

POWERED
BY TRUST

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ELECTRONICS & DEFENSE



NAVAL OPTRONICS

Sea with confidence



YOUR REQUIREMENTS
FOR SUCCESSFUL MISSIONS

- SITUATION AWARENESS
- GUN DIRECTOR
- TARGET ACQUISITION
- TRUE ON-THE-MOVE
- GEOLOCATION
- NAVIGATION
- ADVANCED EMBEDDED FUNCTIONS
- COMPLETE SUPPORT PACKAGES



40 YEARS OF EXPERIENCE
AS A MARKET LEADER



N°1 IN EUROPE FOR
OPTRONIC SYSTEMS



PERFORMANCE & RELIABILITY
AT YOUR SERVICE



TAILORED TO YOUR
REQUIREMENTS



COMBAT PROVEN



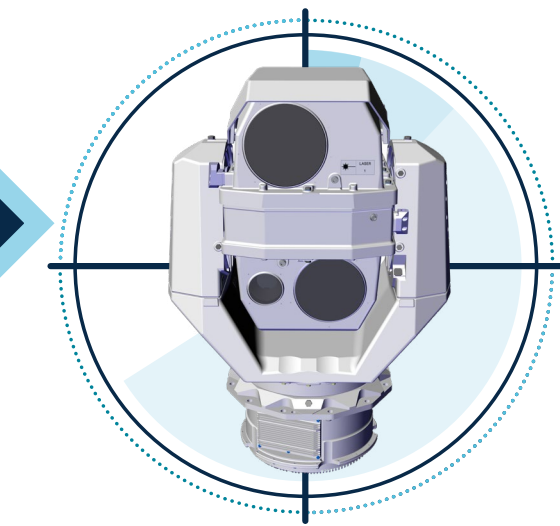
OPTIMIZED LIFE CYCLE COST

PASEO XLR®

Extra long-range naval optronic identification & fire control system for naval applications

Designed for self-defense operations, PASEO XLR® provides crystal clear images of the environment, day or night, even in poor weather conditions, to ensure long-range identification & tracking. It allows manual or automatic sector surveillance, automatic target tracking, visual identification and transmission or reception of 3D target designation information.

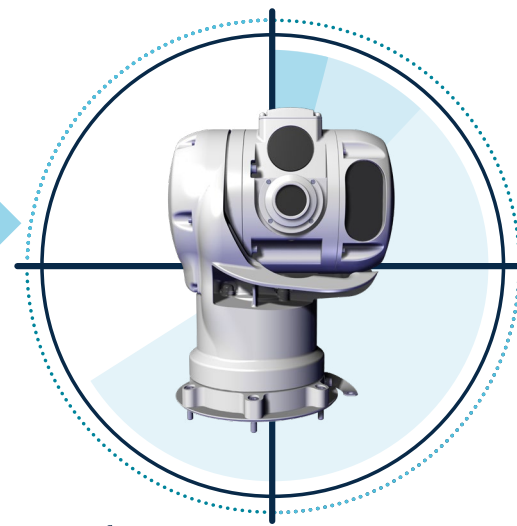
PASEO XLR® comprises a high-performance gyro-stabilized platform and is able to simultaneously control several guns of different calibers. It can be integrated in a Combat Management System or operated in a stand-alone mode.



VIGY HD®

OBSERVER/ENGAGE

Compact and lightweight, VIGY HD® is a fully panoramic stabilized observation system, easy to install and deploy, on any type of vessel, from RIBs to large OPV. VIGY HD® Observer provides a full day-night, all weather surveillance. VIGY HD®, in its Engage configuration, is a naval stabilized electro-optical system, which can be used as either gun director or fire control system. An integrated remote weapon station interface provides gun director capabilities.

