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## **Rheinmetall: The leading “one-stop shop” for 40mm systems**

Rheinmetall’s array of 40mm ammunition – along with quite a few other products made by Germany’s best-known defence contractor – serves as a veritable combat multiplier for the infantry and other dismounted troops. It bridges the gap between hand grenades and mortars. Besides ammunition and weapon systems the Düsseldorf-based Group also offers the Vingmate family of fire control systems. Visitors to MSPO 2016 can learn more about the world’s leading “one-stop shop” for 40mm systems at the Rheinmetall stand.

Widely used today, the Group’s 40mm x 46 low-velocity ammunition (LV, velocity: 78 m/s) is available in many different versions, including HE/fragmentation, shaped charge with fragmentation jacket (HEDP/high explosive dual purpose) as well a number of other service and practice rounds, together with non-lethal payloads such as kinetic impact munitions or irritant. Rheinmetall’s 40mm LV ammunition can be fired from all standard standalone and underslung grenade launchers such as the M79 “Blooper”, the M320, AG 36, Milkor launchers, the M203 and the SCAR EGLM/Mk13 Mod 0.

Rheinmetall is now the leading maker of new 40mm medium-velocity (MV) and 40mm long-range/extended-range ammunition. These rounds can be fired by individual operators equipped with handheld or underslung grenade launchers. Not only do they attain a longer range, they also carry a more effective payload. This product portfolio includes the new generation of 40mm MV ammunition, which has a maximum effective range of 800 metres, doubling the operator’s reach and providing a flatter trajectory for those crucial close-in, accurately placed shots.

Rheinmetall’s MV ammunition will soon be available in service and practice versions. It can be used with the multi-shot grenade launchers Milkor US M32A1 and AV 140. The 40mm MV ammunition family is currently undergoing NATO qualification.

The 40mm Magazine-Fed Grenade Launcher (MFGL) gives the dismounted soldier the firepower of a three-man infantry team equipped with a 40mm high-velocity (HV) grenade launcher. Combined with the newly developed 40mm MV airburst cartridge, it transforms the 40mm MV into a cutting-edge system. Moreover, easy-to-change magazines save time by shortening the reloading process. In addition, extra magazines can be carried by other members of the squad. The Vingmate MR fire control system family supports the operator with the correct aiming point and programs the cartridge as it leaves the barrel.

The Group's 40mm x 53 high-velocity ammunition reaches a velocity of 240 m/s and has a maximum effective range of 2,200 metres. Here, too, the Group supplies a wide assortment of different cartridges, including newly developed HE and HEDP airburst ammunition, programmed by an infrared programming unit.

The new multipurpose 40mm HV-HEDP IM ESD (High Velocity-High Explosive Dual Purpose, Insensitive Munition, Electronic Self-Destruct) cartridge is ideal for engaging and defeating lightly armoured and soft targets. It has a newly developed shaped charge cone capable of penetrating 80 millimetres of rolled homogeneous armour (RHA) grade K. It is the only 40mm ammunition on the market today with this kind of penetration performance. A unique nose fuse incorporating an electronic self-destruct (ESD) mechanism is optimized for high-sensitivity detonation against both hard and area targets. This system results in a dud rate significantly below that of a typical pyrotechnic or spin decay self-destruct mechanism.

The excellent accuracy of the Rheinmetall 40mm HV-HEDP cartridge is a result of its patented, proprietary propulsion unit, in which the cartridge case (including the propelling components) is fastened to the projectile (which contains the copper liner and the explosive charge). At extreme temperatures, e.g. resulting from a fuel fire, the RWM 40mm IM's improved propulsion system prevents separation of the projectile and propulsion unit. The ammunition stays in the box, with no risk of live ammunition being scattered around the area. The 40mmx53 HEDP IM ESD is equipped with qualified IM explosives. The 40mm HV-HEDP IM ESD grenade is suitable for use in all NATO-standard weapon systems, including the HK GMG, as well as the MK19 and the MK47 grenade launchers.

Rheinmetall's programmable 40mm x 53 Airburst Munition (ABM) constitutes another important new capability, allowing troops to engage targets (e.g. snipers) taking cover in trenches, behind stonewalls, etc. The Group's 40mm x 53 ABM is fully qualified for use by the Bundeswehr and Dutch armed forces. Officially dubbed the DM131, the pilot lot ordered by the German procurement authorities is already being delivered.

Rheinmetall's Vingmate family provides users with a broad range of enhanced capabilities, increasing the effectiveness of the gunner while maximizing the potential of the host weapon system and munitions being utilized. The Vingmate family consists of four fire control solutions, providing increased accuracy and performance: Vingmate FCS 4500 for high-velocity automatic grenade launchers and heavy machine guns, Vingmate MR500 and Vingmate MR800 for low- and medium-velocity 40mm grenade launchers and Vingmate SL 1000 for shoulder-launched weapons.

The Vingmate family of fire control systems enhances combat effectiveness enormously. The Vingmate FCS 4500 fire control system fitted with the Saphir 6.2 thermal camera, a combined tripod and gun cradle. It is thus suitable for various 40mm automatic grenade launchers such as the MK19 and HK GMG but also for heavy .50 cal. machine guns like the FN M2, or even 20mm automatic cannon such as the GAM B01. Vingmate FCS 4500 is designed to permit programming of airburst rounds via an infrared laser beam as they leave the barrel. Rheinmetall also offers the VingSim Trainer as the accompanying 1:1 video training device for the Vingmate FCS 4500.

Also on show at MSPO 2016 is the Vingmate MR500. Being shortlisted as one of two contenders in the U.S. Army's Grenadier Sighting System (GSS) programme, the MR 500 is a manually adjusted clip-on aiming system specifically developed for low- and medium-velocity 40mm grenade launchers and shoulder launched rockets (e.g. M72/AT4). Incorporating an infrared target marker, an infrared illuminator and a red dot sight (Trijicon RM 06 for GSS), the device weighs only about 11 ounces (300 grams). It is suitable for both underslung and standalone grenade launchers. The system can also store variable ballistic tables, two of which can be selected using a dedicated selector switch. The MR 500 is suitable for left-handed and right-handed shooters, and is powered by a CR123 battery. If desired, the MR 500 can communicate with external devices such as Rheinmetall's newly developed TAC-Ray clip-on (rifle-mounted) laser rangefinder. The TAC-Ray which is available in different variations is an extremely compact device capable of measuring targets out to 2,000 meters and includes visible and IR laser pointers and illuminators.

Reasonably priced and ready to go into full-scale production, the MR 500 is available immediately to meet the US Army's current and future sighting requirements for the M320.

Once again, the manually adjustable MR 500, as an extension of the motor-driven MR 800 and Vingmate SL, underscores Rheinmetall's status as a one-stop shop for 40mm weapons technology, and other shoulder-launched weapons. It joins other fire control units from the Vingmate family such as the Vingmate FCS 4500 for automatic grenade launchers under contract with US SOCOM.

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