rigids for airport refuelling
- Method of projection: Air, Sea and Rail
- Standalone refuelling unit with high compatibility: Gasoline, Diesel, Jet A, Jet A-1, AVGAS 100LL, F54, F63, F67, F18, F34, F35, F44, JP5, JP8.
- From 5 000L (rigids) up to 22 000L (semi-trailer) of capacity

WATER TREATMENT SYSTEMS

- Containerized or trailer-mounted, our Water Treatment Units are specially designed for 100 to 5000 men military camps under all climatic conditions.
- **Sanitary Treatments Units, TEI** are able to treat all sewage, black, grey and galley waters. Treated water is according to discharge standards for irrigation purposes or reuse.
- **Water Purification Units, WPURO** produce potable water as per WHO standards from any available surface water and well including any sub surface water source and sea water.

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MAISONNEUVE





**PRODUCTS /
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MANKIEWICZ FRANCE

DEFENSE COATINGS

Trusted & customized product solutions

Customized solutions are an essential part of success – especially in the Military sector. Mankiewicz combines the conformity of standards and approval of the Military sector with the individual needs for your vehicles.

OUR TRADITION: CREATE THE FUTURE

Over a century of taking pleasure in innovation have made us one of the leading manufacturers of high-quality coating systems worldwide for industrial series production in the business sectors of General Industry, Aviation and Automotive.

GROUND FORCE – APPLICATIONS

ALEXIT® Defense Coatings are tailored to fulfil both current and future demands of OEMs and MROs in the military sector and combine these with the potential available to the modern paint industry. Requirements such as chemical resistance to a multitude of fuels, brake and hydraulic fluids, lubricants and cleaning agents as well as ease

of decontamination (CARC) are complied with. ALEXIT® Defense Coatings are available in both waterborne and solvent-based systems. It goes without saying that the performance of these coatings is equivalent to that of conventional coating systems.

YOUR ADVANTAGES

- Customized coating solutions according to a large number of national and international specifications
- Full range of approvals
- Advisory support during development of coating strategy
- Global technical support & dedicated research
- CARC (chemical agent resistant coatings) in accordance with STANAG 4630
- Advanced camouflage technologies (infrared, thermal insulation, low solar heat absorption)
- Wide range of camouflage colours, IR values and gloss levels
- Special products available as non-skid or EMC

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MANKIEWICZ
Peintures Industrielles





TRUCKS



MERCEDES-BENZ TRUCKS France

TRUCKS YOU CAN TRUST

Mercedes-Benz offers the right trucks for your missions.

In a nutshell:

- Complete range of trucks (articulated and rigid)
- All well prepared for various superstructures
- Several variants in terms of performance, cabin size, wheel base, payload
- Our engines meet your expectations with regard to emission standards and fuel categories

Mercedes-Benz presents several models of vehicles well prepared for various superstructures and various fittings intended for customers of the sector of the security and defense forces as well as authorities and organizations in charge of security missions.

Mercedes-Benz offers a complete range of trucks (articulated and rigid) in several variants (cabin sizes, wheel bases, performances, pay loads etc...) as well as engines that meet the expectations with regard to fuel categories and emission standards in order to suit the intended logistics and tactical tasks.

Some models are also available with the Euro VI emission standard and can therefore be approved in accordance with legal obligations in place at the moment.

Our products:

- **Atego:** 6.5 to 16 tons
- **Arocs:** 18 to 250 tons
- **Actros:** 18 to 250 tons
- **Unimog:** 4x4 10 to 16.5 tons
- **Zetros:** 4x4, 6x4 and 6x6 18 to 27 tons
- **Econic:** 4x2, 6x4, 6x2 and 8x4 18 to 26 tons including electric version
- **Fuso Canter:** 3.5 to 8.5 tons including an EcoHybrid version

