

Living in a safe environment



Technology for peace and freedom

We long for peace and security.

Armed forces are deployed worldwide to defend countries, to prevent conflicts, to manage crises or to combat terrorism. They act on behalf of governments and the international community to support humanitarian missions. Soldiers protect people and facilities, ward off attacks, and have to prevail in combat in global hot spots. Their missions are dangerous, their training and equipment are crucial for their survival and the success of their mission.

Berlin's Brandenburg Gate is a symbol of German Unity. The will and capability to defend freedom helped bring about a peaceful end to the East-West conflict in 1989.



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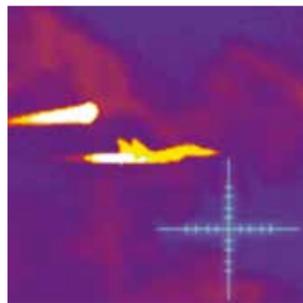


Technology for mission success

For our engineers, technicians and specialist staff in the development laboratories and production centers, it is a daily challenge to consistently tailor products and services to the mission requirements of modern armed forces.

We go to the limits of what is feasible by applying cutting-edge technologies. We are good listeners. Experience reports from the troops help us to continuously improve our performance. Our mission: providing the necessary equipment within the given

constraints of cost and time. We face up to this responsibility for the benefit of successful force operations and a life in safety.



Diehl Defence profile



Diehl Defence combines the Diehl Group's activities in defence and security. For decades, Diehl companies have established themselves as important partners of the German and international armed forces.

Diehl Defence is among the global technology leaders regarding the development and production of advanced guided missiles and ammunition for armies, air forces and navies as well as system solutions for ground-based air defence. Its product range includes innovative solutions for reconnaissance, surveillance, training and protection.

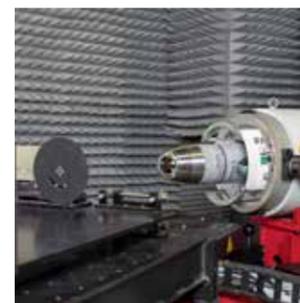
The participation in the development and production of high-performance infrared modules, fuzes and fuzing systems as well as special batteries guarantees the necessary independence in the field of key components.

Long-term strategic cooperations with multinational partners strengthen our system and equipment expertise and provide access to global markets.

Our continuous commitment to research and development as well as the high degree of reliability and loyalty towards our customers together with our qualified, motivated employees provide the basis for the company's long-standing success.

As a holding company, Diehl Defence coordinates the activities of numerous subsidiaries, program and affiliated companies:

AIM Infrarot-Module GmbH
 JUNGHANS Microtec GmbH
 JUNGHANS T2M S.A.S.
 Diehl Retrofit Missile Systeme GmbH
 Diehl & Eagle Picher GmbH
 DynITEC GmbH
 EuroSpike GmbH
 PARSYS GmbH
 RAM-System GmbH



Final acceptance test of an IRIS-T guidance section on a 3-axis rate table.



Missile seeker head production in a cleanroom



Precision milling machine

Copyright: Leonardo



Air missions

Fighter pilots fly their missions to monitor the airspace and international borders, to provide support for land and naval operations in global missions – round the clock. In case of an alert, every minute counts, every move has to be exactly right. Pilots must be able to fully rely on their onboard weapon systems – in air combat, in the precise engagement of ground targets, and, last but not least, for their own protection.

Owing to its broad product portfolio of highly advanced guided missiles, Diehl Defence makes a vital contribution to the protection and effectiveness of national and allied

armed forces. Our highly efficient precision weapons can be integrated into a variety of carrier platforms for air, ground or naval missions.

Guided Missile IRIS-T

IRIS-T (Infrared Imaging System-Tail/Thrust Vector Controlled) is worldwide among the most advanced short-range, air-to-air guided missiles. IRIS-T was developed within a European cooperation program under the industrial leadership of Diehl Defence. The missile has been selected as standard weapon system for the Eurofighter/Typhoon, F-16, F-18, Tornado and Gripen aircraft.

IRIS-T has a high-resolution, infrared seeker with a wide field of view enabling air combat at short and very short ranges but also interception at greater distances. The target can be designated by the airborne radar or via the pilot's helmet sight.

