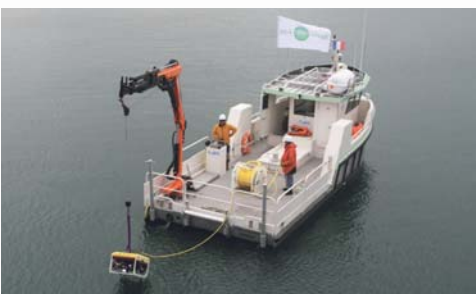


# SEA TEST BASE



## SEA TEST BASE

INNOVATION PLATFORM  
FOR SEA TRIALS

LAND-BASED AND MARINE  
FACILITIES FOR OCEAN  
SCIENCE AND TECHNOLOGY

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Lanvéoc, Brest  
FRANCE

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# SEA TEST BASE

## Land-based and marine facilities for ocean science and technology

### Our mission is to conduct experiments at sea for:

- Naval defence and maritime security projects
- Renewable energy projects
- Scientific research
- Research and salvage
- Environmental monitoring
- Oil & gas industry
- Fishing industry

### Our resources:

- Land-based facilities at the French Naval academy, Lanvéoc, France
- New research vessel fully equipped - up to 12 people, other vessels on request
- Rigid-hulled inflatable boat - up to 5 people, other boats on request
- Remotely Operated Vehicle (ROV): SAAB Seaeye Falcon for inspection, research and salvage up to 300 m depth
- Instrumented pontoon at sea: coastal observatory as a development platform for marine instrumentation
- Acoustic buoys network for active and passive acoustic experiments

### Our services:

- Requirements analysis
- Technical and logistical support
- Marine operation and sea trials
- R&D and engineering support
- Port facilities: Lanvéoc, Brest
- Administrative, approval and certification support

### Our references:

Thales, ECA-Robotics, DCNS, Sercel, Directorate General of Armament (DGA), French Ministry of Defence, SAGEM/SAFRAN, FIAMM, iXBlue, CESTA, RTSYS, NEOTEK, ISEN, Naval academy...





Naval academy, Lanvéoc © French navy



**APPLICATIONS:** defence and security, marine renewable energy, scientific research, research and salvage, environmental monitoring, oil & gas industry, fishing industry.

Location	Naval academy in Lanvéoc, France
Distance	45 minutes by car or 30 minutes by boat from Brest, France
Area	1,200 m <sup>2</sup> area with a secure perimeter fence
Alarm system	Trespass and fire alarm system in all the premises
Office	15 m <sup>2</sup> air-conditioned and secured office
Laboratories	30 m <sup>2</sup> (2 x 15 m <sup>2</sup> ) secured dry lab with seafront view
Office and lab equipment	Ethernet and WiFi networks, 220/240 VAC - 50Hz single-phase, meeting furniture, web-connected computer, phone, laser printer, video projector...
Shed	100 m <sup>2</sup> multi-purpose shed with large doors
Shed equipment	WiFi network, 220/240 VAC - 50Hz single-phase and 380/400 VAC - 50Hz 3-phase, generator, lockers, heated clothes drying lockers, workbench, usual tools (metric), heating, fresh water...
Storage	Two 20 feet containers for customer storage
Masts and antennas	Two 12 m height rotating masts equipped with long range WiFi directional antennas, any other devices on request
Marina	Access to the Naval Academy marina with pontoon - 220/240 VAC - 50Hz single-phase and 380/400 VAC - 50Hz 3-phase and fresh water
Van	Fiat Scudo van, 1,200 kg, 6 m <sup>3</sup> , equipped with a 750 kg trailer
Rigid-hulled inflatable boat	5.4 m RHIB with a 50 HP outboard, side scan sonar, GPS, maps, VHF
Material-handling equipment	40-ton hydraulic truck crane, semi-trailer, forklift, pallet jack...
On-site facilities	Kitchenette (fridge, microwave, coffee machine...), showers, WC
Services	On-site catering/restaurant and off-site accommodations

Our onshore facilities, located on the Crozon peninsula at the Naval academy premises (military base) in Lanvéoc - France, enable you to conduct sea trials in shallow water (<50 m depth in Brest bay) or deeper water (<200 m depth outside the bay).



