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Rheinmetall's 3D X-Band tactical acquisition radar for today's air defence systems

Aerial attacks continue to pose a major threat to troop concentrations, military bases, civilian population centres and critical civilian infrastructure. True to its motto "Force Protection is our Mission", Rheinmetall offers a wide array of sophisticated air defence solutions. These include the X-TAR3D radar on show at Eurosatory 2014.

In order to meet the stringent operational requirements of radar sensors for short- and very short-range air defence, Rheinmetall has extended its family of X-TAR radar to include the new X-TAR3D air surveillance and acquisition radar.

A three-dimensional tactical acquisition radar operating in the X-band, X-TAR3D performs the functions of short-range search, detection, acquisition, tracking, classification and identification of air targets, enabling it to supply a three-dimensional local air picture to the command and control network as well as to track threat data for cueing fire control systems.

X-TAR3D is specifically designed for maximum effectiveness against a wide array of air threats, ranging from conventional air-breathing targets (fixed-wing, helicopters) to low and very low cross-section objects such as stealth and unmanned targets (UAVs, cruise missiles), as well as rockets and mortar rounds (C-RAM capability).

A fully coherent phased-array pulse Doppler radar, X-TAR3D obtains elevation information through up to twelve simultaneously receiving stacked beams, which allows it to scan the full search volume in a single antenna revolution (1.5sec). The radar architecture is based on multiple transmitter and receiver modules that assure high reliability and graceful degradation. The radar electronics are integrated inside the antenna unit; data interface with other units (IFF, MMI, etc.) is via the Ethernet channel. Compact design and reduced weight permit easy installation on board light vehicles or integration into highly mobile command and coordination posts.

While retaining excellent altitude coverage, X-TAR3D is specifically designed to detect and track targets flying at very low altitudes. Despite the system's small dimensions, its high radar accuracy and resolution, both in azimuth and elevation, allow excellent target-to-target and target-to-jammer discrimination. The outstanding accuracy of the 3D target data results in a high target acquisition probability and

thus a drastic reduction in the acquisition time for associated weapon systems; this, coupled with the short radar target revisit time, translates into a very short reaction time for the entire air defence system.

X-TAR 3D is the perfect Sense & Warn radar as it is fully compliant with NATO technical performance standards. It is also extremely compact and light, and therefore highly mobile and easy to transport, thus making it the ideal S&W system for field operations.

Rheinmetall Defence: totally oriented to today's military

In the domain of VSHORAD technology, Rheinmetall's Air Defence division 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. Its core competencies include the development and manufacture of complete air defence systems as well as simulators and training equipment.

Rheinmetall Italia S.p.A., formerly Oerlikon Contraves S.p.A., is a company of the Rheinmetall Group and serves the low-level air defence market. Building on more than fifty years' experience in the design, development and manufacture of air surveillance and tracking radars, Rheinmetall Italia is the Group's radar centre of excellence.

With its Combat Systems, Electronic Solutions, and Wheeled Vehicles divisions, Rheinmetall Defence supplies the world's armed forces with systems and equipment systematically designed to assure successful outcomes in complex modern military operations.

Rheinmetall also maintains an extensive network of international partnerships for serving new markets as well as enabling technology transfer that will substantially benefit both the industry and the military of customer nations. This makes Rheinmetall the ideal industrial partner in the quest to supply today's armed forces with advanced capabilities.

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