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Networked air defence by Rheinmetall: A force multiplier for military operations and the protection of critical infrastructure

For many decades, air attacks have posed a severe threat to ground troops and civilian population centres as well as vital military and civilian infrastructure. The situation in future conflicts is unlikely to be any different. The threats from above are many and varied, ranging from fixed-wing aircraft, attack helicopters and cruise missiles to unmanned air vehicles, precision-guided munitions and rocket, artillery and mortar fire. Low-altitude air threats in particular present an around-the-clock menace, irrespective of weather, terrain and electronic countermeasures, endangering static and moving targets – at land as well as on sea.

In the domain of cannon-based air defence technology, Rheinmetall is the global leader and the sole single-source supplier of battle management systems, fire control systems, automatic cannon, integrated missile launchers and Ahead ammunition. One of the company's core competencies is the development and manufacture of advanced air defence systems as well as simulators and training systems.

At Eurosatory 2014, Rheinmetall is displaying the group's leading competence in air defence.

Oerlikon Revolver Gun Mk2

Making its debut at Rheinmetall Medium Calibre Day 2013, the Oerlikon Revolver Gun Mk2 is one of the Group's latest development projects. Rheinmetall is showcasing this subsystem of the Oerlikon Skyshield air defence system at Eurosatory 2014.

The Oerlikon Revolver Gun Mk2 is a remotely controlled, networkable, 35 x 228mm air defence gun. It features beltless ammunition feeding. Using clips, two men can replenish the 252-round magazine in about eight minutes. This enables 14 bursts of 18 rounds each. Its rate of fire is roughly 1,000 per minute. The Mk2 is designed to use Rheinmetall's Ahead technology. Furthermore, the Oerlikon Revolver Gun Mk2 can be modified very easily to make it C-RAM-capable.

Oerlikon Skyshield MOOTW/C-RAM System

The Oerlikon Skyshield MOOTW/C-RAM system is Rheinmetall's answer to the threat from rockets, artillery and mortar (RAM). It is specifically designed to defend high-value civilian or military assets from RAM attacks, whether in high-intensity combat scenarios or in "military operations other than war" (MOOTW). The system

can also be used for protecting critical infrastructure or targets with a high symbolic value from terrorists and insurgents employing unorthodox tactics.

The Skyshield MOOTW/C-RAM system depends on Oerlikon Ahead airburst technology. Available in various configurations, the Oerlikon Revolver Gun is suitable for multiple applications. This state-of-the-art system can operate in a conventional anti-aircraft role or be used for protecting military and civilian assets from RAM threats, and is also highly effective in a naval context: known as the Millennium Gun, it is already in service with two navies.

Highly sophisticated yet extremely robust, this state-of-the-art system combines permanent airspace surveillance, automated detection and tracking of extremely small targets, prior warning of areas under threat and the interception and destruction of approaching RAM targets. Coupled with an Oerlikon Skymaster command and control system in MOOTW configuration, the Oerlikon Skyshield MOOTW/C-RAM system is entirely up to the task.

Instantly and automatically, the Skyshield MOOTW/C-RAM system reliably neutralizes a wide variety of threats. It calculates the incoming projectile's point of impact and warns personnel in the threatened zone. Advanced fire control technology results in optimum, precisely timed target assignment and interception.

In November 2012 the German Air Force took delivery of the Rheinmetall-made MANTIS air defence system. An acronym standing for "Modular, Automatic and Network-capable Targeting and Interception System", MANTIS is based on tried-and-tested Oerlikon Skyshield air defence technology.

Visitors to Eurosatory 2014 can get more information about the Oerlikon Skyshield MOOTW/C-RAM system at the Rheinmetall pavilion.

Oerlikon Ahead Airburst Munition

Each round of Rheinmetall's 35mm Oerlikon Ahead airburst 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 catastrophic damage to its interior.

Ahead airburst ammunition can 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.

Furthermore, Rheinmetall's Ahead technology is by no means limited to static defence roles. Mobile applications are equally feasible. For short-term missions, a

truck-mounted version is available which can be deployed without unloading the system from the truck. This is particularly useful if the mission involves protecting a succession of different sites for short periods. Mounting a Skyshield air defence system on an all-terrain 6x6 or 8x8 vehicle ensures maximum operational flexibility.

Existing Skyguard and Skyshield systems can also be retrofitted with Ahead technology. Furthermore, due to the complete modularity of its systems, Rheinmetall is able to bring additional components into play, readily creating multi-mission capabilities tailored to the needs of individual clients.

Cutaway models of Rheinmetall's Oerlikon Ahead muzzle-integrated programming unit and Ahead ammunition are on show at Eurosatory 2014.

About Rheinmetall

Around the globe, the armed forces of more than 40 nations have come to rely on the multifaceted, automated and highly effective air defence solutions produced by Rheinmetall. Among others, the company's best-known products are its widely introduced Oerlikon Skyguard Air Defence System and the Oerlikon Skyshield generation with its pioneering Revolver Guns.

Orders from customers around the world underscore Rheinmetall's status as a globally leading supplier of advanced, readily available modular products for the modern military. In an age when new threats to national security can emerge literally overnight, this means maximum flexibility and maximum readiness.

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