Naval academy, Lanvéoc © French navy



© CESTA / DGA, Sea-surface targets identification, Bertheaume, Plougonvelin



© Thales / ECA Robotics, AUV remote monitoring from the shore via the instrumented pontoon (radio link and underwater acoustic communication), Sea Test Base, Lanvéoc



© DGA / RTSys / ISEN / Marée - MIMO underwater acoustic communication experiment, Sea Test Base, Lanvéoc

**References:** Thales, ECA-Robotics, DCNS, Sercel, Directorate General of Armament (DGA), French Ministry of Defence, SAGEM/SAFRAN, FIAMM, iXBlue, CESTA, RTSYS, NEOTEK, ISEN, Naval academy...

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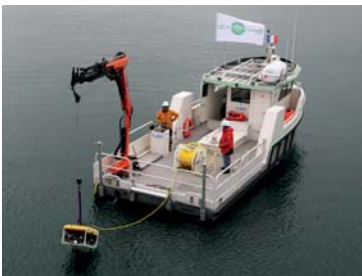
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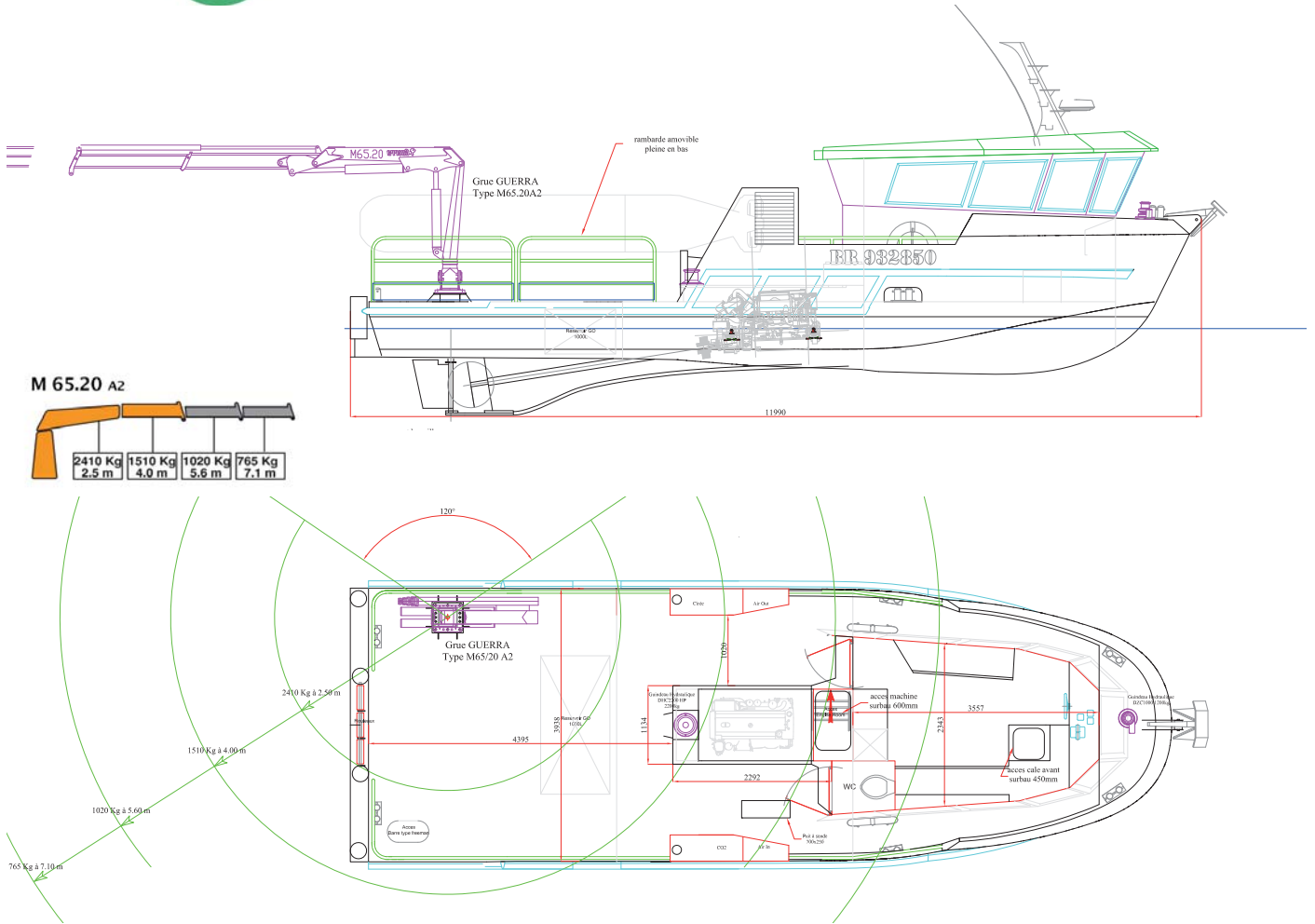






