

USER- FRIENDLY

New Lyra radars are versatile and economical

ANDY NATIVI • GENOA

When Selex Sistemi Integrati began developing a line of radars in 2006, it wanted a platform that would be versatile and inexpensive to operate and support. The result is Lyra, a family of small radars with a common base that is configurable for a number of applications.

Lyra comes in three models—10, 50 and 80—that can be used as surface-movement radar at airports, for coastal surveillance and naval traffic control, on battlefields and for border security.

The radar can be integrated with different surveillance sectors and with C⁴I architectures and related software.

Selex unveiled a prototype of the Lyra

10 at the Farnborough air show in July.

The key to the radar's versatility, says Lorenzo Mariani, head of engineering, is scalable engineering and modular software, which offers performance advantages over dedicated products. Customers benefit from the logistical, operational and training advantages of commonality, and from low pricing.

Lyra 10 enters series production in early 2009. It is for homeland security and battlefield surveillance, and can be mounted on a fixed tower, a vehicle or supplied as a man-portable system. In the latter configuration it consists of two packs: the first includes a compact patch antenna, 70 X 40 X 25 cm. (27.5 X 15.7 X

9.8 in.), weighing less than 25 kg. (55 lb.); the other contains battery packs that allow 24 hr. of continuous operation.

The pulsed-coherent radar, with a solid-state transmitter and a receiver with double conversion coherent chain, operates in the X-band. It can be remotely controlled and has a scan rate selectable from 6-12 deg./sec.

Selex claims a detection range of 24 km. (15 mi.) against trucks with 20 sq. meters (215 sq. ft.) of radar cross-section (RCS), and 10 km. against individuals with 0.5 sq. meters of RCS. Resolution is 9 meters in range and 3 deg. in azimuth.

Lyra 10 operates in a standby or surveillance and classification mode. It has automatic classification based on Doppler analysis of target backscatter.

Lyra 50 also operates in the X-band, but is for coastal surveillance and naval traffic monitoring. It is a solid-state system featuring advanced digital processing and radar technologies, including wideband frequency modulation, frequency diversity and digital-pulse compression, which permits lower peak-power use during long pulses. A proprietary side-lobe suppression algorithm reduces pulse-compression

range. Frequency diversity is exploited to lessen the fluctuation of target echo and decrease the range and time correlation of clutter returns, a benefit Selex says is vital for coastal radar.

The Lyra 50 is offered with a slotted waveguide sized for these applications. The system has a gain of more than 35

dB., selectable scan rate of 11 or 22 rpm., transmits an average of 5 watts and has a detection range of 48 km.

Prototype tests on the Lyra 50 began at the Selex plant in July, and development of the system is well along.

The Lyra 80 is for use in maritime surveillance, or as a high-end vessel

traffic system sensor with longer-than-average range due to the higher-gain reflector antenna and a more powerful transmitter.

The system maintains low transmitter peak power and offers transmission over multiple frequencies. It will reportedly offer enhanced performance in detecting difficult targets; the reference here being a small rigid-hull inflatable boat with low RCS. Lyra 80 is designed to detect this type of target at 15-20 km.

The development of this version will be completed next year, with production launched by the end of 2009. Selex still needs to make a decision about whether it will manufacture or purchase the antenna for the Lyra 80. While there are several commercial off-the-shelf options available, Selex is considering developing its own antenna to increase performance and optimize the design.

Executives put market demand for Lyra-type radar at 80 units per year for the next decade. They believe Selex can claim a 30% share of the business. ■

Lyra radars from Selex are small, configurable units with a common base.



ANDY NATHAN/DEFENSE TECHNOLOGY INTERNATIONAL