



INSTRUMENTS

Hyperspectral

Magnetometer

VLF

Gamma Ray

Lidar

ISR

BLACKSQUARE

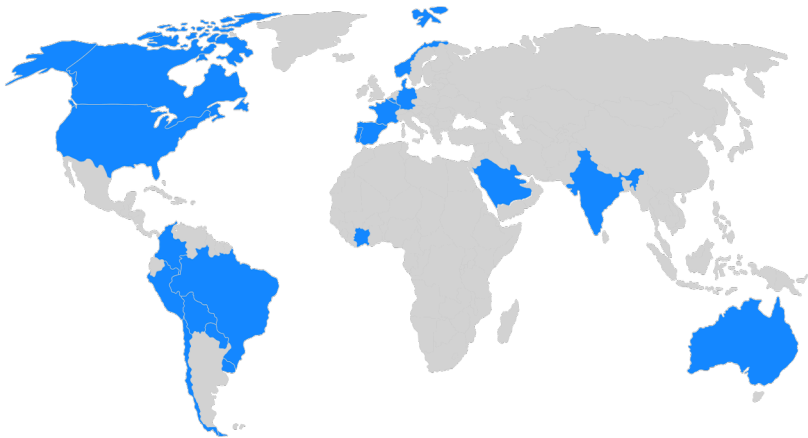
Who we are

We are an engineering company with more than 10 years of experience, specialized in the development of comprehensive technological solutions based on three areas of knowledge:

Robotics






Sensing

Analytics








Our drones operate
Currently in more than 20 countries

What we offer

01 Drones			Hercules X4 Hercules X8	Atlas X4 Atlas X8	Drakon 4000
02 Instruments			LiDAR ISR	Magnetómetro VLF	Hiperespectral Gamma Ray
03 Remote Sensing			Mining Oil & Gas	Civil engineering Environment	Agriculture
04 Projects			Tailor-made projects with a focus on innovation		

Our Technologies:

01	Hyperspectral		MJOLNIR
02	Magnometer		DRONEmag
03	Very low frequency		AirVLF
04	Gamma Ray		D230A
05	Lidar		ARGUS
06	Intelligence, Surveillance and Reconnaissance		STORM EYE 30I

For platforms



LAB



AIRBORNE



UAV



TRIPOD

At BLACKSQUARE we integrate advanced sensor technologies for exploration, monitoring and characterization of the subsoil and surface. We are authorized distributors for Latin America of leading global manufacturers such as HySpex, Gem Systems, Georadis and Yangda. This official representation allows us to offer not only the supply of equipment, but technical integration, specialized support and direct support from the manufacturer in the region.

Tecnología

Hyperspectral

CREATED BY **HySpex**
by neo

Mjolnir

Hyperspectral sensors measure the reflected light of objects, which is called the spectral signature. Since the spectral signature of an object changes according to its chemical properties, hyperspectral sensors can be used as an indirect way of obtaining chemical information from objects. The processed output of hyperspectral sensors consists of images in which each pixel contains the spectral signature of the specific part of the object covered by the pixel.



Plataform

LAB UAV TRIPOD AIRBORNE

Technical specifications

	V-1240	S-620	VS-620
Weight	400g	450g	600g
Spatial Pixels	1240	620	620
Spectral Range	400-1000	970-2500	400-2500
Spectral channels	400	300	490
Spectral resolution	1,5 nm	5,1 nm	5,1 nm
Max speed (at full resolution)	250 fps	170fps	170 fps

About the manufacturer

HySpex
by neo

HySpex is a leading Norwegian brand of cameras and hyperspectral image systems developed and manufactured by Norsk Elektro Optikk (NEO), specializing in compact and high-performance sensors for applications from laboratory to aerial and ground platforms.

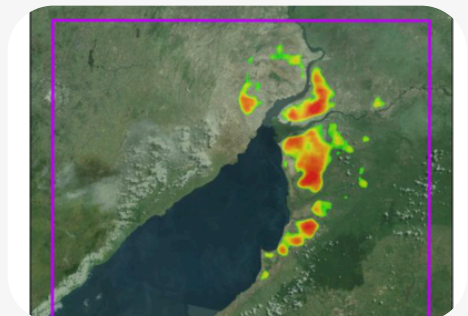
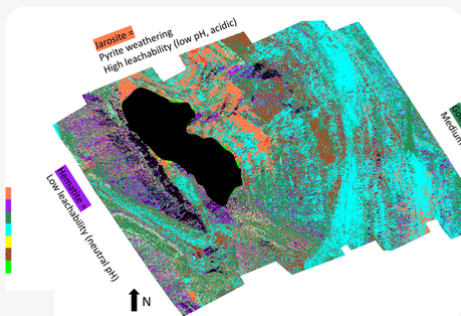


