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MBDA: Land expertise

The current geopolitical context is characterised by an asymmetric threat and indicates that it is increasingly infantry forces that are intervening, even in distant combat zones. In Europe, as in the U.S., land forces expect the industry to develop a panoply of capabilities to provide them with the means to act. In response to the land combat capabilities requirement for 2015, MBDA is developing its offer according to three possible criteria of probable threat evolution. First, this threat is considered versatile, made up of all generations of main battle tanks, light armoured vehicles, defensive infrastructures (bunkers, field fortifications), helicopters and UAVs. Second, urban engagements are today increasingly complex, as political authorities wish to avoid or minimise collateral damage. Finally, there is an additional emphasis on infantry protection, while ensuring ease of operation and mobility. Taking into consideration all these factors, MBDA is also working on adapted weapon systems: missiles capable of precisely striking the target even beyond the line of sight (BLOS). In this context, the light infantry anti-tank missile (Milan), in its new ER (Extended Response) configuration, is capable of defeating any visible threat in close-range battle up to 3,000 metres, at a significantly lower cost than fire-and-forget missiles. Concerning non-visible targets in a broader combat battle area, a project has recently been developed: EMM (European Modular Missiles). These systems are designed to be integrated with NEC (Network Enabling Capabilities), such as the French BOA programme (Bulle Operationelle Aéroterrestre). In this regard, the Milan ER, which was successfully tested in May 2006, reaching a target located at 1,500 metres, MBDA technology also provides training and simulation based on the "enriched reality" concept. This new training provides a scenario that is very close to reality: the missile does in fact strike its target, while the environment is recreated with various future combat zone scenarios. The security and protection of both soldier and equipment deployed in operation is also a concern for MBDA, which for several years has been developing capabilities for countermining and road clearing solutions (Dedale…). Interoperability and adaptation to other weapon systems is also of prime interest for MBDA's engineers, as the different generations of Milan reveal. Developed since 1974, the Milan, whose latest generation is the ER, can be fitted on any kind of vehicle: P4, VBL, VAB, AMX10 and VLRA for France. MBDA engineers are always anxious for feedback on their products, such as, for example, with the Milan, which has been employed in many conflicts (Iran-Iraq war, Lebanon, Chad, Afghanistan…). It remains to be seen how MBDA's land experience will be applied within the coming European consolidations. n

Interview with Marwan Lahoud, CEO of MBDA

1. With Eurosatory currently taking place in Paris, where does MBDA position itself on the land armament market?

ML – Since I assumed leadership of the company at the end of 2002, my main concern has been to make a strong comeback in this sector where we have been among the best. With the arrival of LFK last March, we've consolidated the Franco-German pole of excellence that in the past successfully dominated the market with the Milan and the Hot (500,000 missiles sold in 45 countries). The Milan is the only missile worldwide to be produced in greater numbers than its American competitor, the TOW. Today, we offer solutions that continue to be successful, opening new doors toward weapon systems for the digitised battlefield.

2. The launch of a future European missile (EMM) seems to be one of your priorities. Which partners will be associated with the programme?

ML – France paved the way for a new concept with the land combat missile (MCT) in the aim of providing forces with true stand-off firing capabilities. Other countries are already working on the same operational need. Our hope is to converge these programmes sufficiently enough to be able to launch a European cooperation programme, as we successfully did with the Scalp-Storm Shadow and the Metoer. Only a multinational programme can meet both cost requirements and the demands of interoperability.

3. Overall, how do you view the rise of the European Defence Agency?

ML – This rise in power represents great hope for us. With the political will of certain nations less clear than it was at the time of the LOI (Letter of Intent of the six European nations), as well as when the European Defence Agency (EDA) came into being, industrials, who have done their share for European consolidation, are happy to be able to count on the support of organisations such as the EDA. The agency, though, still requires major funding. n

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Milan ER: In-depth, precision strikes

► Definition

The Milan ER missile is the most efficient solution to defeat all visible targets in close-range battle up to 3,000 metres. It is particularly efficient against main battle tanks currently in service worldwide. Man-portable and powerful, it can engage any threat.