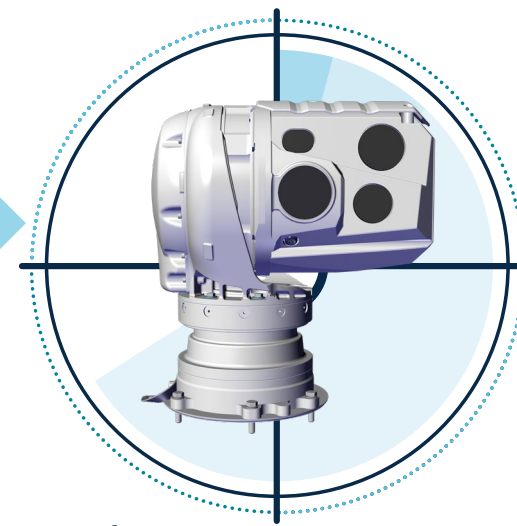


VIGY 4®

OBSERVER/ENGAGE

Compact and lightweight, VIGY 4® is a fully panoramic stabilized observation system, suitable for installation on any type of vessel from RIBs to corvettes and frigates. Easy to install and deploy, it includes the most up-to-date sensors, integrated on a low weight 2-axis gyro-stabilized platform. VIGY 4® Observer provides a full day-night, all weather surveillance capability, as well as enhanced navigation and situation awareness.

VIGY 4® , in its Engage configuration, is also suitable as a fire director system by transmitting the target position to a CMS or as a fire control system (FCS) including ballistic computation and naval gun control.



5 UP-TO-DATE SENSORS



HD MWIR COOLED THERMAL IMAGER

HD MWIR - COOLED THERMAL IMAGER
Wavelength: 3-5 µm (MWIR)
NFOV up to 0.95°

Continuous optical zoom up to x8
Additional digital zoom up to x4



DAYLIGHT FULL HD TV CAMERA

Type: Color Full HD
Continuous optical zoom up to x10
Additional digital zoom up to x4
HDTV spotter up to 0.34°



SWIR CAMERA

Wavelength: 0.95 - 1.7 µm (Short Wave InfraRed)
SWIR Spotter up to 0.55°
Additional digital zoom up to x4



LASERS

Eye safe laser range finder
Range capability: 50m up to 30km
Frequency: 6Hz



GYRO

2-axis high performance rate gyros embedded
LOS stabilization: < 10 µrad RMS
LOS pointing accuracy: < 0.5 mrad

BENEFITS & MAIN FEATURES

- -30° / +70° elevation range
- 630mm x 950mm
- Weight: <133kg
- Serial production
- ITAR FREE

- Enhanced target identification performances
- Multi-target tracking
- MWIR and HD TV fusion
- Optionnal ballistic computer with high accuracy gun firing
- Easy to integrate
- Modular design allowing for easy maintenance
- High-performance gyrostabilized platform
- Accurate line of sight

OPTIONS

- Sector automatic detection surveillance module
- Ballistic computer with high accuracy gun firing

4 UP-TO-DATE SENSORS



HD MWIR COOLED THERMAL IMAGER

Wavelength: 3-5 µm (Medium Wave InfraRed)
WFOV of 9° and NFOV of 3°
Additional digital zoom up to x4



DAYLIGHT FULL HD TV CAMERA

Continuous optical zoom up to x27
(from 63.7° to 2.3°)
Additional digital zoom up to x4



LASERS

- Eye safe laser range finder
- Range capability: 50m up to 10km



GYRO

2-axis high performance rate gyros embedded
LOS stabilization

BENEFITS & MAIN FEATURES

- 360° continuous azimuth (slip ring)
- -30° / +70° elevation range
- Compact & lightweight: <33kg
- Sea proven
- Serial Production
- ITAR FREE

- Improved on-the-move capability
- Sensor modularity
- Easy to integrate
- Automatic target tracking
- Improved target designator due to powerful magnification
- Accurate & gyro-stabilized line of sight

OPTIONS

- Sector automatic detection surveillance module
- Ballistic computer with high accuracy gun firing