Mjolnir Instrument in action

Applications

- 01 Surface mineral maps
- 02 Environmental impact analysis of mining
- 03 Direct detection of hydrocarbon macrofiltrations
- 04 Indirect detection of hydrocarbon microfiltrations
- 05 Forest inventory with species classification
- 06 Water quality map (turbidity, chlorophyll, etc.)
- 07 Soil pyrogenic potential map
- 08 Carbon sequestration map
- 09 Asbestos roof detection map
- 10 Disease maps
- 11 Nutrition maps (N, P, K)
- 12 Yield forecast maps

Examples of results



Tecnology

Magnetometer DRONEmag

CREATED BY



DRONEmag™ is an ultra-lightweight, ultra-high-sensitivity airborne magnetometer for integration into fixed-line UAV platforms, helicopters and multi-rotors. Based on optically pumped Potassium (K) technology, it offers the highest sensitivity available in drone magnetometry, with low course error and high tolerance to gradients, allowing the reliable detection of subtle magnetic anomalies from the air.



Technical specifications

	25U
Weight	2200 g
Sensitivity	0,022 nT
Resolution	0,0001 nT
Absolute Accuracy	± 0,1 nT
Dynamic Range	20 000 nT to 120 000 nT
Low/High Field Options	3 000 nT to 350 000 nT

About the manufacturer



GEM Systems is a leading Canadian manufacturer of high-precision magnetometers and gradimeters, with more than 40 years of innovation. Specialist in Overhauser, Potassium and Proton Precession technologies, it offers integrated sensors with GPS for terrestrial, air and UAV applications, recognized for their high sensitivity, reliability and data quality globally.



Instrument 25U in action

Applications

The integration of ultra-lightweight and high-sensitivity magnetometers into drones improves data quality by operating at a lower altitude and closer to the source. This combination enables multiple applications in exploration, monitoring and underground engineering.

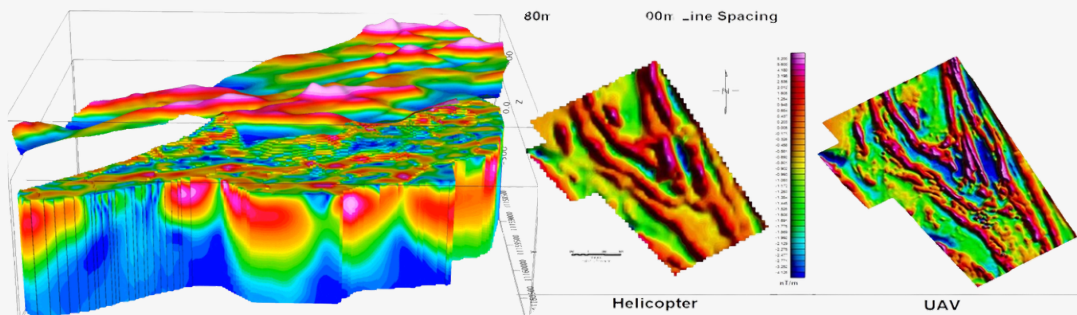
Magnetometer

-
- 01 Prospecting of ferromagnetic minerals

 - 02 Inspection of buried metal objects (pipes, etc.)

 - 03 Delineation of geological contacts, faults and fractured areas
-

Examples of results



Tecnology

VLF

CREATED BY



AirVLF

AirVLF is an airborne VLF-EM electromagnetic system oriented to the mapping of resistance and subsoil conductivity contrasts. Based on the passive Very Low Frequency method (15–30 kHz), it uses global VLF transmitters to measure with high precision the phase and out-of-phase components of the electromagnetic field, directly related to the electrical conditions of the terrain. The system integrates lightweight and orthogonal sensors, optimized to reduce noise and ensure stable measurements regardless of the orientation of the drone.



