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Rheinmetall: Comprehensive competence in ammunition

As a performance-driven global player, Rheinmetall has unique expertise and innovative strength in armour, artillery, air defence, medium calibre, mortar and infantry ammunition and systems. Visitors to CANSEC 2013 in Ottawa can take a closer look at Rheinmetall's comprehensive ammunition competence.

With more than 40 industrial sites, Rheinmetall Defence has extensive experience in plant design, ranging from development through engineering to production – an essential capability to safeguard operational excellence in Europe, North America and Africa.

Rheinmetall's stated aim is to supply the world's armed forces with customized services and an unparalleled range of products that includes environment-friendly and insensitive ammunition as well as state-of-the-art effectors. Prominent examples are the Group's extensive portfolio of 40mm x 46 (low velocity/LV and medium velocity/MV) and 40mm x 53 high velocity (HV) ammunition, the new family of insensitive 60mm mortar bombs, medium-calibre Ahead airburst ammunition, 105mm and 155mm artillery ammunition and propulsion systems and, last but not least, programmable 120mm tank rounds that are fully compatible with Rheinmetall's 120mm smoothbore gun, which of course serves as the main armament of the Leopard 2 and M1A1 Abrams main battle tanks in service with many armed forces worldwide.

Infantry ammunition

The Group's broad portfolio of 40mm x 46 (low velocity/LV and medium velocity/MV) and 40mm x 53 high velocity (HV) ammunition underscores Rheinmetall's compelling lead in the 40mm field. This ranges from practice ammunition and non-lethal variants to highly effective service ammunition, including 40mm x 46 MV and 40 mm x 53 HV time-delayed airburst rounds.

In addition, Rheinmetall has developed the Cerberus grenade launcher and Hydra automatic grenade launcher, each specifically designed for firing medium-velocity ammunition. Both feature a hydraulic shock absorber that reduces the recoil force to the level of LV ammunition.

New insensitive 60mm patrol mortar bombs

Rheinmetall's new family of 60mm ammunition is the latest generation of enhanced-range, enhanced-performance mortar ordnance. It is designed to meet all current and foreseeable future mission requirements.

This innovative ammunition family is optimized for insensitivity, either meeting or surpassing all STANAG 4439 requirements. It encompasses service and practice cartridges, including insensitive high explosive (IHE), high explosive (HE), two different types of smoke/obscurant (WP, RP multispectral) as well as two illumination

variants (visible light and infrared). The newly developed HE-PFF (pre-formed fragmentation) variant is achieving the performance of a conventional 81mm IHE offering outstanding performance on the battlefield while reducing the burden of the dismounted soldier.

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

Medium-calibre ammunition

Rheinmetall automatic cannons, weapon systems and ammunition cover the full range of present and anticipated future threat scenarios, and can be deployed on land, at sea or in the air. The main product groups are vehicle-mounted weapons, aircraft cannon systems and naval guns, including the accompanying ammunition as well as ammunition for air defence systems.

Decades of design, development and production of automatic cannons have resulted in a number of modern, high-precision weapon systems featuring operational reliability, cost efficiency and easy handling. Prominent examples are the 25mm x 137 and the 30 mm x 173 ammunition families, both available with APFSDS-T, FAPIDS-T and PELE effectors.

The company's proprietary ABM airburst rounds feature a programmable ignitor. The optimum combination of a high rate of fire and state-of-the-art ammunition technology makes Rheinmetall's MK30-2/ABM automatic cannon a highly effective, highly reliable weapon system that is universally deployable. At ranges of up to 3,000 metres, the MK30-2/ABM is extremely effective against land, air and naval targets.

Oerlikon Ahead ammunition technology

Each round of Rheinmetall's 35mm Ahead ammunition contains a lethal payload of heavy metal spin-stabilized subprojectiles, unleashed in the path of an oncoming target at a programmable, predefined point in time. A short burst of Ahead ammunition produces a dense cloud of lethal subprojectiles. These penetrate the outer skin of the target, causing lethal damage to its interior.

Ahead airburst technology is designed to bring down targets at greater distances with fewer rounds fired, making it a much more cost-effective solution than conventional ammunition. The technology can be used in ammunition ranging in calibre from 30mm to 76mm. Ahead technology is suitable for ground, air force and naval applications. As an alternative option, Ahead rounds can also be fired in non-fused mode, in which they behave like frangible rounds upon impact and are able to penetrate and destroy hard targets very effectively. In effect, Ahead is actually two types of ammunition in one.

105mm artillery ammunition

Rheinmetall's new 105mm M1130 base-bleed (BB) and M1131 boat tail (BT) projectiles are insensitive high explosive rounds, developed under the aegis of the Advanced Cannon Artillery Ammunition Programme (ACA2P). Their effectiveness

against semi-hard targets exceeds that of a 155mm high explosive round. The round is in series production.