360° panoramic
view independtly of the turret



2 axis stabilized platform

5 UP-TO-DATE SENSORS



HD MWIR COOLED THERMAL IMAGER

Wavelength: 3-5 µm (Medium Wave InfraRed)
NFOV up to 3.3°
Continuous optical zoom up to x8
Additional digital zoom up to x8



DAYLIGHT FULL HD TV CAMERA

Type: Color Full HD
Continuous optical zoom up to x27
(from 63.7° to 2.3°)
Additional digital zoom up to x12



SWIR CAMERA

Wavelength: 0.95 - 1.7 µm (Short Wave InfraRed)
SWIR fixed FOV of 2.5°
Additional digital zoom up to x8



LASERS

Eye safe laser range finder with a range capability: up to 20km. Frequency up to 10Hz
Eye safe laser pointer with a range performance: up to 800m
Wavelength: 0.83 µm



GYRO

2-axis high performance rate gyros embedded
LOS stabilization

BENEFITS & MAIN FEATURES

- 360° continuous azimuth (slip ring)
- -30° / +70° elevation range
- Compact & lightweight: <35kg
- Sea proven
- Serial Production
- ITAR FREE

- Improved on-the-move capability
- Sensor modularity
- Easy to integrate
- Automatic target tracking
- IR and TV channels with real time enhancement
- NMEA radar and INS connections
- Optional Fire Control System (FCS)
- Color TV camera including low light mode

OPTIONS

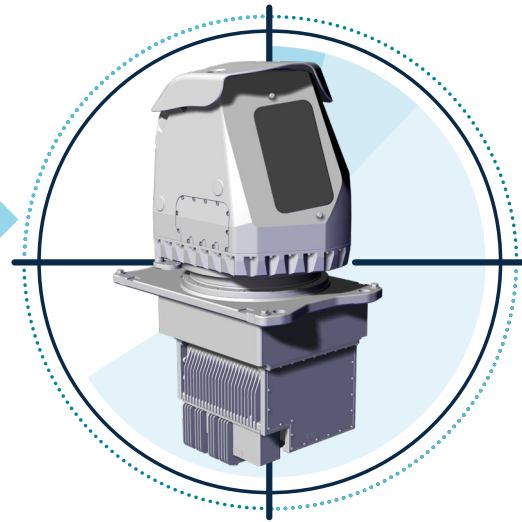
- Sector automatic detection surveillance module
- Ballistic computer with high accuracy gun firing

VAMPIR NG®

3rd generation naval InfraRed Search & Track (IRST)

Integrated onto surface vessels, VAMPIR NG is a long-range infrared search and track system. It is the only system that offers high response capabilities to threats coming from either blue or shallow waters, providing a unique contribution to situation awareness.

As an integral part of the ship's combat system, VAMPIR NG is an efficient and cost effective solution for self-protection against conventional and asymmetrical threats, from anti-ship sea-skimming missile, fighter aircraft and UAV to fast incoming crafts, including RIBs or jet ski.



WORLD'S BEST SELLING NAVAL IRST

HD MWIR COOLED THERMAL IMAGER

Wavelength: 3-5 μ m (Medium Wave InfraRed)
Vertical WFOV of 10.5° & Vertical NFOV of 4.3°

IRST IMAGE PROCESSING

Combining 100 pictures/second to provide a high-quality IRST video
33 million pixels/second processing

TRACKING CAPACITY

Tracking initiation capacity
Automatic alert
Extreme false alarm rate
Target designation accuracy: <0.5 mrad (rms)
Simultaneous tracking of 100 targets

BENEFITS & MAIN FEATURES

- 360° continuous azimuth (slip ring): 1 revolution/second
- -20° / +45° elevation range
- Sea proven
- Serial Production
- ITAR FREE

- Unique combination of panoramic imaging and alerting operation modes
- Permanent high speed rotation
- Very long range
- Stabilized Line of Sight
- Dual mode IRST
- State of the art IR sensor
- Sea-proven image processing
- Provides IRST video
- Fully remote controlled from CMS or supplied operator console
- 5 mission settings available
- Reduced acquisition and through life cost
- Shock & vibration resistant
- Easy installation and maintenance

A PORTFOLIO FOR ALL YOUR NEEDS, FOR ALL YOUR VESSELS

VIGY HD®



RIBs

OPVs

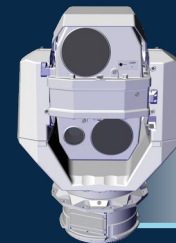
Large surface vessels
(corvettes, frigates...)

