

## CASE STUDY

### Using GPASEABOTS' SB 100 PRO USV for Mooring Inspection in Harbors



Unmanned Surface Vehicle

Sidescan Sonar &  
Singlebeam Echosounder



## The Company

Founded in May 2019 in Barcelona as a spin-off of the GPAINNOVA Group, GPASEABOTS' activity revolves around the development of technologies for exploring and preserving the marine environment, such as USVs (Unmanned Surface Vehicles) and smart buoys.

Just a few months after its creation, the company was granted the Fuera de Serie ("state-of-the-art") Design & Innovation Award, promoted by one of the most important publishing groups in Spain, in the category of Sustainability.

In 2020, GPASEABOTS deployed more than 100 buoys to study the coastal waters on beaches

in Eastern Spain and launched the SB 100 PRO model, a multipurpose marine drone for all kinds of tasks in sheltered waters. Depending on the payloads, this USV can be used in the fields of hydrology, water analysis, research, Search & Rescue (SAR), mooring inspection and other tasks. Likewise, its use allows access to restricted areas, in which navigation may be restricted, difficult or dangerous.

Another product developed by GPASEABOTS is SB 100 Cleaner, specially designed for sea water surface cleaning in ports and marinas.



## The Opportunity

Naval robotics can replace tasks that have always been carried out by traditional methods, which have a high ecological impact and expensive operating costs.

USVs are becoming widespread in several areas in the naval sector. In this real case study, we present a need that is shared by many ports: Mooring inspection in harbors and marinas.

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## Payloads

**GPASEABOTS' SB 100 PRO USV**, the most versatile USV platform on the market for sheltered waters activities. It is an indispensable tool for a fast, efficient and precise work. Both the operating cost and its environmental footprint are extremely low, and it allows to expand the range of possibilities in the field of data acquisition.



**StarFish 992H sidescan sonar.** It is a hull-mounted version of the StarFish 990F, a high-definition system suitable for small coastal vessels operating in shallow water. The operation of the 1 MHz CHIRP radar and the horizontal beam width of 0.3 ° make it ideal for SAR missions.

**ISA500 single beam echosounder,** providing depth readings up to 120 m (394 feet). It enables detailed bathymetric surveys with pinpoint accuracy.

## Location

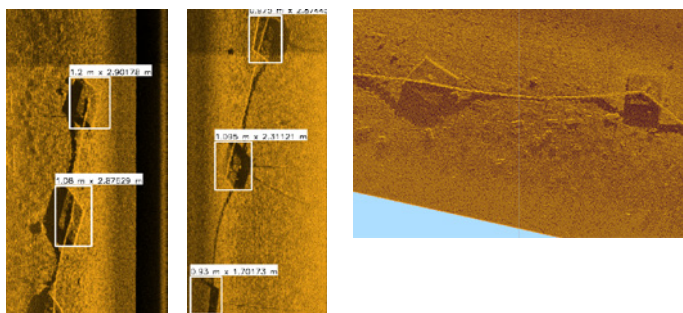
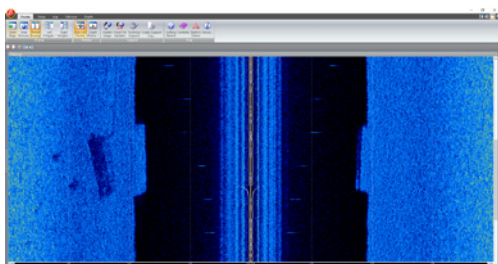
The mission took place in Cap d'Agde, in the Hérault department, one of the largest marinas in Southern of France.





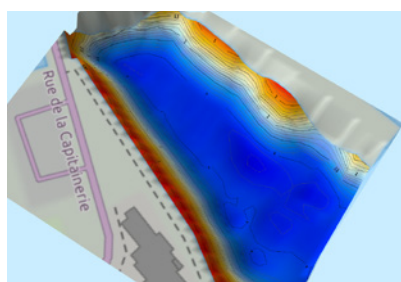
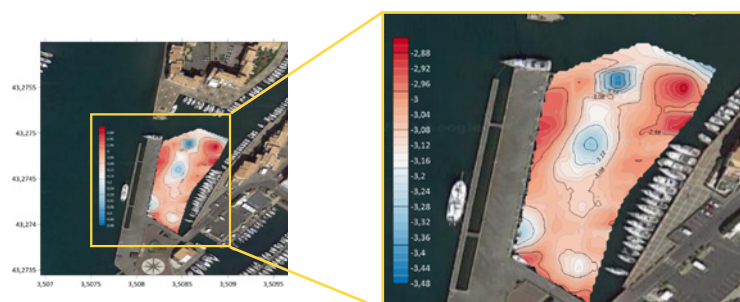
# Data Acquisition

The following images correspond to live data gathering, implemented by the StarFish Scanline software and the sidescan sonar integrated with the SB 100 PRO.



These are the results of the mooring inspection carried out by a sidescan sonar integrated in the SB 100 PRO with Reefmaster acquisition software. Additionally, if OpenSidescan software is used, structures or objects can be marked and identified for further detailed analysis.

During the operation, bathymetric data was collected during field work, in order to perform a bathymetry with this information.

