

15 September 2015

**“Be prepared for the unexpected”:
Rheinmetall surveillance and alert systems at DSEI 2015**

Successful surveillance and reconnaissance operations require comprehensive detection capabilities and reliable identification of ground, surface and airborne threats at various altitudes – both day and night and under adverse weather conditions.

Despite their many advantages, radar-based solutions feature a number of drawbacks: they are active, susceptible to jamming, and may generate clutter when the radar beam bounces off non-targets such as mountains or trees. Finally, when radar detects a potential threat it generates an electronic signal rather than a real image of the target. These disadvantages can be offset by deploying passive infrared systems.

Several examples of Rheinmetall’s state-of-the-art system solutions will be on display at DSEI 2015 in London.

HEROLDnavy is an electro-optical surveillance and fire-control system which assures continuous 360° surveillance, detection, alerting and simultaneous tracking of more than 256 moving ground/surface and airborne objects. The combined key capabilities of the HEROLD system solution enable the operator to constantly generate and maintain optimum situational awareness.

HEROLDnavy encompasses two sensor system elements:

- FIRSTnavy – covering the complete angular range in azimuth, the “Fast InfraRed Search and Track” (FIRST) surveillance sensor delivers outstanding performance, assuring simultaneous detection and display of multiple ground/surface and airborne targets within a complete real-time panoramic thermal video stream, with a 5Hz repetition rate and an adjustable elevation beam from -29° to +35°. At DSEI 2015 FIRSTnavy is on display with a 2-axis stabilization for naval applications.
- Long-range sensor system for enhanced target evaluation – a wide choice of E/O sensor systems for target evaluation, tracking and fire control, all of which feature a thermal imager, an eye-safe laser rangefinder and daylight camera, providing a long-range target detection and identification capability.
- An additional FIRST sensor in tripod-mounted mode, specially designed for ground-based air defence applications and vehicle integration, will be on display at DSEI 2015.

FIRST and the dedicated long-range sensor system come with a sophisticated video image-processing capability for automatic target detection and automatic tracking with continuous calculation of 3-D target characteristics (latitude and longitude

coordinates, speed, course, altitude), which are displayed on a dedicated map for improved situational awareness.

An additional multi-mode multi-target tracker assures robust tracking capabilities and offers various search parameter settings for automatic target reconnaissance (ATR) to reduce false alarms as well the workload of the operator during extended missions.

At DSEI 2015 Rheinmetall is showcasing the Multi Sensor Platform MSP600, with a very precise internal 2x2-axis stabilization for observing surface and airborne objects over very long distances as an example of a second component of the HEROLDnavy system.

In the standard sensor configuration, it consists of three units: a sensor head, which contains a thermal imager, high-resolution colour CCD camera and a switchable eye-safe laser rangefinder; internal 2x2-axis stabilization; and the operator and control unit.

It provides an around-the-clock vision capability, including in conditions of poor visibility. Its integrated eye-safe laser rangefinder can be used to generate 3-D tracking data. Furthermore, the video processing unit includes automatic target reconnaissance (ATR) and line of sight (LOS) functions. The combination of ATR and pre-programmable search patterns enables automatic area surveillance with a high system redundancy.

HEROLD/HEROLDnavy feature the following key capabilities:

- automatic detection, alert, verification and tracking of ground, sea and airborne targets
- high sensor sensitivity and long-range capability due to cooled IR sensors
- multi-mode multi-target tracking of more than 256 targets (FIRST)
- 3D-target data (coordinates, speed, course, altitude)
- multiple dedicated deployment strategies (virtual fence, scanning, etc.)
- map display for improved situational awareness
- data recording
- target assignment and fire control
- network-enabled operations

HEROLD/HEROLDnavy provide dynamic, high-precision, reliable surveillance capabilities in a wide array of operational scenarios: airspace, ground/surface and coastal surveillance; air defence; border control; monitoring of harbour and airfield/airport installations; forward operating base protection; and air, ground and surface defence applications for various gun and missile systems.

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