Aircraft carriers

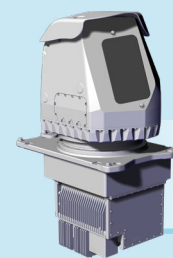
VIGY 4®



PASEO XLR®



VAMPIR NG®



A PORTFOLIO FOR YOUR MISSIONS: DETECT & IDENTIFY

“ A world leader in 360° IRST systems allowing for long range detection and optimized protection ”

“ All-weather, very-long-range identification
Maximum data gathering Information
shared in real time ”



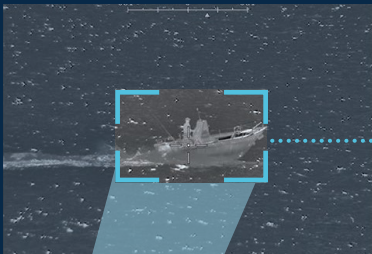
- ▶ DETECTING ALL THREATS WITHIN THE AIR AND SURFACE SELF-DEFENSE ZONE AND WITH A VERY EARLY WARNING ENSURING MAXIMUM PROTECTION
- ▶ CONSTANT SURVEILLANCE AND CAPABILITIES, DAY OR NIGHT, UNDER ALL CONDITIONS

- ▶ FIT FOR INCREASINGLY DEMANDING INTELLIGENCE GATHERING MISSIONS WITH ADVANCED AI FEATURES
- ▶ FIT FOR TODAY'S CONNECTED & COLLABORATIVE WORLD
- ▶ POSITIVE & VISUAL IDENTIFICATION OF THREATS UNDER ALL CONDITIONS

A PORTFOLIO FOR YOUR MISSIONS: ENGAGE

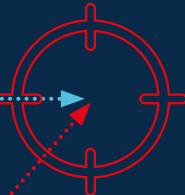
Gun Fire Control System

“ Automatic, decoy-resistant tracking and precise trajectory calculation of multiple targets allowing for a high precision engagement with any type of weapon system ”