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Mercedes-Benz

Trucks you can trust

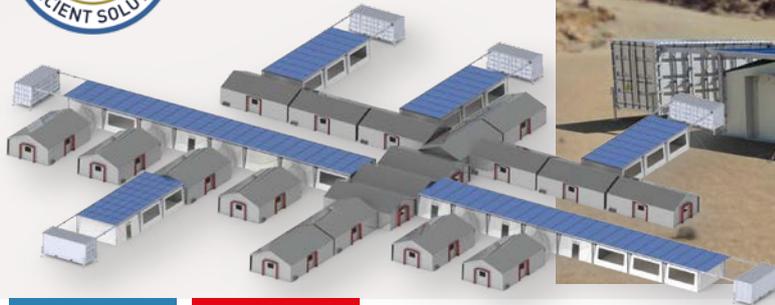




PRODUCTS /
PROTECTION
SERVICES &
TRANSPORTATION



POWER PLANTS
BATTERIES
GENERATORS



MONKILOWATT

MULTIFUNCTIONAL INDEPENDENT ENERGY SHELTER IN KC20

Monkilowatt has developed **Containwatt**, an autonomous shelter for Forward Operating Base in severe service conditions. The shelter can be used in many ways such as command posts, advanced medical posts, or any other human activity.

Up to 75m² the whole system, meaning shelter, battery AND solar panels, fits in a KC20. Shelters can be tents or semi-rigid. As solar panels are deployed above the shelters, no more space is needed. It takes one day for two people to set up the **Containwatt** on an unprepared floor. Every tool needed for the set up can be found in the KC20.

The electric system can be either autonomous (with the possibility of an on-board back-up generator), or part of a network. Several battery technologies like LFP or Sodium are available to fulfil different places of operation. **Containwatt** can provide 7 to 21 kVA, enabling at least power autonomy for the shelter it creates.

Containwatt takes part in the autonomy of area it supplies, reducing fuel consumption for the surrounding generators (when part of a network), improving the resilience for the whole Forward Operating Base power plant, free of CO₂, free of noise (discretion). **Containwatt** is set up within a day, with no tool needed and reduces the logistic footprint thanks to its compactness (75m² shelter and its power inside one KC20 only).

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EQUIPMENT & DISTRIBUTION



MOUVEX

PUMPS ARE AT THE HEART OF THE SYSTEM

Mouvex®, an historical partner of the French military, is particularly proud to offer all its expertise and support.

Mouvex® is a member of GICAT (formerly Gilep) as well as an supplier of the S.E.A. (French Service of the Essences of the Armies).

Mouvex® Pumps are particularly suited for the severe applications of the Army and Navy sector, and are synonymous with absolute dependability and reliability.

We offer different pump technologies depending on the application including: Sliding vane, Eccentric Disc, and Peristaltic. We also have available all necessary accessories including Meters and Hydraulic Coolers to manage hydraulic drives.

Our pumps are compatible with a wide range of products including: Petroleum, Fuels, Biofuels, Fuel Oil, Gasoline, Kerosene, Lubricating Oils, Water & Wastewater, and AFFF (Floating Film Forming Agent).

We are able to support applications such as transfer, receiving, stripping, and delivery (measured or not) using state-of-the-art equipment on board tank trucks, trailers, and also using stationary equipment integrating motor pump units. Sliding vane pumps offer the best-combined characteristics of sustained high-level performance, energy efficiency, trouble-free operation and low maintenance cost.

The sliding vane operating principle imparts a very low rate of shear to the material being handled and provides a smooth, almost pulsation-less flow.

When repairs are required, maintenance is a simple, requiring few tools and minimal training to ensure proper performance.

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**STORAGE
& HOSES**



**EQUIPMENT &
DISTRIBUTION**



**SECURITY &
SUSTAINABILITY**



MUSTHANE

DELIVERING, SAVING AND PROTECTING ENERGIES IN FORWARD AREA OPERATIONS

MUSTHANE has a significant and successful experience in breakthrough innovations for delivering, saving and protecting the necessary Energy for the military equipment in Forward Area Operations Bases.

