CAT EYE™ SYSTEM XLR
See Clearer & Further in any Condition
Extra-long-range DAY/NIGHT Surveillance

Identification of target at up to:

- **20 km**
  in dark night or difficult meteorological conditions

- **40 km**
  from elevated point, by day
CAT EYE™ SYSTEM XLR
CAT EYE™ XLR: MISSIONS

Observation
- 24/7 surveillance
- Adjustable surveillance area
- Panoramic surveillance
- Horizon scanning

Security
- Target acquisition and tracking
- Automatic event detection
- Multi-threat detection
- Total situational awareness
INNOVATIONS: The best of LERITY

- **Avant-garde technologies**
  - VIRTAMS (fusion of color/B&W, zoom function)
  - Embedded lense-cleaning system

- **Disruptive technologies**
  - Super resolution (in partnership with ENS, École Normale Supérieure)
INNOVATIONS: The best of LERITY

- Constant quest for sensitivity
  - Low light level expertise

- Even more pixels
  - 10 MP sensor

- Even more visibility
  - 200 W Laser illumination
    ("narrow" and "extra-narrow" fields)
  - Range-gating (active imaging)
NIGHT VISION TECHNOLOGY: RANGE-GATED ACTIVE IMAGING*

- Calculation of time of flight
- Synchronization between laser light and sensor opening
- Elimination of backscatter
- Resulting in high image quality, regardless of darkness or adverse weather conditions

* Advantageous technology compared to thermal imaging and image intensification (which is costly and tubes often need replacing).
CAT EYE™ SYSTEM XLR
(click on video below)

https://youtu.be/TTph0ALry9g
MARKETS & APPLICATIONS

DEFENSE & SECURITY

- COASTAL SURVEILLANCE
- BORDER MONITORING
- NAVAL PLATFORMS

CRITICAL INFRASTRUCTURE

- PORTS
- OIL & GAS FACILITIES
- NUCLEAR PLANTS
KEY ADVANTAGE #2: Extra Long Range

- With CAT EYE XLR, LERITY provides unmatched ranges in night vision

IDENTIFY AT UP TO
20 KM BY DARK NIGHT
& 40 KM BY DAY
SUPPORTED BY THE FRENCH NAVY

- CAT EYE™ SYSTEM is retained in 2020 by the French National Navy
- CAT EYE™ SYSTEM XLR is an evolution of CAT EYE™ SYSTEM. It is supported by the General Staff of the French Navy & will be available in 2024.
See Clearer & Further in any Condition
LERITY, a Subsidiary of the ALCEN GROUP

### ALCEN

- **Turnover**: 300 M€
- **Overall Staff**: 2000 Employees
- **Markets**: Defense & Security, Energy, Medical & Healthcare, Aeronautics & Space, Large Scientific Instruments

### LERITY

- **Turnover**: 4.5 M€
- **Export Sales**: > 50 %
- **Overall Staff**: > 35 Employees
- **Markets**: Defense, Security, Aerospace
LERITY PRODUCTS IN USE BY THE FRENCH ARMED FORCES
FIELDS OF APPLICATION

- Land
- Naval
- Aerospace
- Security
OUR IDENTITY

- In the Visible/IR Spectrum and in Real Time, See Clearer & Further in any Condition:
  - Daytime, nighttime, poor visibility
  - Electromagnetic pollution
  - Extreme temperatures and humidity
  - Shocks and vibrations

- Expertise
  - Real-time signal processing
  - Innovative design of optronic systems for weak-signal environments (i.e. low light levels)
  - Know-how and integration of image sensors and laser illuminators
OUR EXPERTISE

▪ **Optronic Systems Engineering**
  • System design
  • Range calculation: TRM4, BATS

▪ **Sensor Physics**
  • Characterization & integration of CMOS sensors
  • Continuous market watch over technological developments in the field

▪ **Mechanical Design**
  • Definition and design of the mechanical structures of our cameras
  • Material strength
  • Vibration analysis by simulation
  • Ruggedized designs built for harsh environments
OUR EXPERTISE

- **Electronics**
  - Simulation & design of advanced circuit boards (digital/analog electronics)
  - Implementation of algorithms for real-time processing on FPGAs
  - Integration of thermal and EMC constraints

- **Real-Time Embedded Algorithms**
  - Design of proprietary algorithms for real-time image enhancement
  - Architecture & real-time implementation
  - Strong cooperation with academic research

- **Optics**
  - Design or characterization of optics
  - Adjustment methods (centering, alignment)
OUR MEANS

LERITY PRODUCTS ARE:

100% Stress-screened
- 3 RTC chambers: -90 °C to +180 °C
- 1 vibration test rig: 15.5 kN shocks and vibrations

100% Qualified
- 1 anechoic chamber: 30 MHz to 18 GHz RE/EC
- External qualified lab (mechanics, EMC, thermal)

100% Fine-tuned
- Collimator
- Calibrating beds
- Alignment beds
- Test cards
Land Applications

- Local Situational Awareness
- Day/Night Driving Aids
- Visible Channel for Sights
Marine Applications

- Periscopes
- Subsea UAV vision
- Coastal surveillance
Air Applications

- A400M - Monitoring of Refueling Operations and Cargo
- UAV/Aircraft Pilot Cam
- Payloads & Pods - Long Range Imagery
- Head-Up Display (HUD) for Fighter aircraft
HUD CAMERA – REFERENCES 2/2

- **2005:** F15-F18: Under Production
- **2010:** KAI KA-1 & KT-1: Under Production
- **2015:** T4: Under Development
- **2021:** CMOS
- **2023:** More than 600 cameras delivered
VISION SYSTEMS: Coastal/Border Surveillance & Critical Infrastructure Protection

- **CAT EYE**: Handheld Camera for field observation

- **CAT EYE SYSTEM**: Panoramic Surveillance System (Day to Moonlit Night)

- **CAT EYE SYSTEM XLR**: Panoramic Extra-Long-Range Surveillance System (Day/Night)

- **HEMISPACE**: Innovative Optronic Dome Specially Designed for Anti-Drone Operations

*CAT EYE systems use Range-Gating (Active Imaging)*
OVERVIEW OF PRODUCTS