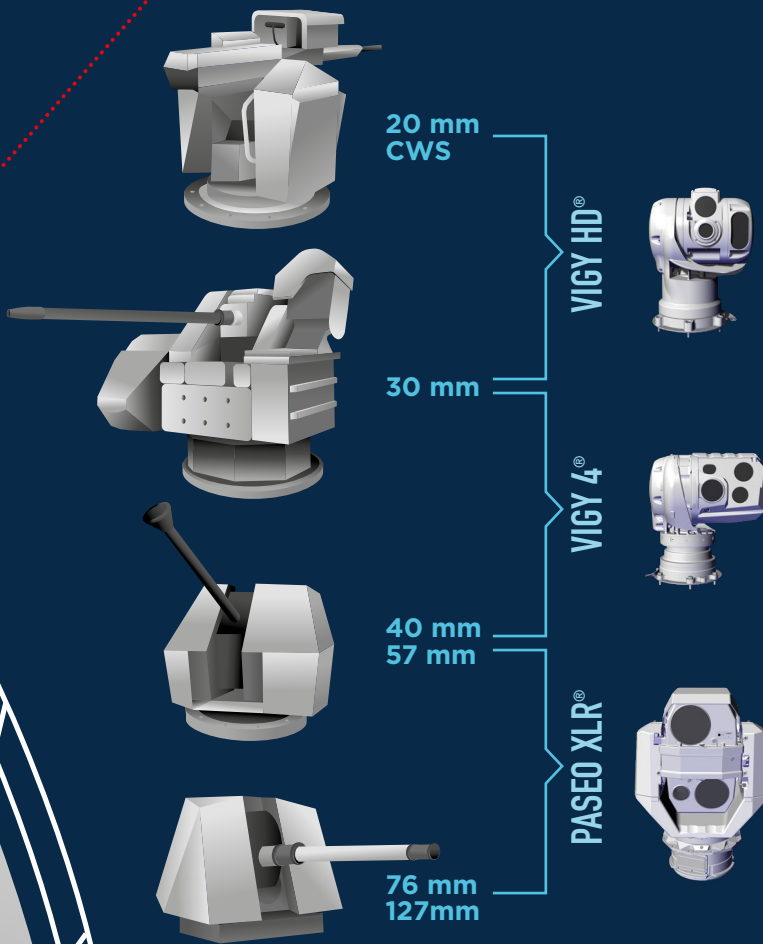


Advanced tracking capabilities & distance measurement

allowing for precision firing aiming at target's future position



Distance measured by LRF



ADVANCED EMBEDDED FUNCTIONS

Safran offers advanced functions fully embedded in the systems, enhancing the operator's situational awareness.

ENHANCED IMAGE PROCESSING

Improve real-time image quality thanks to a proprietary algorithm that sharply increases detail recognition and identification range.



SECTORIAL SCANNING

Azimuth sector-scan with automatic target detection. Panoramic display of the scanned sector with marked detected targets.

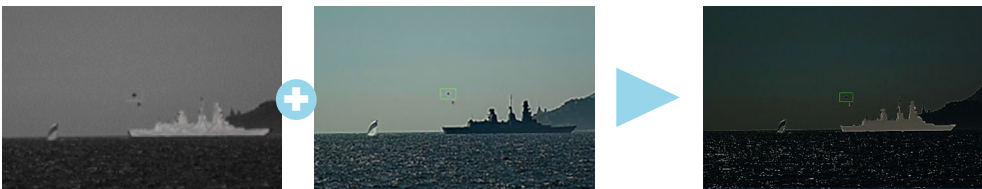
Zone of interest



TV or IR video stripes

BLENDING & FUSION

Fusion of different wavebands into a single video stream, giving operators the advantages of each wavelength.



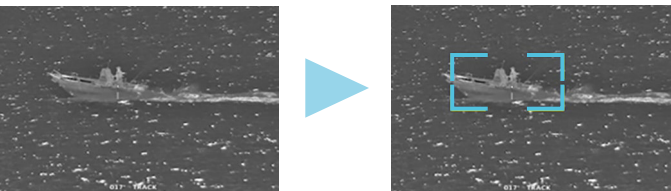
HOT SPOT DETECTION (HSD)

Reveal objects that are invisible to the naked eye by highlighting hot targets in the image background.



AUTOMATIC VIDEO TRACKING

Follow a target of interest automatically without any continuous input from the operator, by day or night. Video tracking allows to determine the speed of a designated target.

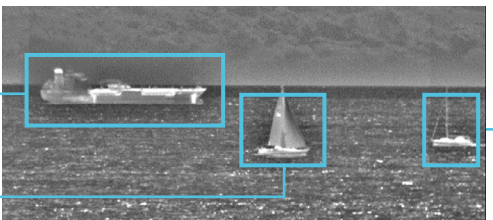


AI-BASED AUTOMATIC CLASSIFICATION

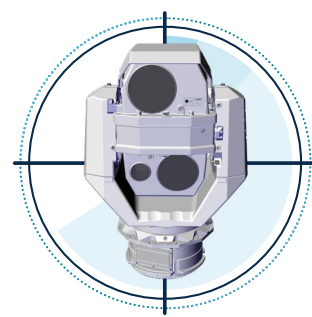
Advanced developments integrating more artificial intelligence allow for the utmost actionable situational awareness