► A long history

The Milan ADT-ER weapon system benefits from 32 years of experience, from the first Milan SDT-1 system in 1974 to the Milan 3 AJ-MILIS 3 in 2002. In all firings carried out, targets have been hit more than 93 per cent of the time.

► First development fire

On 18 May, the first Milan ER was fired within the development phase. The test aimed at validating the air-propulsion features and guidance as well as the missile's flight behaviour, especially the jet deviator and remote control.

► Meeting the need

The Milan ER has been developed for precision land targeting. It is the product of reflections on future forms of war, currently led by the French army staff, which, after the digitisation of the battlefield, is preparing the BOA programme (Bulle Opérationnelle Aéroterrestre). With a major concern: replacing the man at the heart of the combat zone. Either man-portable or fitted on a light armoured vehicle, the Milan ER was tested in many situations during its design phase, in order to match it as accurately as possible to the needs of the end user, the soldier. In this regard, the system, made up of the new firing post (ADT) and the Milan ER missile, is functioning within a renewed environment, made possible thanks to a simulation process as well as a new maintenance system.

► From development to delivery

The development phase will proceed until early 2007, while the validation phase will start in late 2006 and be completed by mid-2007. The industrialisation process will be launched by 2007 and carried out until the end of 2008. The production phase will then start by late 2008 or 2009, followed by the first deliveries.

Moving beyond the Milan 3

The Milan ER represents the future, and its capabilities are based on prospective reflections regarding the forces' future operations. With a 3,000-metre range, this new-generation missile features a new military warhead with increased lethality. It has been developed to efficiently strike any target within contact battle, including the most protected main battle tanks. With a very attractive cost effectiveness, the Milan ER provides an affordable solution, as its guidance system functions are integrated with the firing post, whereas U.S. and Israeli systems integrate these same functions onto each missile, a very expensive solution. The final choice of the Milan ER is expected by 2008, with deliveries to take place between 2009 and 2012. Beyond the system's cost considerations and the need to adapt it to forces' requirements, the choice of successor for the Milan, whose future obsolescence has been revealed by the French staff within the BOA (Bulle Opérationnelle Aéroterrestre), is a major challenge for MBDA and its customers, the Milan equipping not only the French Army, but also about 40 foreign armies.

The Milan ER structure

The missile is divided into two parts. The warhead has been improved to ensure the destruction of all types of targets, from main battle tanks to bunkers. This forward part of the missile combines precision and total destruction. As for the missile's propulsion, its upgrade offers an extended range, up to 3,000 metres, and provides the missile with improved manoeuvrability, including a high altitude capability—up to 3,500 metres. The two-stage motor with propellant allows impressive acceleration. The guidance system is made up of a gyroscope, decoder, jet interceptor as well as an infrared beacon.

The technological pairing of Milan ER and ADT firing post

The Milan ER's powerful technology lies in its combination with the ADT (Advanced Technologies) firing post. The Milan ER builds on all the features that ensured the success of the Milan family (ergonomics, reliability, simplicity, sturdiness and easy-of-use), to which have been added the innovative technologies necessary for the evolution of combat while maintaining a global cost of ownership compatible with budget limitations. The ammunition innovations concern the military warhead, propulsion, manoeuvrability and range. As for the ADT firing post, the innovation lies in the area of digitisation and all applications connected to the NCW (integrated thermal imager, video in-out for remote control, remote vision, new training tools, built-in-test, GPS, North Finder and telemeter).

French Schedule

DGA, the French procurement agency, along with MBDA, is examining the evaluation process of the system for France, even though the system is currently under development, financed by MBDA's own funds, and hence not yet available off-the-shelf. DGA is closely scrutinising the needs of other European countries concerning the replacement of their Milans as well as export prospects for the Milan ER.