Plataform
UAV

Technical specifications

90 AVU

Weight	6200 g
VLF frequency	(2) user selected stations in the frequency range of 15 - 30 kHz
Resolution	0,1% of total field (VLF fields >5 pT)
Parameter 1	Vertical in-phase and out-of-phase components as % of total.
Parameter 2	2 components of horizontal amplitude and total strength in pT
Sampling Rate	1, 2, 5, 10 Hz

About the manufacturer



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VLF

AIRVLF

BLACKSQUARE.COM.CO

Instrument 90 AVU in action

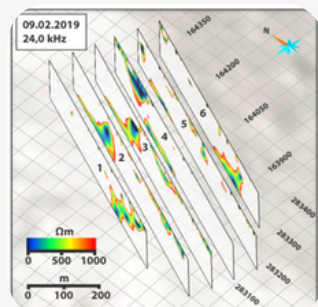
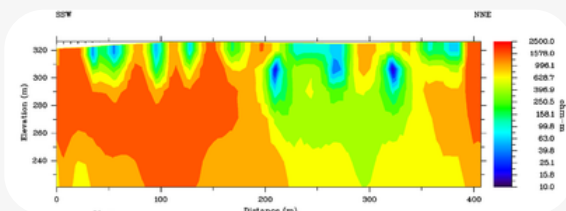
Applications

The VLF-EM method has been consolidated as an efficient tool for the structural and electrical characterization of the shallow subsoil, using natural electromagnetic sources and advanced processing techniques. Advances in airborne instrumentation, computational capacity and numerical investment have significantly expanded its scope, enabling its application to different services:

VLF

- 01 Delineation of geological contacts, faults and fractured areas
- 02 Delineation of conductivity contrasts in depth
- 03 Resistivity images for mapping of rock beds
- 04 Exploration of aquifers and groundwater

Examples of results



Tecnology

Gamma Ray

D230A

CREATED BY

GEORADIS

A gamma-ray spectrometer measures the energy and intensity of gamma radiation emitted by natural radioactive sources. Elements such as potassium (K) and the decay series of uranium (U) and thorium (Th) contain radioisotopes that emit gamma rays with sufficient energy and intensity to be detected and analyzed by gamma spectrometry. This radiation is also associated with relevant geochemical processes, such as radiolysis, through which radioactive rocks, in the presence of water (H₂O), can contribute to the generation of natural hydrogen.



Plataform
UAV

Technical specifications

	D230A 2x2	D230A 2x3	D230A 2x4
Weight	2700g	3300g	3900g
Detector Size	2"x2" (51x51 mm)	2"x3" (51x76.5 mm)	2"x4" (51x102 mm)
BGO detector	Bi-alkali PMT Sensitivity 2 x 160 cps / MBq / m (Cs-137)		
Resolution max	11.5% FWHM (661 keV)		
Spectrometer	200 ns Resolution, Max throughput 250,000 cps per detector		
Energy Range	25 keV – 3,000 keV		

About the manufacturer

GEORADIS

GeoRadis is a Czech company founded in 2006, specializing in the design and manufacture of portable detection and gamma spectrometry equipment for measuring ionizing radiation. GeoRadis equipment is characterized by its spectral precision, operational reliability and ease of use in the field. GeoRadis operates under ISO 9001 certification.

Instrument D230A in action

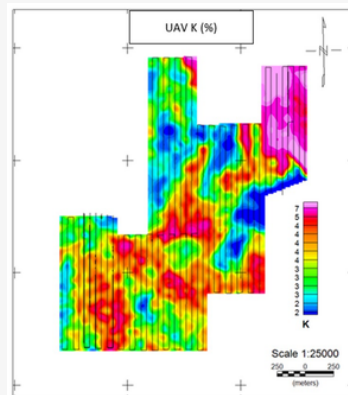
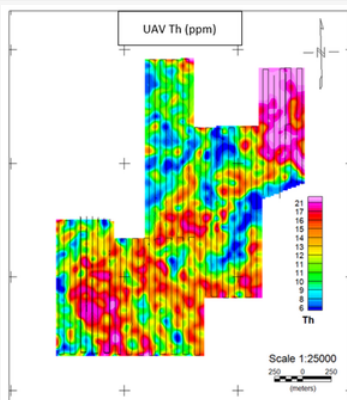
Applications

The ability of the D230A to estimate concentrations of K, U and Th and detect natural radiometric signatures makes it an effective tool for different mineral and energy prospecting approaches. These capabilities enable direct and indirect applications based on radiometric contrasts and alteration patterns.

Gamma Ray

- 01 Uranium prospecting
- 02 Mineral prospecting by association with Th and K alteration
- 03 Oil and gas prospecting for radiometric anomalies in shape of halos

Examples of results



Tecnology

ISR

CREATED BY



EO-IR cameras for ISR integrated as payloads in drones combine high-resolution electro-optical sensors and uncooled or refrigerated infrared modules to allow day and night operations in a single system. They incorporate multi-axis gyroscopic stabilization and precision gimbals to maintain image quality and target tracking even in vibration conditions or sudden maneuvers. They include continuous optical zoom, on-board processing algorithms (detection, tracking, contrast improvement) and real-time digital link options for safe transmission to ground stations.