Merchant Ship - Star of Plougastel
IMO 20271872

Sailing Ship
Napoleon

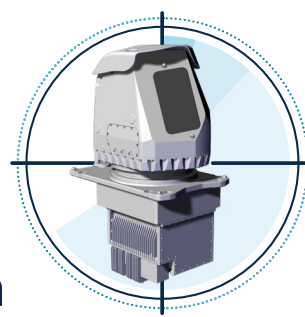


Sailing Ship
Nelson



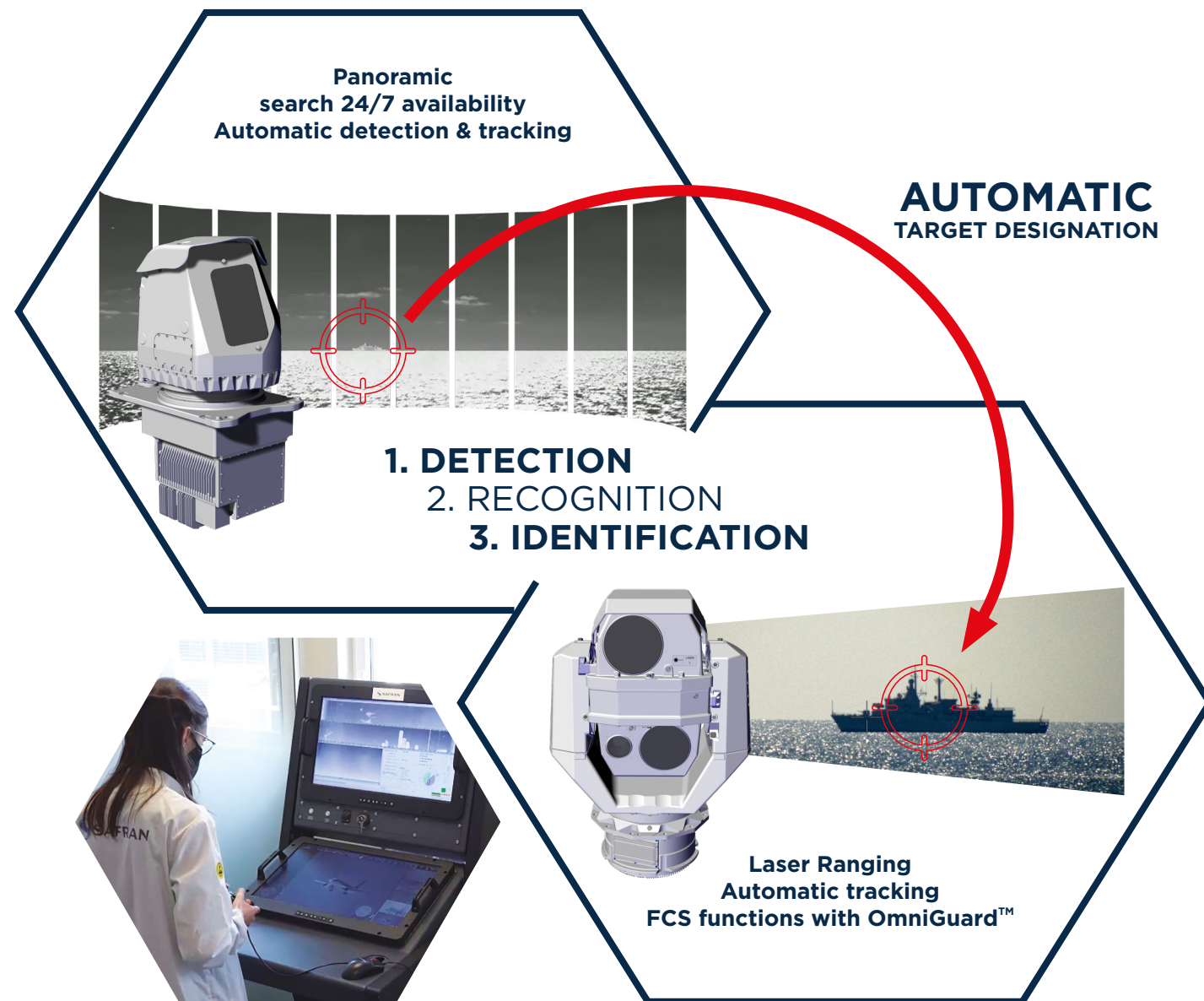
OMNISIGHT™

the game-changing
integrated 360° EO/IRST solution



OMNIGUARD™

the ultimate 360° solution with fire control management
for a full engagement capability



A SMART INTEGRATED SOLUTION FOR ACTIONABLE SITUATIONAL AWARENESS

BENEFITS & MAIN FEATURES

- ▶ Sea proven
- ▶ Integrated solution
- ▶ Autonomous system

Combined optronic sensors to detect,
identify and engage from a single operated console

Operational against both symmetric and asymmetric threats

Robust tracking at firing range

MWIR and HD TV fusion

High-performance and encompassing solution

Extra-long range and multispectral track level fusion

Intuitive & user-friendly HMI

“ Integrating AI-based solutions for the utmost operability ”

MAINTENANCE MADE EASY BY OUR MODULAR DESIGN

Safran Electronics & Defense develops product architectures allowing for time-saving and easy on-board maintenance.

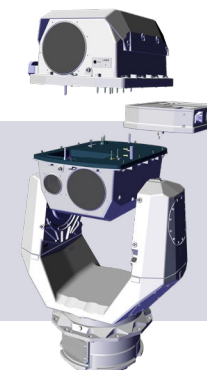
VIGY HD®
OBSERVER/ENGAGE



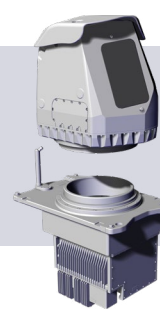
VIGY 4®
OBSERVER/ENGAGE



PASEO XLR®



VAMPIR NG®



LINE REPLACEABLE UNITS (LRU)

All 6 LRU are fit-for-purpose and allow for on-board maintenance



ROBUST DESIGN

Adapted to even the harshest naval environments



HIGH AVAILABILITY ON-BOARD

With few failures requiring removal for depot-level maintenance



SOVEREIGN & ITAR-FREE TECHNOLOGY