State-of-the-art real-time image processing enables precise control with optimum hit accuracy as well as excellent ECM resistance also covering modern blinding lasers.

Simultaneously, thrust vector control provides unrivalled maneuverability allowing engagement of targets behind the aircraft. IRIS-T's exceptional precision in combination with a radar proximity fuze also permits interception of enemy missiles.



Sidewinder – procured worldwide as aircraft weaponry for air-to-air missions. Maintenance and modernization of the AIM-9L product line are provided by Diehl Retrofit Missile Systeme.



Laser-guided Sidewinder – air-to-ground guided missile with semi-active laser for engaging land targets for various carrier platforms.



PARS 3 LR is the primary armament for the German Tiger helicopter. It is supplied by PARSYS GmbH, a joint venture of Diehl and MBDA Deutschland.



The 70 mm GILA guided missile is offered for the Tiger helicopter to provide fire support for ground troops.



SPICE – air-to-ground glide missile for engagement of land and sea targets.

**Ground-based
air defence**



Population centers, facilities and objects, such as military camps of international forces in war and crisis areas, are exposed to a variety of threats from the air. Ground-based air defence units contribute to securing the airspace and protecting civilians as well as deployed troops.

IRIS-T SLM – modern air defence missile system

Based on the new IRIS-T SL (surface-launched) guided missile, Diehl Defence offers armed forces an all-weather capable air defence system as a modern, cost-effective solution. The highly mobile, all-terrain, medium-range system provides comprehensive 360° protection against aircraft, helicopters, cruise missiles and ballistic short-range missiles. It enables simultaneous engagement of multiple targets from very short to medium range with extremely short reaction times.

Various multi-function radar systems as well as electro-optical sensors can be integrated into the air defence system. IRIS-T SLM is suited for both mobile and stationary deployment. Its high degree of automation makes it ideal for permanent operation with minimum staff requirements. Diehl Defence has developed and qualified the new IRIS-T SL air-to-surface guided missile under contract to the German armed forces for their tactical air defence. It is designed for easy integration into various existing and future air defence systems through connection to command and fire control systems via standardized, software-based interfaces.

IRIS-T SLS – Using air-to-air missiles for ground-based air defence

This is an interesting option above all for all those armed forces already using the IRIS-T air-to-air missile. Together with an appropriate IRIS-T SLS launcher, this standard weapon for modern fighter aircraft can be integrated without any change into a ground-based air defence system. IRIS-T engages the same targets as IRIS-T SL, however, has a shorter range.



Launch of IRIS-T SL (surface launched) missile.



Launcher for IRIS-T SLS on Hägglunds BV410.



Guided missiles for ground-based air defence (from left): IRIS-T (short-range), IRIS-T SL (medium-range).



Ground Master 200 Multi-mission tactical radar, Thales.



GIRAFFE 4A Multifunction Radar, Saab.



TRML Multi-Function Surveillance Radar, Hensoldt.

Missiles for land and naval forces



Due to their outstanding precision, advanced guided missiles ensure the effective engagement of land and sea targets over long distances. As multi-functional weapons, missiles also offer advantages in so-called Military Operations in Urban Terrain (MOUT).

RBS15 Mk3 – Long-range engagement of sea and land targets

Diehl Defence supplies the RBS15 Mk3 heavy anti-ship missile as the main weapon for the German Navy's new K130 corvette. A special feature of the ultra-modern German-Swedish missile is its additional capability to precisely engage land targets.

The long-range, all-weather capable, fire-and-forget missile is remarkable for its high maneuverability enabling it to fly extremely low above the water surface or around and over islands at distances of far more than 200 km.

It is extremely resistant to electronic countermeasures and characterized by high robustness against air defence sites employing guided and tube weapons. The Mk3 version jointly developed by Diehl and Saab is based on the predecessor RBS15 Mk2 which has proved its worth in the Swedish and other countries' navies.

The two industrial partners are now developing a new generation of the missile family, including an airborne variant for fighter aircraft in addition to the ship-based version.



IDAS (Interactive Defence and Attack System) is a submarine-launched guided missile system jointly developed by thyssenkrupp Marine Systems and Diehl.