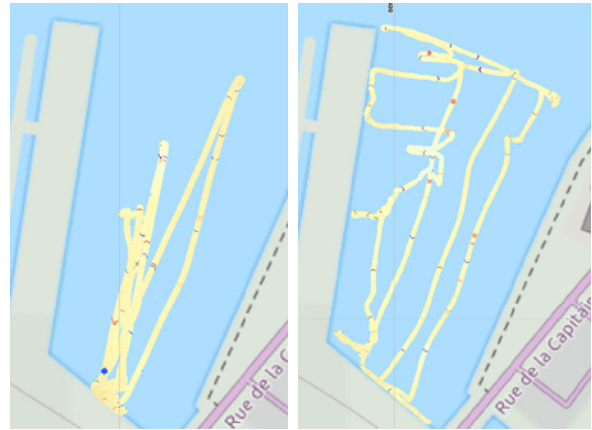


Bathymetric data is processed with the Reefmaster acquisition software. On the other hand, the data can be analyzed later thanks to specialized GIS software.

## Working Routes & Navigation Modes



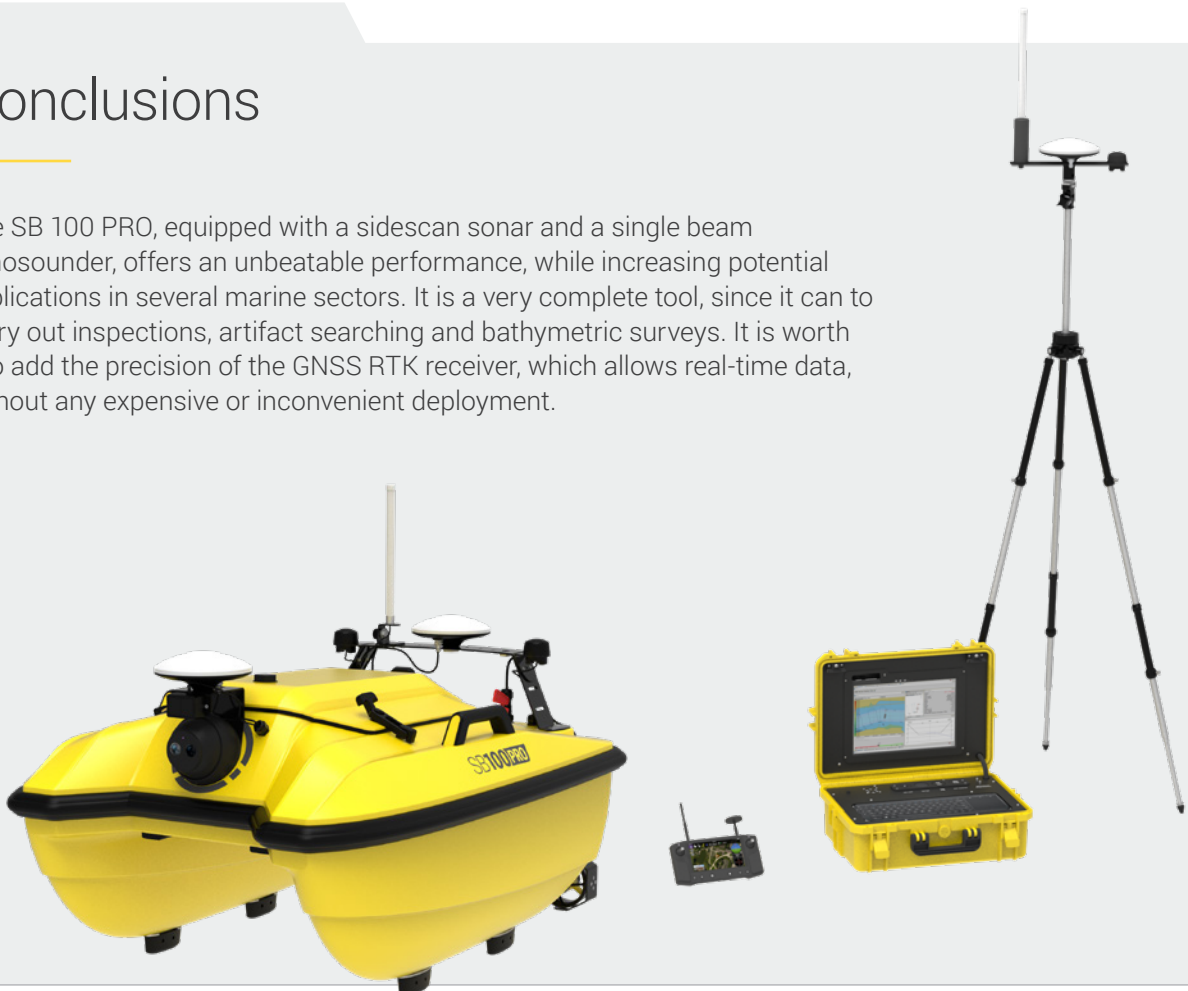
Automatic mode (waypoints or area)



Manual mode

## Conclusions

The SB 100 PRO, equipped with a sidescan sonar and a single beam echosounder, offers an unbeatable performance, while increasing potential applications in several marine sectors. It is a very complete tool, since it can carry out inspections, artifact searching and bathymetric surveys. It is worth it to add the precision of the GNSS RTK receiver, which allows real-time data, without any expensive or inconvenient deployment.



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