Our engineering department skills are based on 2 core expertises:

- Design and manufacturing of composite and elastomer made products
- Design and manufacturing of fluids' transfer and management equipment

Our brand *Muststore*® addresses most of the critical issues faced in forward area operations:

- **Safe storage and transportation of fuels or hydrocarbons:** our storage or transport flexible tanks are made to highly reduce the pollution of the fuels (bacteria, water, sediments). Their outstanding low logistic footprint is a very smart way to optimize space. The flexible tanks can be transported full on a trailer, in an airplane or by helicopter thanks to slings.

- **Distribution equipment** such as: aviation fuel filtration and transport equipment, refueling pumps...The equipment can be delivered on a chassis or be mounted on any mobile platform.
- **Self-sealing protection** polymer film to be placed on tanks or reservoirs to increase the vehicles and fuel farms resilience in combat configurations. This ballistic protection is efficient for projectiles up to 14.5 mm.

Our engineering team will configurate or design the appropriate solution in case our standard range does not meet your expectations.

 Mr REZA ROSIER

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Musthane





TANKS



PRODUCTS /
PROTECTION
SERVICES &
TRANSPORTATION



POWER PLANTS
BATTERIES
GENERATORS



NOVAKAMP

MORE THAN A CAMP

NovaKamp and its affiliated companies operate in the energy and infrastructure sector. We design and integrate smart off-grid energies and critical services for remote sites : from energy production, transformation and distribution, to mobile water treatment and purification units, or waste treatment.

NovaKamp handle logistics, spare parts management and all major maintenance, revamping and retrofit operations. Tailored services adapted to the context of use (dust, altitude, high temperatures, etc...).

We deploy our people and mobile solutions around the world, in the field, as close as possible to the users.

Thus, providing long time and field-proven expertise, NovaKamp brings innovative equipment and competences, to lower fuel costs, improve camp autonomy and support the backbone resilience of your base-camp.

Indeed, we designed a solution where the energy-hungry camp and operations devices, and power generation mix, is built around a backbone providing extended autonomy, maximised autarcy, cost reduction and quality output even in degraded mode.



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PRODUCTS /
PROTECTION
SERVICES &
TRANSPORTATION



NYCO

DEVELOPMENT AND MANUFACTURE OF HIGH-PERFORMANCE LUBRICANTS

More than 60 years field experience in the defence business and pioneer research in the development of turbine oil have made NYCO a key partner for MROs, OEMs, Airlines, Armed Forces and Aero derivative Gas Turbines users around the world. We offer a wide range of lubricants for aircraft, helicopters as well as Air, Land and Marine military equipment; qualified under civil and military international specifications and approved by OEMs such as engine manufacturers and aircraft manufacturers.

- 300 employees around the world
- 80% of turnover in export sales
- Customers in more than 100 countries
- Comprehensive range of 300+ products

Products:

NYCOLUBE® 127 CLP BIO

Synthetic weapon lubricating oil (CLP), containing anti-corrosion and anti-wear additives (operating temperatures from -51°C to +71°C). Excellent water-displacement properties.

NYCO GREASE® GN 145

High performance grease designed to lubricate bearings, pins & sliding parts in military automotive equipment. Fortified with anti-corrosion, antioxidant & anti-wear additives.

HYDRAUNYCOIL® FH 3

Primarily used in tank recoil mechanism and hydraulic systems of ground equipment. It enables safer handling and operation at high temperature.

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NYCO
Solutions ahead





TANKS



STORAGE & HOSES



EQUIPMENT & DISTRIBUTION



SECURITY & SUSTAINABILITY



PRONAL

DEFENSE & FLUIDS LOGISTICS

With their **60 years plus experience working** in collaboration with few armed forces, Pronal has developed a range of solutions that are perfectly designed to meet the challenges of **fuel and water logistics**. Our solutions can be rapidly deployed and implemented on-site. All can be easily transported: mounted on trucks, suspended by helicopter, or towed behind vehicles. These mobile solutions are suitable for transportation by a wide range of methods: by land, sea, or air.

Our solutions in Defense area are:

Bolted fuel tanks (RAM)

RAM is a bolted tank that combines the advantages of conventional steel tanks and those of flexible tanks for the storage of hydrocarbons.