Our independent technologies allow for obsolescence and upgrades management and technology transfers

MY E&D SERVICES

Customer support solutions to maintain cutting-edge technologies

CUSTOMIZED SERVICES

- Easy servicing throughout the product lifecycle

TRAINING

- Realistic training simulators based on user-defined operational scenarios for optimized ownership

E-SERVICES

- Modern e-maintenance solutions tracking key parameters to forecast wear and failures

LOW COST OF OWNERSHIP

- Worldwide big sellers naval electro-optical solutions enabling a mutualized obsolescence treatment

UP-TO-DATE & COST-EFFECTIVE PRODUCTS

- Integration of the latest innovative solutions & development of product roadmaps for better opportunities

If you have any other questions or if you would like our assistance, please contact us by email. We look forward to hearing from you. Your Safran Support Team.



ONLINE CONTRACT MANAGEMENT

- Full online access to your repair status, contract information technical documentation

CYBER-SECURED ONLINE PLATFORM

- Data sharing and documents transfer

E-LEARNING

- Access to e-Learning modules

HELPDESK AND TICKETING

- 24/7 access to Safran Service Managers



Email:
contact-defense@safrangroup.com



SafranDefense



SafranElecDef

OUR REFERENCES

More than 1,000 warships and
50 navies worldwide equipped with our
optronics and/or inertial solutions



Our understanding
of your requirements
combined with our expertise
in electro-optics solutions



Ease of
integration
&
on-board
maintenance

Fire Control System
functions for guns
up to 127mm