**APPLICATIONS:** defence and security, marine renewable energy, scientific research, research and salvage, environmental monitoring, oil & gas industry, fishing industry.

Name	CELADON
Category	Research Vessel, division 222
Flag	French 
Registration	BR 933 340
Tonnage	7.42 UMS
LOA / Breadth	11.87 m x 4.05 m
Capacity	12 people including crew
Speed	15 knots
Year built	2016
Engine	Cummins QSB 6.7 – 305 MD/HO – 220 kW / 295 BHP
Generator	Cummins Onan 9.5 QD – MDKBM – 220 VAC / 50 Hz / 9.5 kVA
Homeports	Marina du Château, Brest, France Naval Academy, Lanvéoc, France
Crane	Hydraulic crane Guerra M65.20 A2 equipped with a winch
Winch	Hydraulic winch 2,000 kg on deck
Payload	Max. 3,000 kg
Moon pool	Moon pool on deck for sensors with a failsafe latching system
Dry lab	Open workspace with 360° view - up to 6 people
Container	Footprint for a 10 feet container
Tender	Rigid-hulled inflatable boat with outboard
On-board services and facilities	Catering, snacks and beverages, kitchenette, WC



**Navigation and Com.**

Navigation software, radar, AIS Receiver/Transmitter, GPS, loch/speedo, autopilot, echo sounder, satellite compass, VHF, multibeam echo sounder for 3D high resolution bathymetry.

**On-board services**

Cruise log, Ethernet and WiFi networks, very high speed Internet link, remote operation, remote assistance, digital video cam network, live video broadcast, Autonomous Underwater Vehicle (AUV) remote access, SAAB Falcon Seaeye - Remotely Operated Vehicle (ROV) up to 300 meter depth.

**References:** Thales, ECA-Robotics, DCNS, Sercel, Directorate General of Armament (DGA), French Ministry of Defence, SAGEM/SAFRAN, FIAMM, iXBlue, CESTA, RTSYS, NEOTEK, ISEN, Naval academy...