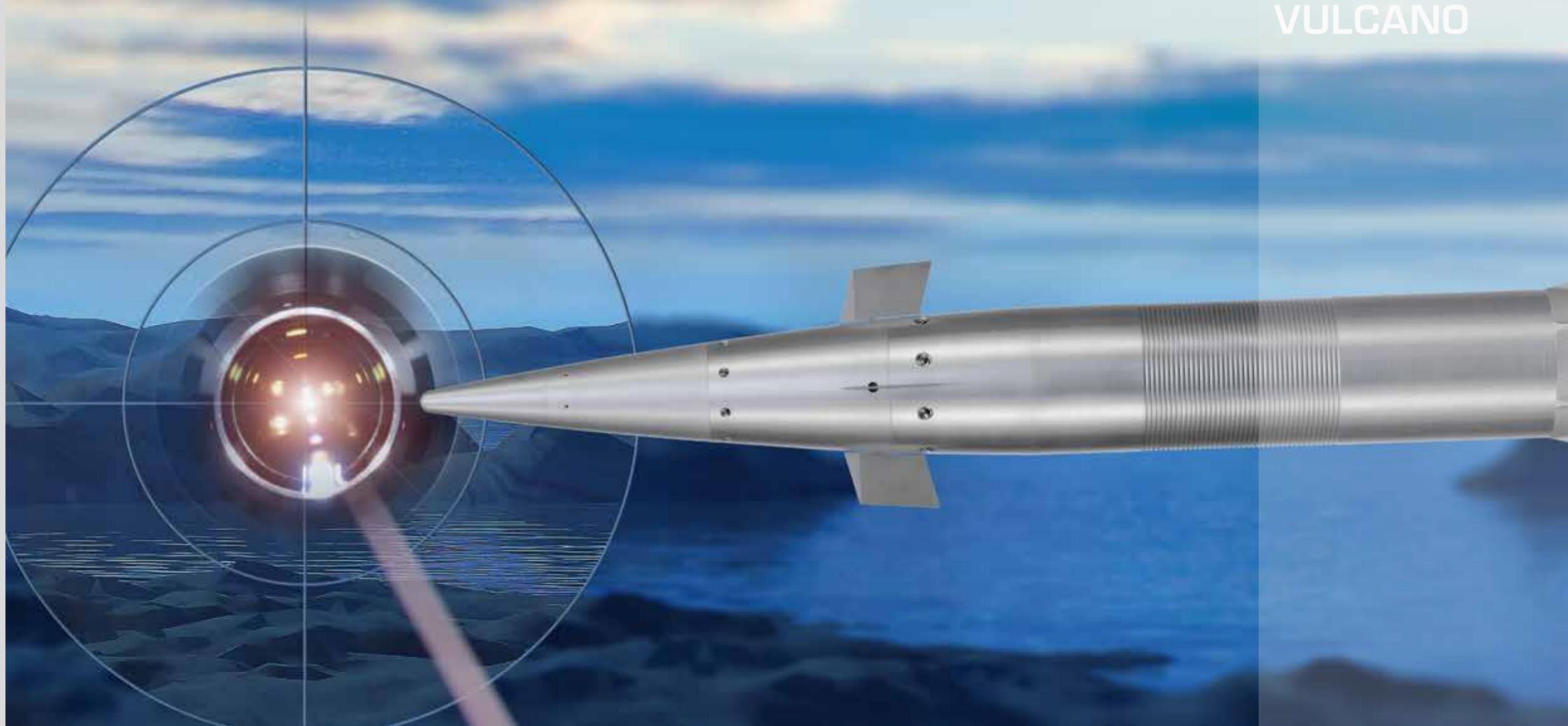


The RAM Block 2 guided missile features an upgraded radar seeker head and highly improved agility.



The SPIKE guided missile has been selected for arming the PUMA armored infantry combat vehicle and other carriers. It is supplied by Euro-Spike GmbH, a joint venture of Diehl, Rheinmetall and Rafael.