155mm artillery ammunition

The Group's family of 155 mm ammunition encompasses a wide array of projectiles for neutralizing various targets at extremely long ranges as well as executing a variety of battlefield tasks. These include high explosive and insensitive high explosive (IHE) rounds, IHE base-bleed rounds, illumination projectiles for illuminating the infrared and visual spectrum of the combat zone, multi-spectral smoke/obscurant (MS) projectiles, and practice rounds. This fully STANAG-qualified ammunition family was specially developed for the PzH 2000 self-propelled howitzer, an excellent system now used by a number of nations.

Rheinmetall's suite of 155mm Assegai artillery ammunition comprises insensitive munition (IM), high explosive (HE), conventional HE, screening smoke, illumination, infrared illumination and many other projectiles. The projectiles are supplied with a boat tail fitted, which can be field replaced with a base bleed unit. When fired from a 39 calibre-gun, Assegai rounds exceed a range of 30 kilometres. When fired from a 52-calibre gun, Assegai rounds exceed a range of 40 kilometres. Fully compliant with the Joint Ballistics Memorandum of Understanding (JBMoU), the Assegai projectile family is qualified in accordance with STANAG norms and is in series production.

The extended range V-LAP exceeds a range of 44 kilometres, when fired from a 39 calibre gun. When fired from a 52 calibre gun, V-LAP exceeds a range of 55 kilometres.

120mm tank rounds

Rheinmetall is well known for its 120mm smoothbore gun, which serves as the main armament of the Leopard 2 as well as of the Abrams M1A1 main battle tank in service with many armoured forces.

Rheinmetall's new 120mm tank round, the HE Temp. DM11, is optimized for the modern battlefield. The DM11 is characterized by (a) the programmability of the loaded cartridge, and (b) delayed airburst detonation at ranges of engagement of up to five kilometres. The necessary technical modifications (programmability) can be carried out in any main battle tank equipped with a 120mm smoothbore gun and an up-to-date fire control unit.

Rheinmetall's lower priced HE SQ (high explosive super quick) RH31 features an impact function without delay that requires no modification of the system.

A number of Leopard 2 and M1 user nations have already placed orders for both ammunition types. Under the name "Multi Purpose (MP) DM11", the US Marine Corps already uses the DM11 for engaging non-armoured and lightly armoured targets in asymmetric conflict situations, for example in Afghanistan.

Broad experience from development to production

Since its inception in 1889, Rheinmetall has been a driving force in the development and production of weapons and ammunition ranging from small arms up to laser effectors.

Rheinmetall also has unique experience in running international operations. Today the Düsseldorf-based Group runs ammunition production plants in Germany, Switzerland, USA, Canada and South Africa.

Jointly owned by German Rheinmetall and Swiss RUAG, Rheinmetall's Nitrochemie Group enjoys a global reputation for excellence. Its core competencies are the development and production of propellants and propelling charges for large-, medium-, and small-calibre ammunition as well as combustible components such as the MCS modular propelling charge system for artillery applications.

In 2001 the company signed its first long-term supply agreement with BAE Systems (GCSM) for propellants, combustible cartridge cases, and associated customized services. In 2003 the agreement was extended to include the supply of propellants for small arms ammunition, appointing Nitrochemie as the principal supplier of propellants for Her Majesty's Armed Forces. In the ensuing years Nitrochemie has produced and delivered some 7,000 tonnes of propellant. Rheinmetall propellants are used in 155mm artillery charges L8/L10/M3/M4, the 105mm ammunition L36 charge, 4.5" IAHE ammunition, 120mm L18 and L3 charges, 81mm mortar, 30mm RARDEN and all calibres of small arms ammunition.

In September 2009 Rheinmetall's subsidiary was awarded a second ten-year supply contract with GCSM in support of the UK MoD MASS contract. The contracting principal utilizes best practice to secure the supply chain and to mitigate associated risk through business continuity planning and sustainable development – core values of GCSM.

For many years now Rheinmetall has been a partner of South Africa's armed forces and defence industry. Incorporated in 2008, Rheinmetall Denel Munition (Pty) Ltd. is a joint venture of Germany-based Rheinmetall Waffe Munition GmbH (51 %) and Denel (Pty) Ltd. of South Africa.

An internationally acknowledged player, Rheinmetall Denel Munition produces artillery, mortar and infantry systems and operates various large production sites. Besides South Africa, Rheinmetall Denel Munition primarily serves customers in Asia, the Middle East and South America. Rheinmetall and its South African subsidiary are thus able to supply their respective core markets with the Group's complete, comprehensive array of products.

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