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Rheinmetall “Gladius”: state-of-the-art soldier systems

Pedites pugnas decernent. Infantry decides the battle!

Experience gained and lessons learned in recent conflicts underscore once again the importance of having well-trained, well-equipped, highly flexible, highly mobile infantry forces that are capable of operating in joint and combined scenarios and putting “boots on the ground” where they are needed most, ultimately achieving the desired military outcome.

The German Army tasked Rheinmetall to develop a modular soldier system capable of meeting an exhaustive catalogue of requirements – one that would enable German infantrymen to gain and maintain a decisive advantage in current and future conflicts.

Following a five-year development and testing phase, the new system, now dubbed the “Gladius”, was ready to be fielded. Having met all the requirements, the first 30 of these systems – one system equips a 10-men infantry section – reached the Bundeswehr in 2012, earmarked for units due to deploy to Afghanistan in mid 2013. In the meantime, a further 60 systems have been taken under contract, the most advanced soldier system now on the market.

Gladius, named after the trusty Roman short sword, is on display at Rheinmetall’s stand at DSEI 2013 in London, where the focus is on interaction between dismounted troops and the section vehicle’s C4I system.

Operational requirements

Gladius had to meet the operational requirements of a variety of highly specialized units, ranging from special operations forces and airborne forces to mechanized infantry and naval and air force security units.

Taking into account the tactics, techniques and standard operating procedures of specific infantry units, Rheinmetall’s approach to meeting these requirements was to integrate every single component, from combat uniforms to laser rangefinders, into a single overarching system, merging specific, individual capabilities to form a reliable, fully integrated soldier system rather than a collection of separate components.

Gladius significantly improves a 10-man infantry section's command and control, combat effectiveness, survivability and force protection, and sustainment and mobility capabilities – whether mounted or dismounted, in any terrain, in any climate, at any time.

Features and functions of Gladius

Gladius is the first soldier system that directly connects the infantry section to the next higher echelon, enabling the exchange of voice and data communication and assuring a link to the German Army's battle management system.

This requires a comprehensive array of technical equipment. The components that make up this system fall into three basic subgroups:

- battle dress, body armour and personal load-carrying equipment,
- weapons, optics and optronics (WOO), and
- C4I = command, control, communication, computers, information.

The complete C4I system is integrated into the “electronic backbone”, including the core computer, which is based on the Linux operating system, and various interfaces necessary to operate the GPS, the UHF section radio, the head-set, as well as the power supply, the soldier's control unit, the helmet system with digital magnetic compass and the helmet-mounted display / night vision device with augmented reality. Additional sensors and devices, such as a laser rangefinder or the push-to-talk buttons on the assault rifle, can be readily integrated into the system.

Via the control unit, the rifleman can easily and intuitively access the main menu in order to change or adjust the system's settings or to display maps, waypoints, blue force tracking or enemy threat reporting features. All relevant information can be viewed on the helmet-mounted display (HMD) or the “Lucie II D” night vision goggles.

The current tactical situation is continuously and automatically updated, helping the section leader and his superiors to take quick decisions as well as making it easier to coordinate the deployment of friendly forces. An integrated blue force tracking function indicates the position of every single rifleman, enabling the section leader to visualize and evaluate the disposition of his unit. In order to facilitate movement and manoeuvre, Gladius provides the section leader and assistant section leader with an additional command and control computer and a VHF radio. This enables the section leader to accelerate the dissemination of orders by providing a sketch tool for graphic orders on the digital map or by distributing pre-formatted messages within the section and the platoon.

An audio headset with built-in hearing protection not only enables direct voice communication, but also filters harmful impulse noises while still permitting the wearer to hear quieter ambient sounds.

Key advantages of Gladius

The significant operational added value of Gladius results in part from bridging previous capabilities gaps, especially with regard to C4I, network-enabled warfare and combat effectiveness. Examples include:

- improved situational awareness and expanded command and control capabilities due to blue force tracking and red force visualization;
- augmented reality day and night with integrated command and control information for enhanced combat performance;

- real-time transmission of information from soldiers to the command post;
- rational harmonization of uniforms, body armour and the load-carrying system. This enables soldiers to adjust to ambient temperatures ranging from -32°C to +45°C. They offer protection from optical detection and the elements, and can be upgraded from German protection level (SK) 1 (an inconspicuous, normal battle dress uniform) to protection level SK4, which features modular body armour inserts. The latter can also be worn in tactical vehicles, which makes exiting the vehicle under fire considerably less hazardous;
- Optimized ergonomics (easy to use under field conditions, comfortable to carry, etc.), coupled with high mobility: "equipment tailored to mission". The innovative ventilation shirt makes a significant contribution to sustainment.

Combining a high degree of modularity and flexibility with the systematic use of standard interfaces assures fast, economical retrofitting and reconfiguration in response to changing tactical requirements, making Gladius a reliable, future-proof investment. Gladius gives infantrymen a tremendous technical and tactical edge, greatly enhancing their operational effectiveness.

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