Naval & Air Defence Systems

MULTIFUNCTIONAL AESA NAVAL RADAR

KRONOS NAVAL is a multifunctional radar based on advanced Active Electronically Scanned Array (AESA) technology, used on naval vessels of 400 gross tons and above. KRONOS NAVAL applications include point defence, air and sea surveillance, littoral warfare, and missile and gunfire support.

KRONOS NAVAL is designed to enable warships, such as offshore patrol vessels and corvettes, to perform naval missions such as self and point defence, blue and coastal patrolling, and land forces assistance.

In blue water and littoral environments, and in harsh meteorological and electromagnetic conditions, KRONOS NAVAL uses its multifunctional capability to simultaneously and independently perform surveillance and targets tracking by electronically scanning the beam both in azimuth and elevation, in addition to mechanical rotation.

In operation with a number of navies around the world, the system belongs to the company's renowned KRONOS multifunctional radar family.

KEY POINTS

KRONOS NAVAL is based on consolidated company experience in the development of multifunctional radar systems.

This began more than 20 years ago with the shipborne EMPAR radar installed on the French/Italian Destroyers (Horizon) and Italian Aircraft Carrier (Cavour), with the main mission of self/area defence through active missiles guidance (ASTER15/30). EMPAR, in service since 1985, has successfully performed more than ten formal ASTER missile firing and more than 100 formal trials with co-operative targets (missiles, helicopters, aircraft and ships).

While maintaining the same capabilities, the company inserted new solid state technology based on Transmitter Receiver Modules in the EMPAR's antenna architecture designing the KRONOS MFRA, the KRONOS NAVAL and a modular and scalable design which is now branded as KRONOS multifunctional radar family.

KRONOS® NAVAL

Successfully supplied to the UAE and Peruvian navies, KRONOS NAVAL offers multifunctional capabilities with:

- AESA technology developed at the in-house foundry
- Configurable antenna illumination distribution
- Dynamic and adaptive beam forming
- Extremely fast reaction times to manage response to a wide spectrum of present and future threats, and minimizing delays in the tracks initializations
- Dedicated tracking for active missiles guidance
- Gunfire support, such as splash spotting
- High reliability and graceful degradation
- Ease of maintainability through TRMs plug-in features

THE SYSTEM

Suitable for a wide range of vessels, KRONOS NAVAL performs the following main tasks:

- Air and surface surveillance, with elevation coverage up to 70° to help counter high diving missile threats
- Priority evaluation of threats
- Air and surface dedicated tracking with different refresh rates depending on the danger of the threat
- Dedicated tracking for active missile guidance (e.g., VLMICA, ASTER)
- Dedicated tracking against small and low visible target or pop-up targets, such as Sea Skimmers
- Target designation to weapon systems
- Gunfire support/splash spotting
- Side Lobe Blanking (SLB) and side lobes lower than 40dB
- EMission CONtrol (EMCON)
- Jam strobe detection and tracking

Unlike traditional 3D radars, KRONOS NAVAL automatically schedules and performs any activity classified as a priority within the current tactical scenario by scanning the beam in both azimuth and elevation, while mechanically rotating at 60rpm.

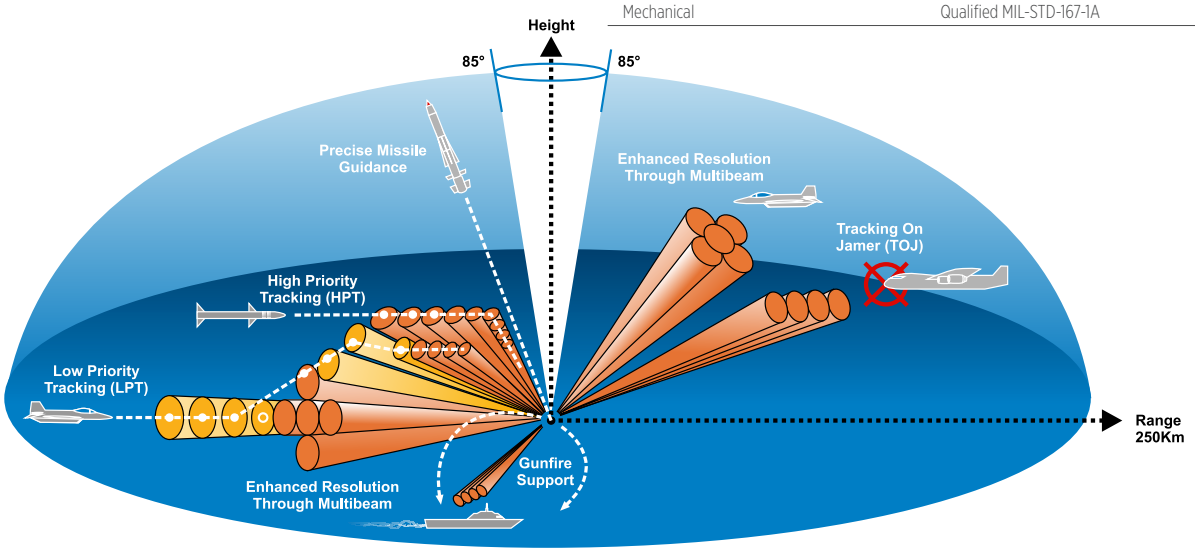
It also features stealth configuration with a reduced radar cross-section. KRONOS NAVAL can be easily integrated in a multi-layered defence system, such as a ship combat system, providing the following operational advantages:

- Shortest reaction time for track initialization. After the initial detection of a new threat, KRONOS NAVAL confirms the threat in the same scan, scanning the beam in azimuth and then initializes the track in the next mechanical scan. This capability is fundamental against pop-up targets, such as Sea Skimmers
- Shortest reaction time for track cueing and engagement. KRONOS NAVAL performs a dedicated tracking with an update period of 1 second for threats classified as HPT (High Priority Tracking), reaching the fire control system required tracking accuracy in a short time
- Reference to LPT

This capability provides increased reaction time gain in the combat system engagement chain.

TECHNICAL FEATURES

Operating band	C-Band
Antenna technology	Active Full Phased Array TX/RX solid-state modules
Antenna rotation speed	60rpm
Electronic scanning capability	±45° azimuth ±60° elevation
Surveillance range	250Km
Tracking update rate	Up to 1 second
Elevation coverage	Up to 85° in tracking Up to 70° in surveillance
Number of tracks	Up to 300
Weight above deck	970kg (IFF Included)
Integrated IFF and SLB antennas	Primary radar 4 channels Secondary radar 2 channels
MTBCF	>2000h
MTTR	<45 min (TRM plug-in)
EMI/EMC	Qualified MIL-STD-461E
Climatic environment	Qualified MIL-STD-810F
Mechanical	Qualified MIL-STD-167-1A



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