- For fuel tank depots, capacity 135 000 USG (500 m³),
- External part : bolted metal frame,
- Internal part : liner made of nitrile rubber reinforced,
- Transport in two ISO 20' containers,
- Simple assembly & disassembly (in 5/6 days),
- Label "as used by the french armed forces".

The Pumping Filtration Measurement Module (MPFM)

Measuring Pumping Filtration Modules (MPFM) are key elements in downstream fuel logistics for diesel, kerosene, petrol, or avgas. When employed in a secondary or advanced fuel depot, in both civil and military contexts, this single unit can house all the devices that are required for:

- Unloading
- Loading (dome or source),
- Micro-filtering particles (up to 10 microns),

- Separate water from the product,
- Degassing the fuel before it is measured,
- Measuring delivered or received fuel.

Flexible fuel tanks:

Flexible fuel tanks represent the best logistical solution for storing hydrocarbons. Their modest volume when "emptied and folded" is only equal to about 1% of their nominal storage capacity meaning that they can be simply and rapidly transported, no matter where they are to be installed.

The strength of these tanks coupled with the rapidity of their installation (less than 4h for a 300 m³ tank) means that they have become the preferred fuel storage system for organizations working in remote areas.

Others solutions:

- Towable and heli-transportable,
- Helitank flexible heli-transportable tanks,
- Motor pump
- Forward area Refueling solution,
- Water purification systems & Flexible water tanks,
- Aircraft recovery.

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 **PRONAL**
Elastomer Engineering





EQUIPMENT & DISTRIBUTION



RELLUMIX

FILTRATION & SEPARATION OF LIQUIDS

Experience, Mastery and Innovation

Rellumix is a French company recognized in the industry for its expertise and the reliability of its equipment. Our experience is based on our know-how of nearly a century in the field of filtration and separation techniques of liquids. Our mission is to respond to our customers' problematics in highly complex and technical markets and processes. Conscious of the importance of the challenges that filtration represents for these industries, we put our know-how at the service of our customers in order to propose equipment adapted to each application. We control end-to-end our commercial chain, ensuring the design and production of our equipment.

A TAILOR-MADE APPROACH

- Study of your needs • Conceptualization
- Realization of your installations • Start-up
- Maintenance • Spare part replacement

EQUIPMENT ADAPTED TO YOUR SECTOR OF ACTIVITY

- Petrochemical industry • Industry • Defense
- Naval industry • Space industry • Aeronautics
- Nuclear industry • Water treatment

FILTRATION & SEPARATION OF LIQUIDS

- Static filtration • Self-cleaning filtration
- Mechanical filtration by separation
- Filtering elements and accessories

HYDROCARBON DISTRIBUTION SYSTEMS

- Refueling skid for onshore and offshore installation
- Refueling skid for helipad
- Mobile container for hydrocarbon storage and distribution
- Refueling mobile group: GDSA - EFDA
- Aircraft engine test benches: Compressed air start / Fuel supply
- Hydrocarbon distribution accessories: Breather - HIFR: Helicopter inflight refueling Ariane coupler - refueling beaks

IRIS WATER TREATMENT

- Filtration skid for process water
- Capacity: 10m³/h - 20m³/h - 40m³/h (more on study)
- Suspended matter, hydrocarbon, heavy metal, and PH

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EQUIPMENT & DISTRIBUTION



SATAM

THE EXPERT AND SPECIALIST IN HYDROCARBON METERING SOLUTION OPTIMALLY TAILORED TO EACH TYPE OF APPLICATION IN THE OIL AND GAS INDUSTRY !

A COMPLETE RANGE OF METERING SYSTEMS

With over 100 years of experience, SATAM has acquired unique expertise in metrology and develop a comprehensive range of Positive Displacement meters (PD meters) and measuring systems to guarantee the perfect control of measurement of liquid hydrocarbons, liquid gas and liquid chemicals.