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Ground-to-air and ground-to-ground targeting

The operational context

The end of the Cold War has led to major transformations in the type of threats land forces and contact battle units have faced and will be confronted with in the future. In Central Europe, the disappearance of the threat of invasion by Russian tanks (Soviet operational manoeuvre groups) does not however eliminate the reality of the MBT threat. Armoured vehicles remain numerous in politically unstable regions that are susceptible to become future combat theatres. This situation means Western armies must have the capabilities to destroy them, even if two-thirds of targets engaged by missiles are not armoured vehicles. Bunkers, field fortifications, sensitive urban infrastructures, light and high-velocity vehicles along with everything other than heavy tanks also requires a high probability rate of destruction, a very short response time, as well as minimised collateral damage, whether in an urban environment or not.

The Eryx solution

In light of this new operational context, the Eryx missile, thanks to its technical and operational features, is the short-range land combat missile of reference, well adapted to both current and future operations. In service within the French forces since 1995, the Eryx has proven itself in various military operations. The Eryx system equips all kinds of infantry and represents a major armament for both operative and tactical levels. It is also in use among many foreign armies and is commonly used in operations, even under extreme weather conditions, on all kinds of fields of engagement, from Nordic fjords to Middle Eastern deserts. Combining a devastating effect and high-precision capabilities with ergonomics and a true versatility of use, the Eryx has no real direct competitors in its segment. Export prospects are very good in Europe as well as in the Middle East. Today, there are seven client nations: France, Canada, Norway, Turkey, Kuwait, Malaysia and Brazil. The goal for MBDA is to double the number of customers within the next five years.

A new answer: A Multipurpose Combat Vehicle (MPCV)

Developed with its German partner Rheinmetall Defence Electronics using a VBR-Panhard chassis, MBDA's multipurpose combat vehicle (MPCV) is of great interest due the versatility of its multi-role turret, capable of firing anti-tank missiles or, depending on the operational context, ground-to-air missiles (using Mistral). This multi-role vehicle will thus be able to engage both fixed or mobile threats within either a 2,000-metre range (using Milan 3) or a 3,000-metre range (using Milan ER). Depending on an alternative ground-to-ground or ground-to-air use of the MPCV, it can carry four missiles ready to be fired and four complementary missiles inside the vehicle. The complete weapon system comprises a control box with an integrated calculator, a tele-operable system (inside the cabin), or a remote controlled system (outside the vehicle). As the vehicle is highly mobile, the deployment time is particularly short, i.e. less than 10 minutes. The reaction time is also impressive, requiring less than four seconds. The turret's rotating speed is about 60 degrees per second.

► The Eryx concept of use

The Eryx system has a multi-target capability. It can carry out a direct firing, in a confined or enclosed space, either shoulder-fired by a single man or launched from a tripod. Capable of operating by day or night, it is also equipped with electronic warfare systems in order to better resist against enemy jamming.

► Technical features

With a range of from 50 to 600 metres, the Eryx is equipped with line-of-sight guidance, and can fire 13-kg, 135-mm calibre, tandem hollow charge ammunition with 900-mm penetration capabilities, from a man portable system that weighs 4.5 kg.

► The Eryx experience

The Eryx has been purchased by seven armies. More than 52,000 rounds of ammunition have been ordered from MBDA, along with 3,200 firing posts. The missile has been fired in operation about 7,000 times, with a success rate reaching 95 per cent of targets hit.

► STC Eryx training

Land forces have on several occasions stressed the importance of simulators in the mastery of a weapon system. The STC Eryx simulator is aimed at tactical training on the ground for infantry regiment anti-tank groups equipped with the short-range Eryx. Reproducing the ergonomics and features of the Eryx system and used with features that are identical to those on the actual weapon sytem (procedures, etc.), the simulator makes it possible to carry out realistic anti-tank combat. The STC Eryx is fully interoperable with the whole STC family (intended for tanks, helicopters, other missiles, light weapons, etc.). This makes it possible during tactical training to simulate all kinds of scenarios on the ground in which all combatants are vulnerable.

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Countermining protection

► MBDA positioning

MBDA benefits from 20 years of experience in mine warfare systems and their derivatives. The European company has developed a complete range of countermining systems that are becoming worldwide references. First among them is the Dedale system, intended for the destruction of magnetic mines. Second, the Souvim 2 system is a road clearance device for use against all kind of mines. Finally, the MMSR-Sydera is a remotely controlled system.
The complete range of countermining products is evidence of a mature technology and MBDA's valuable know-how for both wheeled and tracked vehicles.

