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“Force protection is our mission”: Rheinmetall’s comprehensive, made-to-measure protection technology

Small arms fire, guided missiles, explosively formed projectiles and improvised explosive devices are among the most serious threats facing troops during deployed operations today.

Whether the object is preventing optical, optronic or electronic detection, or developing individual body armour, innovative vehicle systems or even safeguarding large-scale critical infrastructure, Rheinmetall supplies cutting edge systems and total solutions.

A great strength of Rheinmetall is its unsurpassed ability to integrate new and existing technology into a highly effective system of systems.

In recent years, the Rheinmetall Group has been systematically adding to its portfolio of advanced protection technologies through a strategy of well-targeted corporate buyouts. With Rheinmetall Chempro GmbH, Rheinmetall Ballistic Protection GmbH and ADS Gesellschaft für aktive Schutzsysteme mbH, the Group has a unique range of sophisticated protection technologies at its disposal – all from a single source.

A growing number of defence contractors and end-customers place their trust in Rheinmetall’s force protection expertise. The Group is currently taking part in performance upgrade programmes for a wide variety of vehicles and vessels in countries around the globe.

At Eurosatory 2014 Rheinmetall is displaying its comprehensive force protection concept, highlighting systems and components such as ballistic inserts for body armour, the Integrated Armour Cabin (IAC) for the RMMV logistic vehicle family, diverse add-on armour elements and spall-liners, mine protection concepts and the ROSY smoke/obscurant system as well as its ADS Active Defence System.

Protection in accordance with the “Onion Principle”

Rheinmetall’s comprehensive protection concept involves a multi-layer approach.

Rheinmetall Chempro und Rheinmetall Ballistic Protection are the Group’s experts for passive protection products. Among the passive protection systems on show at Eurosatory 2014 is the VERHA line of products from Rheinmetall Ballistic Protection GmbH. These include lightweight high-performance ballistic protection materials which are integrated into many military and civil armoured vehicles, helicopters, naval vessels as well as furniture, plus insert plates for ballistic vests all over the world.

Rheinmetall Chempro focuses on passive systems for protecting wheeled and tracked armoured vehicles from mine blasts, improvised explosive devices (IEDs), tandem warheads and 120mm kinetic energy warheads. In recent years, Rheinmetall Chempro has equipped more than 40,000 vehicles with highly sophisticated protection systems. On show at Eurosatory 2014 is the MBT Evolution equipped with state-of-the-art force protection technology. Also on display is a protection kit demonstrator for the CV90 infantry fighting vehicle.

High-performance “soft kill” solutions offer excellent active protection by making vehicles harder to detect and hit. Here, too, Rheinmetall supplies solutions for ground vehicles as well as fixed-wing aircraft, helicopters and ships. Smoke/obscurant systems like “ROSY” make vehicles invisible to the enemy in the event of an ambush, etc. At sea, the Group’s Bullfighter and MASS naval countermeasures systems set the global standard. MASS is a decoy-based system that creates phantom targets that reliably divert incoming enemy missiles from their intended objectives. Just a few months ago, the Bundeswehr, Rheinmetall and the Israel Aerospace Industries (IAI) ELTA Group successfully tested the MASS_ISS “Integrated Sensor Suite” with the NavGuard ship protection system. MASS_ISS features various sensors for detecting radar, laser and electro-optical threats. The latest component is the innovative ELTA NavGuard radar detection system, which actively warns the crew of incoming rockets and guided missiles.

A new version of ROSY, “ROSY_mod” (“mod” stands for modular), is premiering at this year’s Eurosatory. It is specifically designed for small weapon stations and light vehicles of the kind used by special operations forces. Moreover, ROSY_mod can be integrated directly into the vehicle without a launcher, making it undetectable.

Though these are not on display at Eurosatory 2014, Rheinmetall also supplies 66mm and 76mm smoke/obscurant systems and ammunition. In its capacity as subcontractor to Finnish vehicle maker Patria, in 2012 Rheinmetall booked an order for the first serially produced “Light Vehicle Protection System LVPS 66mm”. A total of 113 armoured modular vehicles (AMVs) are being equipped with the system on behalf of the Swedish armed forces. Additional orders, likewise for Swedish end-customers, have come from BAE-H for the BvS10, and from Patria for the upgrade of the XA203S. The armed forces of Sweden and the Netherlands already deploy the system in Afghanistan.

Constituting the last line of defence, “hard kill” standoff systems such as Rheinmetall’s ADS neutralize incoming projectiles before they reach their target, and thus present an especially innovative and effective solution.

Active Defence System (ADS)

Successfully tested and now in production, the globally leading Active Defence System (ADS) is a state-of-the-art, extremely effective active hard kill system for protecting military vehicles in practically every weight class from operational threats. ADS provides total situational awareness thanks to sensor systems which continuously scan for incoming projectiles such as shaped charge warheads or antitank guided missiles. When the sensors detect a threat the system reacts within microseconds by automatically activating a protective sector and then neutralizing the incoming threat. ADS is the only high-performance near-field protection system that employs a fragment-free countermeasure which intercepts the threat in the immediate proximity of the vehicle, thus significantly reducing and containing the risk of collateral damage.

In 2012 a foreign customer qualified the ADS in an extensive programme of trials, including static and dynamic ATR and ATGM firings and comprehensive environmental tests. The system is now being delivered in series.

A European agency has carried out generic qualification of the system, including integration into a 4x4 vehicle, testing its effects on vehicle mobility and handling. The programme also included EMC/EMI tests. Qualification was successfully concluded early 2014.

ADS Gesellschaft für aktive Schutzsysteme mbH, in which Rheinmetall AG of Düsseldorf holds a majority 74% share, with the remainder owned by IBD GmbH of Lohmar, Germany, has progressed from the development and testing phase to full-scale production of ADS.

With the increased focus on self-defence, peacekeeping operations and support missions as well as force protection in general, armies around the globe are already showing great interest in ADS technology. Experts put the number of military vehicles requiring an active protection system of this type in the tens of thousands worldwide.

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