**Ammunition -
Effectiveness in combat**



International force contingents operate in global hot spots. They must be in a position to prevail in highly intensive combat. Innovative ammunition solutions enable the engagement of high-value single targets at long distances while largely avoiding collateral damage.

The new VULCANO guided ammunition family – 155 mm caliber for the army and 127 mm for the navy – is one of the world's precisest artillery munitions. The combination of GPS navigation with laser and infrared sensors for terminal

approach enables engagement of even small stationary and mobile ground and sea targets with direct hits up to distances of 100 km.

VULCANO 155 mm – Guided artillery ammunition

The 155 mm guided artillery ammunition can be fired from the Self-Propelled Howitzer 2000 (PzH2000), the FH-70 and M-777-A2 field howitzers, as well as the CAESAR and M109 self-propelled howitzers. The guided ammunition has been designed as a dual-mode system: at long distances, it

demonstrates precision using both GPS navigation and a semi-active laser (SAL) sensor for terminal approach. While purely GPS-guided ammunition merely flies to pre-programmed target coordinates and cannot compensate for target location errors, SAL-guided ammunition hits the target with one shot.

VULCANO 127 mm – Guided naval ammunition

For naval applications, the semi-autonomous SAL sensor can be replaced by "plug & play" with a Far-IR sensor for autonomous target engagement.

Moreover, the mission can also be carried out employing only GPS-guided terminal homing to the predetermined target coordinate using a programmable multi-function sensor.

VULCANO guided ammunition can be employed in the 127 mm/64 lightweight and the 127/54 compact naval gun systems of Leonardo Defence Systems as installed on the F125 frigate, the multi-purpose FREMM frigate and the MEKO 360 destroyer as well as on the destroyers of many navies worldwide.



Loading configuration of the VULCANO guided ammunition: 127 mm caliber (above), 155 mm caliber (below).



Full-caliber ammunition for 76 mm and 127 mm naval guns with insensitive explosive.



40 mm self-destruct infantry ammunition with insensitive explosive.



Smoke agent – harmless to humans and the environment; 76 mm fast smoke grenade.

Reconnaissance and protection



Terrorist, bomb and missile attacks, hidden improvised explosive devices: the threats facing soldiers in missions are omnipresent.

Flexible surveillance sensors provide precise reconnaissance results regarding activities in the air, at sea or on land. Image processing technologies enable a high degree of automation to relieve troops. Innovative developments in the field of non-lethal effectors offer new possibilities for protecting forces and facilities.

SIMONE – ship monitoring system

The passive SIMONE (Ship Infrared Monitoring and Observation Equipment) system is optimized for early detection of threats facing vessels from pirate and terrorist attacks. The system's strengths come into play during port calls and near the coast where attacks may be carried out from land or sea. In these scenarios, conventional radar systems quickly reach their limits.

SIMONE detects even very small suspicious objects, such as inflatable rubber boats or persons swimming in the water, and provides 24-hour/360° coverage of the ship's immediate vicinity, also enabling reliable detection of man-over-board situations.

The monitoring system is suited for yachts, freighters, passenger and naval ships. It provides excellent image quality even at night and can thus also be used as a night navigation assistant.

SIMONE employs sensor modules which, depending on the configuration, consist of different imaging infrared sensors or visual cameras. An additional sensor with high-resolution optics and rangefinder verifies acquired objects and provides necessary fire control data for weapon systems.



Laser systems protect transport aircraft against missile attacks.



HPEM¹ Counter-UAS effector to defend against mini unmanned aerial vehicles.



Counter-IED: Vehicle with front-mounted HPEM¹ effector system for protecting military convoys against IEDs.

¹HPEM: High-Power Electro-Magnetics

**Training -
Mission preparation**

Successful missions require a high level of qualification to reliably manage systems and equipment. Intensive training and good preparation enable the soldiers to master difficult missions. The modern training and simulation systems of Diehl Defence support armed forces in realistic training of their soldiers, which is independent of time and location while simultaneously saving costs.

**Air-Combat Training System
Flight Profile Recorder (FPR)**

The Flight Profile Recorder of Diehl Defence has established itself as the NATO standard for air-combat training systems in Europe. The German Air Force and the air forces of other European countries use the system in pilot air combat training.