ROBUST, QUALITY SAFETY AND PROVEN TECHNOLOGY

The accuracy, safety and long service-life of SATAM equipment allows us to provide optimal metering station performance and maximum profitability in the distribution of petroleum products. SATAM provides also turnkey solution for oil depots including metering systems, flow computer, data acquisition systems, supervision and management systems.

PRESENCE IN THE FORCES

- Aircraft refuellers and hydrant dispensers / Airport fuel fam (refueling and meter calibration),
- Oil tanker vehicles and fuel dispensers for loading,
- Additive injection & blending systems,
- Measuring systems for mobile depots,
- Mobile & Self powered mesasuring systems.

INTERNATIONAL & FULLY TRAINED SALES AND SERVICE NETWORK

SATAM provides technical and commercial support which guarantees optimum availability of your metering equipment and installations through an international network with over 100 distributors and agents in 55 countries.

WORLDWIDE CERTIFIED METERING SYSTEMS

SATAM is ISO 9001 v2015 and EN ISO/IEC 80079-34 certified and provides worldwide certified metering systems (OIML R117, MID 2014/32/EU) and NATO accredited.

TURNKEY SOLUTIONS SPECIALLY DEDICATED TO AIR AND LAND FORCES

SATAM designed and developed specially customized turnkey equipment for Air and Landforces, dedicated flowmeters on military trucks, hydraulic press for tyre mounting / dismantling systems for Airforce, liquid collectors and dispensers for aircraft refuellers and tyre inflation devices for aircraft.

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SATAM
Metering Solutions





PRODUCTS /
PROTECTION
SERVICES &
TRANSPORTATION

POWER PLANTS
BATTERIES
GENERATORS

| Energy Efficiency
Connected cyber-protected
Electrical Panel



SCHNEIDER ELECTRIC

ELECTRICITY 4.0 BY SCHNEIDER ELECTRIC

For Military Forces, we believe a **more electric and digital world** is key to addressing the **carbon/climate challenge**, enabling a **sustainable and resilient fighting** environment. **Electricity is the most efficient energy and the best carbon-independent mobility vector**, and with digital innovation it makes the invisible visible, unleashing huge potential for efficiency and the elimination of energy waste. Only by disrupting the way we manage energy and design infra and FOB grids, and mobility will we be able to deliver an one-step-ahead military **paradigm**.

The centuries-old electricity system is being ushered out, making way for the new. And with its scale, scope, and complexity, the transformation is unlike any in history. This is the convergence of digital and electric. **This is Electricity 4.0: Powering the New Electric World.**

Schneider Electric is accelerating the pace at which we can all address carbon change through **agile digital innovation**. We innovate at our core – The 'internet of Things' starts with great 'things'. We design with digital as default, with a software defined approach that extends and enhances the lifecycle of our offers. Being digital at our core means we enable software and analytics to interpret data, converting it into powerful insights that deliver end-to-end efficiency for any installation from design and build to operate and maintain.

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Life Is On





EQUIPMENT &
DISTRIBUTION



STÄUBLI

ADVANCED CONNECTION SOLUTIONS FOR EVERY INDUSTRY

Stäubli is one of the leading manufacturers of quick release couplings, with over 60 years' experience in providing high-quality connection solutions for all types of energy in all industries.

Our expertise and global presence allow us to participate in all major international projects to provide highly effective and high performance technical solutions for targeted applications.

Stäubli develops quick connection solutions that are ideal for extreme operating conditions at sea, on land and in the air. With broad and profound expertise in the most specific applications, Stäubli offers an unlimited response to its customer's requirements.

We cover very demanding applications such as liquid cooling, air conditioning, oxygen generating, refuelling, breathing air, hydraulics, etc.

Stäubli ensures reliable and quick connection of refuelling hoses and refuelling tools on fuel logistics operations.

As examples the french army's TOE-NG trucks are equipped with our HCB28 product to connect the different types of refuelling nozzles.

Ideal for refuelling applications, HCB28 safety quick couplings guarantee clean, non-spill disconnections. Crafted from high-resistance aluminum alloy, they're lightweight and can be fitted with a hand wheel for easy handling. Thanks to the design and the automatic locking at the end of process the connection is very quick and reliable.