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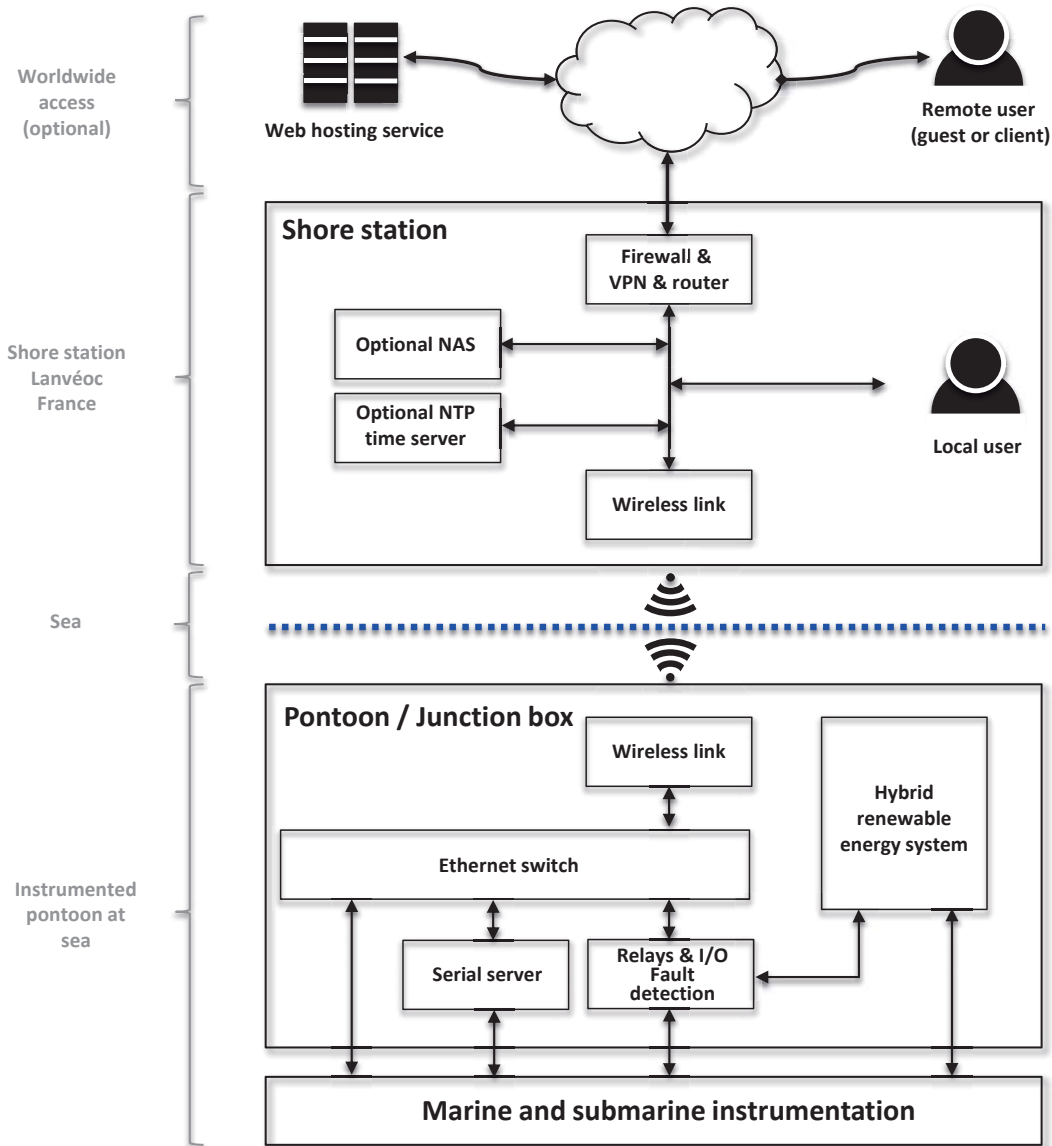
<b>Location</b>	Near Naval Academy in Lanvéoc, France
Distance from the shore	1.1 km
<b>Water depth</b>	Between 7 meters and 14 meters (tide effect)
Operational	Since March 2013
<b>Size</b>	6 meters * 5 meters i.e. 30 m <sup>2</sup>
Weight	1 ton approx.
<b>Radio link coverage</b>	A few km <sup>2</sup> (2.4 GHz and 5 GHz bands)
Bandwidth	300 Mbits/s uplink & downlink to/from the shore
<b>Interfaces for instruments</b>	4 Gigabit Ethernet interfaces and 8 serial links (RS232, RS422, RS485)
Hybrid renewable energy	400 W wind turbine and 2*100 W solar panels
<b>Power supply</b>	12 VDC (24 VDC, 48 VDC on request) and 220 VAC
Operations	24/7/365 service
<b>Live data</b>	Real-time public or private access via Internet (VPN)