The FPR system consists of pods mounted to the aircraft, ground stations and optional data-link receiving stations for real-time representation of training operations. All aircraft in the training airspace and the ground station are inter-connected via the data link. More than 200 aircraft can participate in exercises for specific skills training.

The data link connecting all aircraft in the training airspace permits realistic simulation of various weapon employments and defensive measures. The ground station is used to analyze and evaluate all flight maneuvers with the participants to achieve optimum training results. Automatic collision warning and acoustic warning of the pilot before leaving the training airspace make an important contribution to flight safety.



The ATlan-AS training system for land combat vehicles supports the gunnery and combat training in battle tanks.



With its own on-site support center in Decimomannu, Sardinia, Diehl helps train pilots from many nations.



After air combat training, the pilots are debriefed, showing their maneuvers from different perspectives, and potential improvements are pointed out.

Customer Support

In Customer Support, a team of engineers, physicists, graphic designers, technicians, technical editors and IT specialists cooperate to help customers best use our products throughout their life cycle. Thanks to many years of experience in product life cycle management, Customer Support is the competent partner for meeting these challenges.

Integrated logistic support

First of all, the maintenance and supply of equipment are vital for product design. This requires logistic analyses to ensure easy maintainability, environmental compatibility, etc. Subsequent development and set-up of logistic support systems promote optimum use of the product and efficient maintenance in cooperation with customers.

In-service support

Customer Support provides comprehensive technical and logistic product support. For decades, our services have included not only the maintenance, repair, spare-parts supply and management as well as upgrading of guided missiles, but also document management and training during the entire product life cycle.

Finally, we support our customers in the disposal of their products at the end of service life in a cost-effective and environmentally friendly way.

Interactive training

Additionally, the logistic product support provides interactive learning programs (e-learning) on devices such as desktops, tablets and smartphones. These programs help the learners to become acquainted with complex systems.

Our goal: high product availability at reasonable cost.



Industrial training with the RBS15 Mk3 anti-ship missile.



Technical and logistic product support.



Computer-supported training and interactive electronic technical documentation.

Key components and packaging



High-performance infrared technology

The affiliate AIM Infrarot-Module provides Diehl Defence with long-term access to infrared technology. The product portfolio ranges from standard modules to customer-specific solutions for seeker heads and thermal imaging systems as well as infrared detectors for civil satellite programs. The high-tech company concentrates all core capabilities in electronics, micro-electronics, semiconductor technology, crystal growth, optics and precision engineering under a single roof.

Ammunition fuzes and safety and arming units

Safe and reliable fuzing systems are the main components of modern ammunition solutions. The affiliate JUNGHANS Microtec is a leader in developing and producing fuzes as well as safety and arming units for guided missiles, rockets and ammunition. State-of-the-art micromechanics and highly integrated electronics provide the basis for developing and producing modern fuze systems for the German Bundeswehr and international armed forces.

Special batteries for defence and space applications

Diehl Defence has in-house development and production available to meet the demand for electric energy storage devices for missiles, ammunition and other special applications. The affiliate Diehl & Eagle Picher manufactures thermal batteries for military applications, fuze batteries in lithium-thionyl chloride technology as well as customer-specific battery packs in lithium, nickel-cadmium and nickel hybrid technology for the defence, electronics and communications industries.

Packaging systems for hazardous materials transportation

Diehl Defence develops and produces high-quality packaging systems for tank ammunition, mortar shells, anti-tank weapons, fuzes and hand grenades. We also supply packaging for hazardous materials to the automotive industry for lithium-ion batteries.



The portfolio of AIM Infrarot-Module for military applications ranges from infrared detectors to Stirling coolers to thermal imagers and gunsights.



JUNGHANS Defence fuzes and safety and arming units.



Thermal batteries and customer-specific battery packs for defence and space applications from Diehl & Eagle Picher.