The Carapace trucks are equipped with our symmetrical full flow VSU38 coupling, suitable for motor pumps, distribution systems, fuel supply hoses, collapsible storage tanks, etc.

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STÄUBLI





TANKS



EQUIPMENT & DISTRIBUTION



PRODUCTS / PROTECTION SERVICES & TRANSPORTATION



TITAN DEFENSE

TACTICAL REFUELLING

TITAN DEFENSE is the global **specialist in refueling solutions for military use** in tactical environments. The key benefits of our systems are **high mobility** and **flexible fuelling capabilities**. Our approach is customisation to fit your specific operations requirements as well as international standards.

As a historical supplier to many armed forces all over the world and with 60 years of expertise, we work closely with our customers to develop **specific refuelling solutions** for challenging environments. Our combat proven solutions meet the specific needs of armies.

INNOVATIVE SOLUTIONS FOR REFUELLING

We design, manufacture and support tactical refuellers, hydrant dispensers, containerized solutions, deployable systems and equipment for special operations and FARP. Reliability and quality are the main advantages of our solutions, for reactive, discreet and efficient operations.

We are also developing **innovative hybrid and electric solutions for refuelling**, to ensure the autonomy and discretion in operations.

Finally, TITAN DEFENSE offers ILS solutions with maintenance and refurbishment services as well as expertise in training and technical support.

TITAN DEFENSE is ISO 9001 and ISO 14001 certified.



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**STORAGE
& HOSES**



**EQUIPMENT &
DISTRIBUTION**



TRELLEBORG

EXPERT IN FLUID TRANSFER SOLUTIONS WITH FLEXIBLE HOSES

NAVY

SPECIFIC HOSES for underway replenishment.

Applications

Flexible hoses for fueling at sea.

Advantages

- High resistance product.
- Range of diameters enabling all couplings to be fitted by crimping or with aluminum safety clamps.
- NATO compliance.
- Full range of couplings (type and materials).

GROUND FORCE

VOLUDEC AND TRELLEFLEX HOSES for fuels distribution.

Applications

Flexible hoses on road tankers reels and petrol pump station for fuel metered delivery.

Advantages

- Light weight, flexible and abrasion resistant hose.
- Static electricity dissipated by conductive braid and hose tube.

- Hose assemblies are individually tested and supplied with a hydrostatic proof test certificate in accordance with EN 1360.
- Full range of couplings (type and materials).

AIR FORCE

AEROKLER HOSES type C or F for air base fueling and mobile systems.

Applications

Ground fueling and defueling of aircraft fuels (kerosene, Jet A1, etc.).

Advantages

- Referenced by the major oil companies for civil airports.
- Highly resistant non fuel contaminating tube.
- Hose assemblies are individually tested and supplied with a tests certificate in accordance with ISO 1825.
- Light weight, flexible and abrasion resistant hose.
- Full range of couplings (type and materials).

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**PRODUCTS /
PROTECTION
SERVICES &
TRANSPORTATION**



**POWER PLANTS
BATTERIES
GENERATORS**



ZHENDRE

THE REFUELLING SPECIALIST

Zhendre is the brand of Eiffage Energie Systemes specialized in mobile solutions for extreme conditions for more than 65 years.

French designer and manufacturer, we offer converted containers, portable air conditioners and cold rooms meeting the most complex requirements.

Thanks to our industrial expertise, our products are suitable from -32°C to +60°C.

Our know-how is the result of experience in a wide range of fields: boilermaking, insulation, HVAC engineering, electrical engineering, floor (resin, sheet metal, painting), integration of specific equipment (pumps, fans, sensors, tanks, etc...), piping stainless steel and PVC, paint.

We also have a design office, climatic test chambers and a worldwide network of installers.

The company has adopted an ISO 9001 and 14001 certified environmental and quality management system

Thanks to our global offer, we support you throughout your project: design, installation, testing, training, troubleshooting and repair.

 **MARC RIVIÈRE** | SALES MANAGER

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ZHENDRE



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