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Rheinmetall: A reliable partner of the infantry

Particularly in modern conflicts, ground troops have to be able to respond in a scalable manner to multiple threats worldwide. Infantry forces are also capable to fight in difficult terrain – be it an urban environment or high in the mountains. Despite all the talk of automation and unmanned systems, it is clear that “boots on the ground”, i.e. infantrymen, are as important as ever and will continue to play a decisive role in future military scenarios.

As one of the world's leading suppliers of defence technology systems, Rheinmetall will be showcasing its products and systems for modern infantry forces during the IDEX 2013.

40mm ammunition and fire control units

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. Widely used today, the Group's 40mm x 46 low-velocity ammunition (LV, velocity: 78 m/s) is available in a wide variety of 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.

At present, Rheinmetall is the leading maker of new 40mm x 46 medium-velocity ammunition (MV, velocity: approx. 105 m/s). It can be fired by individual infantrymen equipped with handheld or platform-mounted grenade launchers, attaining an enhanced range of 400 to 800 metres, and enabling rounds with a higher payload, greater lethality, a first shot kill probability and modified fuse technology to be fired.

Rheinmetall's programmable airburst ammunition constitutes another important new capability, allowing troops to engage targets taking cover in trenches, behind stonewalls, etc.

Rheinmetall is also developing the GL Cerberus grenade launcher (as an underslung- or standalone system) and the magazine-loaded AGL Hydra automatic grenade launcher. The latter in particular gives the grenadier enormous firepower, since it can fire three-round bursts. Moreover, the 40mm rounds pack more punch than the US XM25 weapon system with its 25mm rounds.

Both grenade launchers feature a built-in self-regulating hydraulic shock absorber, ensuring that they can fire medium-velocity 40mm x 46 in particular without subjecting the weapon or its firer to greater stress than LV ammunition.

Rheinmetall's 40mm x 53 high-velocity ammunition reaches a speed 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 which is programmed by an infrared programming unit.

Rheinmetall's 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 shape 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.

The Düsseldorf-based Group also offers the Vingmate fire control unit as an ideal way of maximizing the effectiveness of HV ammunition. For instance, Rheinmetall recently won an order to supply the Canadian armed forces with the "Close Area Suppression Weapon System (CASW) C16", consisting of a Heckler & Koch grenade machine gun (GMG) with an integrated Vingmate.

Fly-K and 60 mm mortar ammunition

As indirect fire weapons, mortars play an indispensable role on the modern battlefield, providing light, highly mobile units in particular with organic firepower.

Rheinmetall has developed a quick-mounting digital aiming device for the Fly-K mortar, a system successfully deployed by the French armed forces in Afghanistan. The device measures the incline and elevation angle of the tube, while showing the range of the cartridges on a display. Light, compact, quiet and with a very low operational signature, this indirect fire weapon can of course also be used without an aiming device to engage targets at distances of up to 800 metres.

Rheinmetall has just won a contract from the French armed forces to supply further Fly-K-products worth €38 million.

At IDEX 2013 Rheinmetall is also displaying its new family of 60mm ammunition. The Düsseldorf-based Group's latest generation of enhanced-range, enhanced-performance mortar ordnance is designed to meet all current and foreseeable future mission requirements.

This innovative ammunition family is optimized for insensitivity, fulfilling or surpassing all STANAG 4439 requirements. It encompasses service and practice cartridges, including insensitive high explosive (IHE), high explosive (HE), three different types of smoke/obscurant as well as two illumination variants (visible light and infrared).

The new 60mm ammunition is especially well suited for special forces-type mortars with barrel lengths of 640 and 650 mm. It can also be fired from previously fielded standard weapons with barrel lengths of 895 and 1,000 mm. This is also true of long-range systems such as the M6 launcher made by Denel Land Systems. Fired from a mortar with an 895-mm-long barrel, the maximum effective range is approximately 4,000 metres. Moreover, Rheinmetall's new 60mm ammunition family is compatible with all standard weapons systems in this calibre.

The propelling charge system is identical in all variants, and – depending on customer specifications – can be made with either EI or ECL powder in a combustible case. The loading system and firing tables can also be adapted to match customer requirements. The obturation characteristics of the rounds have been improved as well, contributing to the longer maximum effective range. Moreover, the entire ammunition family meets the STANAG requirements for safety and environmental protection.

Future Soldier System “Gladius”

Several years ago, the German Army tasked Rheinmetall to develop a modular soldier system in order to meet new tactical requirements and enable the German infantry forces to gain and maintain a decisive advantage in future conflicts and post-conflict situations.

After having spent 5 years in developing and testing the new system, at that time named as “Infanterist der Zukunft-Erweitertes System” (IdZ-ES or IdZ-2), “Gladius” met all requirements. The procurement programme began in 2012 with an initial order of thirty systems, enough to equip 300 troops. As planned, the Bundeswehr is currently taking delivery of those thirty Gladius systems. The troops will have until June 2013 to train with the new system before going to Afghanistan. Just recently Rheinmetall has been awarded an order to supply a further sixty systems. This follow-up order is worth €84 million, and encompasses equipment for 60 infantry sections with a total of 600 soldiers.

“Gladius”, named after the trusty Roman “*pedites*” sword, will be on display at Rheinmetall's IDEX 2013 stand in Abu Dhabi, where, among other things, it will be used to demonstrate interaction between the dismounted soldier and the C4I system of a Boxer command post vehicle.

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