STORM EYE



Plataform
UAV

Technical specifications

30IE - MU

Weight	1200 g
EO sensor	1920 x 1080
EO zoom	30x optical / 12x digital
IR sensor	1280 x 1024
IR zoom	8x digital
LRF sensor	5km Target Distance

About the manufacturer



YANGDA is a Chinese manufacturer specialized in EO/IR payloads for drones, focused on security applications, surveillance and advanced monitoring. Its portfolio integrates long-range optical cameras, thermal sensors, laser rangefinders and tracking functions with AI, compatible with UAV and VTOL platforms under PX4 and MAVLink protocols.

ISR

STORMEYE

BLACKSQUARE.COM.CO



Instrument 30IE-MU in action

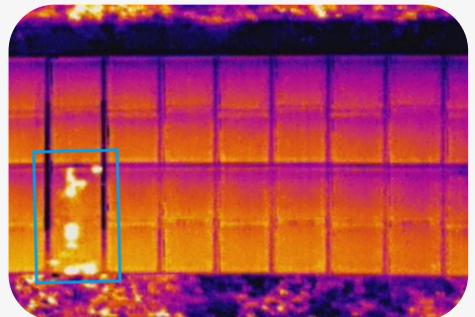
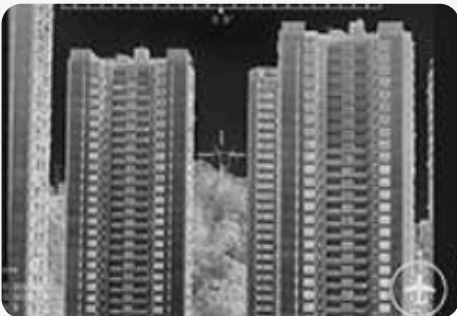
Applications

By integrating electro-optical sensors, thermal sensors, a laser rangefinder, and intelligent tracking capabilities, the Storm Eye-30IE-MU is designed for air operations that require precise monitoring, reliable detection, and real-time response across a wide range of applications:

ISR

- | | |
|----|--|
| 01 | Perimeter security monitoring |
| 02 | Monitoring of road right in pipelines |
| 03 | Monitoring of extreme events (floods, fires, etc.) |
| 04 | Solar panel inspection |
| 05 | Inspection of specific assets (torres, turbines, etc.) |
| 06 | Inspection of linear assets (power lines, Communication, etc.) |

Examples of results



Tecnology

LIDAR

CREATED BY



BLACKSQUARE

ARGUS

Lidar sensors measure the distance of objects to the sensor. If the relative position of the sensor with respect to the ground is known, then it is also possible to know the distance of the objects from the ground and, therefore, their geometric information. The processed output of the lidar sensors consists of a cloud of points in which each point represents the relative position with respect to the ground of that part of the object represented by the point.



Platform
UAV

Technical specifications

	Argus H16	Argus H32
Weight	800g	800g
Lidar Sensor	Hesai XT16	Hesai XT32
RGB Camera	Sony ILX LR1	Sony ILX LR1
IMU Device	Applanix APX15	Applanix APX15
Point Rate	320 000 [Single Return]	640 000 [Single Return]
Pixel Numbers	62,5 Mpix	62,5 Mpix

About the manufacturer



Engineering company founded in 2015, specialized in the development of comprehensive technological solutions based on three areas of knowledge: Robotics, Sensing and Analytical. It stands out for combining combining innovation, precision and experience to transform different industrial processes through intelligent technologies.



Argus instrument in action

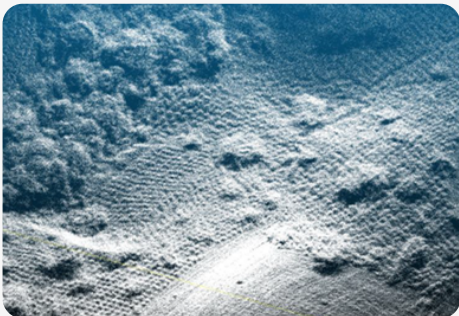
Applications

LiDAR technology in UAV platforms allows the precise and efficient capture of spatial information of the terrain, enabling multiple analysis, modeling and monitoring applications.

LIDAR

01	2D cartographic maps of the terrain
02	3D terrain modeling (DSM and DTM)
03	Calculation of volumes
04	Construction Progress Monitoring
05	Forest Inventory
06	Topographic survey

Examples of results



Acquired by:





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