This platform, easily accessible from the shore, has been designed to meet different applications:

- ▶ R&D experiments to accelerate and to improve the design of new marine sensors and new instruments
- ▶ Underwater acoustic communication and wireless radio link relay to control from the shore: Autonomous Underwater Vehicle (AUV) and Unmanned Surface Vehicle (USV)
- ▶ Long-term intensive tests for marine sensors and instruments
- ▶ Live data of environmental conditions and human activities at sea: meteorological parameters, automatic identification system for ships (AIS), video camera...
- ▶ Ageing, corrosion and biofouling tests
- ▶ Demonstrations, acceptance tests, education and training...



Coastal observatory as a development platform for marine instrumentation



**References:** Thales, ECA-Robotics, DCNS, Sercel, Directorate General of Armament (DGA), French Ministry of Defence, SAGEM/SAFRAN, FIAMM, iXBlue, CESTA, RTSYS, NEOTEK, ISEN, Naval academy...

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© SAAB Seaeeye - Falcon with single function, 3 jaw manipulator



© SAAB Seaeeye - Falcon DR with 5 function manipulator



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## Remotely Operated Vehicle (ROV) for inspection, research and salvage

Depth rating	300 m depth rating
Length	1,000 mm
Height	500 mm
Width	600 mm
Launch Weight	60 kg
Forward Speed	> 3 knots
Payload	14 kg
Umbilical	450 m
Thrusters	4 vectored and 1 vertical thruster 50 kgf thrust with 1:1 power to weight ratio
Video camera	High resolution colour camera on 180° tilt platform
Lights	Variable intensity, 6,400 lumens of LED lighting
Positioning system	Inertial measurement unit, auto heading, depth, compass and rate gyro
Manipulator (main)	5 function manipulator (90-degree shoulder rotate and 180-degree jaw rotate). The jaws incorporate a ¼ inch rope cutter and the arm has a lift capacity of 10 kg at full reach
Manipulator (secondary)	Single function, 3 jaw manipulator & rope cutter
Other tools	Side-scan sonar, high-resolution positioning system (on request)
Surface unit	Portable surface control system with video overlay
System power requirements	100-270 VAC at 2.8 kW single phase



© OCEANOPOLIS



© OCEANOPOLIS



ROV SAAB Seaeye Falcon in a partnership with Télécom Bretagne

**References:** Thales, ECA-Robotics, DCNS, Sercel, Directorate General of Armament (DGA), French Ministry of Defence, SAGEM/SAFRAN, FIAMM, iXBlue, CESTA, RTSYS, NEOTEK, ISEN, Naval academy...

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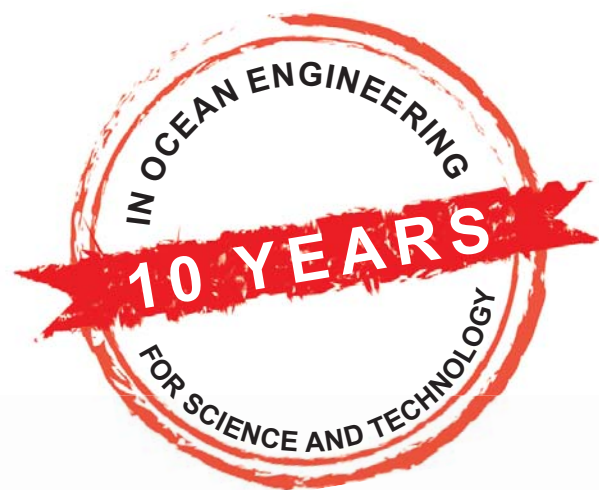
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