► Dedale System

DEDALE represents both current and next-generation magnetic signature duplicator technology. The system activates any magnetically fused anti-tank mine at a safe distance in front of the countermining vehicle. It can be fitted on any kind of vehicle, whether armoured tracked or wheeled tank, or even on trucks. The system activates mines by transmitting a decoy magnetic signature in front of the mine-clearing vehicle.
Decoy magnetic signatures are pre-programmed during mission planning so that all magnetic mines can be safely destroyed. MBDA's system was selected by the French Army in September 2005, for a production of 30 Dedale systems and an option for 20 more.

► Working in cooperation

The Sydera programme is a cooperative undertaking between MBDA, in charge of the SDV and HDV vehicles, Rheinmetall Land Systems, which is producing the DEV and VEV vehicles, and Thales, in charge of the Command & Control vehicle.

Protection: a fundamental necessity

Within a hostile environment, the success of a soldier's mission, whether special forces or conventional troops, depends on his ability to survive and protect himself. Among risks, anti-personnel mines will continue to be a major threat in the coming years. About 60 to 100 million active anti-personnel mines are said to be buried in the terrain of more than 60 countries. Among these, 30 regions are particularly high risk, such as Afghanistan, Angola, Cambodia, Iraqi Kurdistan, Mozambique, Rwanda, Bosnia, Croatia and Kosovo. Today, mines, which have evolved in order to more easily defeat their targets (either military or civilian), are often made by hand by amateurs, as in the case of improvised explosive devices (IEDs). Since 2005, the Iraqi resistance, like the Afghan Mujahideen, has become particularly adept at using these IEDs, using them as roadside bombs to defeat convoys or the armoured vehicles of occupation forces, thus increasing the danger experienced by U.S. troops. Between 1 May and 18 August 2005, 136 U.S. soldiers were killed by these devices, i.e. more than twice as many compared with the same period in 2004. "They are lethal traps made up of artillery or mortar shells, dropped along roads or in buildings," explains a French officer who has been confronted with the threat of IEDs firsthand. "Controlled by a huge range of firing devices, these improvised mines are activated through cell phones, infra-red transmitters or laser pointers…"

Souvim 2

Souvim 2 is composed of two vehicles and three trailers. The first vehicle (VDM) carries the stand-off mine decoy support frame, including DEDALE magnetic decoy antennas. The VDM is immune to pressure mines thanks to its specially designed low-pressure tires which do not detonate mines. It tows a heavy trailer, which detonates mines and secures and marks the path for the second vehicle. The second vehicle (VTR) follows the lane secured and marked by the VDM, and tows two additional trailers, which detonate pressure mines deployed on the track up to a width of 3.9 metres. The system can clear 150 km of roads in a day. It is particularly suitable for clearance of main supply routes. French armies have understood the usefulness of such as system, at a time when many communication routes are booby-trapped by IEDs, and, as with the Dedale, have selected the system for 2007.

MMSR-Sydera

This demonstrator system is the product of cooperation by French and German industrials. Its mine detection technology makes it possible to secure large roads, to neutralise individual explosive devices. Moreover, the system can be remotely operated, ensuring the safety of the vehicle crew. The system consists of five special vehicles and their high-tech equipment. Each of these vehicles will be dedicated to a specific mine detection and clearance task. The Detection Vehicle (DEV), a remotely operated system, acurately detects anti-personnel and anti-tank mines. The Smart Decoy Vehicle (SDV) is capable of detonating all known mine variants with non-contacting fuses at the front of the vehicle, at a speed of up to 20 km/h, while the Heavy Decoy Vehicle detonates mines with pressure-sensitive fuses. The system can reliably clear these types of mines roads and pathways from 2.5 to 4 metres wide. Finally, the Command & Control vehicle (CCV) collects all the information and network data in real-time and evaluates the data collected. Some special vehicles like the SDV and DEV are controlled by experts aboard the CCV.

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