TIDEWISE

USV TUPAN

USV Tupan is an autonomous multi-purpose vessel designed and built in Brazil to operate in an offshore environment. Manufactured in aluminum and designed according to the UK MASS Rev3 guidelines.

The equipment installed for customer data collection (payload) has a dedicated rack, mechanically protected against vibrations.

The stabilized camera used for harbour services (such as surveillance) is installed on the vessel's moonpool: a region designed for attaching sensors both above the deck and below the bottom of the boat. The stabilization of the camera ensures that the capture of the images has sufficient clarity and resolution to read the data both by trained inspectors and by the dedicated **TideWise** software, **WiseControl®**.

Some tasks performed in offshore constructions can be done more efficiently and with less risks and less costs by unmanned vessels. **USV Tupan** has an obstacle avoidance system composed of two parts: a trajectory planning and execution subsystem, which can determine a safe trajectory of the vessel after the identification of obstacles, and a situational awareness subsystem, which can identify robust threats (obstacles such as other vessels). This feature is being qualified and is not available yet.

APLICATIONS

- ### Bathymetric survey

  USV Tupan is capable of integrating the most advanced survey sensors on the market. The revolutionary anti-roll system guarantees an excellent quality of the data gathered. The diesel-electric propulsion system ensures maximum energy efficiency allowing the vehicle to operate continuously for up to 7 days without refueling. **USV Tupan** can carry MBES with capacity to survey in waters 800m deep.

- ### Metocean data gathering

  Our **USV Tupan** can be integrated with a complete set of sensors for collecting environmental data, such as measuring air and water quality, wind and current direction and speed, CO^2 concentration and wave amplitude.

- ### Offshore construction support

  Some tasks performed in offshore constructions can be done more efficiently and with less risks and less costs by unmanned vessels. Tasks that require high positioning accuracy and high accuracy in route maintenance can best be performed by robots. The **USV Tupan** can be equipped with USBL, multibeam sonar, sub bottom profilers and other sensors to perform tasks of:

  - LBL calibration.
  - ROV and AUV tracking using USBL.
  - Pipeline touchdown monitoring.

- ### Environmental monitoring

  USV Tupan can be integrated with an UAV to form an autonomous system capable of detecting oil on the sea surface. The integrated system uses visual data to identify the presence of oil and also collects environmental data to feed an metoceanographic oil dispersion model.

  USV Tupan can perform water sampling and real-time water quality monitoring a pre-defined route.

- ### Harbour services

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  USV Tupan can perform inspection of piers and berths using thermal cameras, visual cameras and LIDAR. LIDAR and MBES data can be generated at the same time and inertial reference. It can also monitor waterway traffic through AIS.

TECHNICAL SPECIFICATIONS

Length	4.92 m
Beam (width)	1.78 m
Height	3.34 m (mast mounted)
Draft	0.6 m
Displacement	1300 kg, loaded
Propulsion	Electric, two propellers 4.5kW each
Steering	Fully redundant, differential thrust + Two rudders
Speed range	0 - 6.5 knots
Endurance	Up to 7 days without refueling
Operational sea state (Beaufort wind force scale)	Operational: 5 | Surviving: 8
Power output	Permanent magnet diesel generator 9kW
Power available for payload	Up to 1kW
Communications	Up to 18 km by radio link (options with 4G, satellite and Wi-Fi)
Handheld remote controller	WiseHelm
Software	WiseControl®
Transportation	Road trailer | 20ft Shipping container
Lifting	Single point lift