High-quality packaging systems for defence products

Portfolio overview

	Reconnaissance sensors	Artillery rockets	Batteries, special	Flares/decoys	Warheads	Hand grenades	HPEM effectors	Infrared detectors	Convoy protection	Guided missiles	Air defence, ground-based	Missile service & support	Ammunitions	Non-lethal weapons	Smoke devices	Stirling coolers	Training systems	Packaging	Thermal imaging devices	Fuzes	Ignition devices
Diehl Defence	●	●		●	●	●	●		●	●	●	●	●	●	●		●	●			
AIM Infrarot-Module								●								●			●		
JUNGHANS Defence																				●	
Diehl Retrofit Missile Systeme										●		●									
Diehl & Eagle Picher			●																		
DynITEC																					●
Eurospike										●											
PARSYS										●											
RAM-System										●											

Companies of Diehl Defence

AIM Infrarot-Module

AIM Infrarot-Module GmbH develops and produces premium infrared detectors and thermal imaging devices, as well as Stirling cooling systems. AIM products are used not only by armed forces, but are also employed in research, industrial processes, safety engineering and environmental protection. Space-based applications are a new segment.

JUNGHANS Defence

JUNGHANS Defence is the common brand of JUNGHANS Microtec GmbH in Germany and its subsidiary JUNGHANS T2M S.A.S. in France. These two technology leaders for fuzes as well as safety and arming devices in Europe are a joint venture of Diehl and Thales. Another subsidiary of JUNGHANS Microtec is the German company DynITEC GmbH, specialized in the development and production of military ignition devices, energetic materials and electronic fuzing systems.

RAMSYS

RAM-System GmbH (RAMSYS) – a joint venture of Diehl and MBDA Deutschland – is responsible for the program management of the RAM (Rolling Airframe Missile) shipboard defence system in Europe and markets the missile system in selected countries. The company is also involved in the U.S. Evolved Sea Sparrow Missile (ESSM) and Standard Missile SM-2 programs.

Diehl & Eagle Picher

Diehl & Eagle Picher GmbH – a joint venture of Diehl and Eagle Picher Technologies, USA – produces battery systems for military programs. Its product range includes thermal batteries for missiles and ammunition, activatable lithium-thionyl chloride batteries (fuze batteries) as well as battery packs for military and civil applications.

Eurospike

EuroSpike GmbH is a program company marketing the Israeli-developed Spike guided missile in Europe. The company's shareholders are Diehl, Rheinmetall and Rafael.

PARSYS

PARSYS GmbH is the prime contractor for the PARS 3 LR guided missile – the primary weapon for the German army's Tiger support helicopter. PARSYS GmbH is a joint venture of Diehl and MBDA Deutschland.

Diehl Retrofit Missile Systeme

Diehl Retrofit Missile Systeme GmbH is engaged in upgrading and marketing Sidewinder AIM-9L missiles as well as providing associated worldwide logistics and life cycle support.

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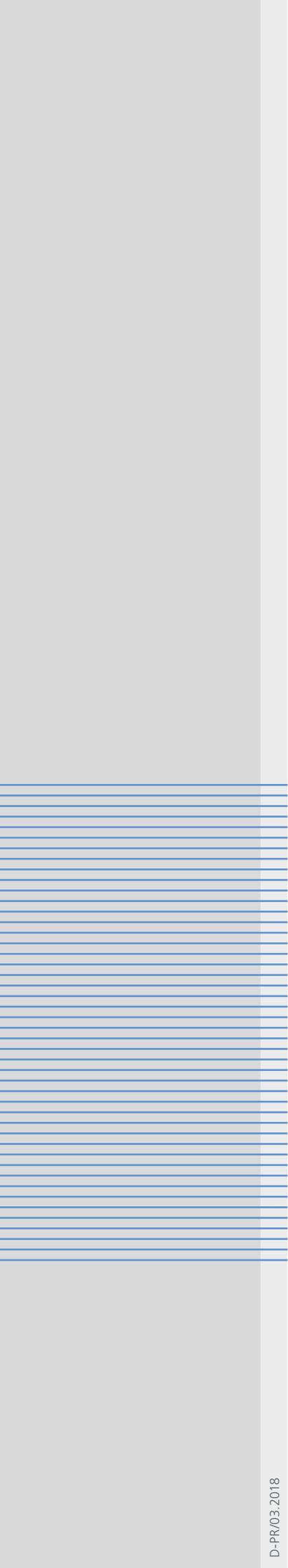
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