

TIDEWISE

Robôs inteligentes

para otimizar operações no mar



Nossa missão é acelerar a
transição para uma indústria
marítima mais segura e
sustentável.





Embarcações autônomas

Drones

Robôs submarinos (ROVs, AUVs...)

Product-agnostic for integration



Tecnologias provadas em campo

Plataformas multifunção



Caracterização de ambientes marinhos



Inspeção de ativos



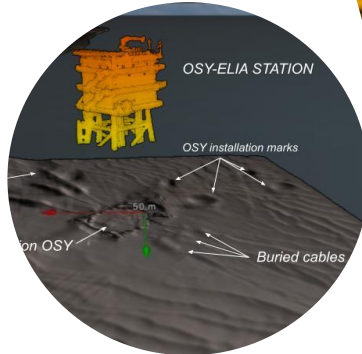
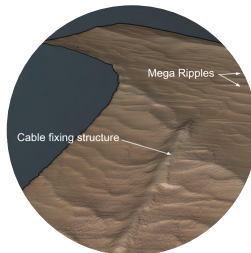
Logística



Smart Data

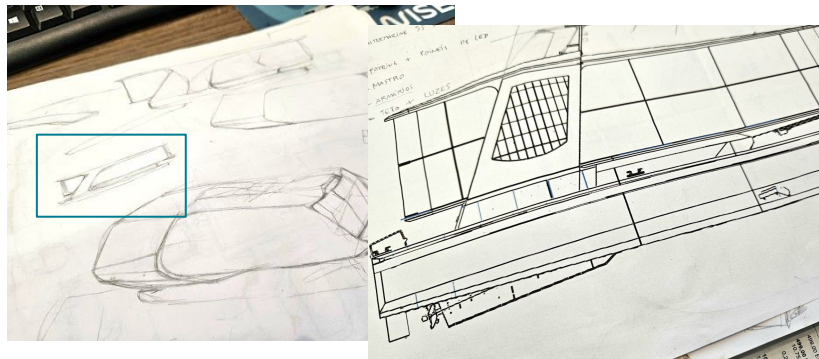


Defesa (em desenvolvimento)



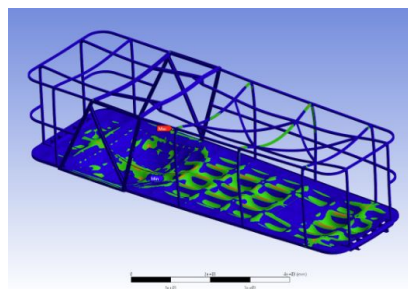
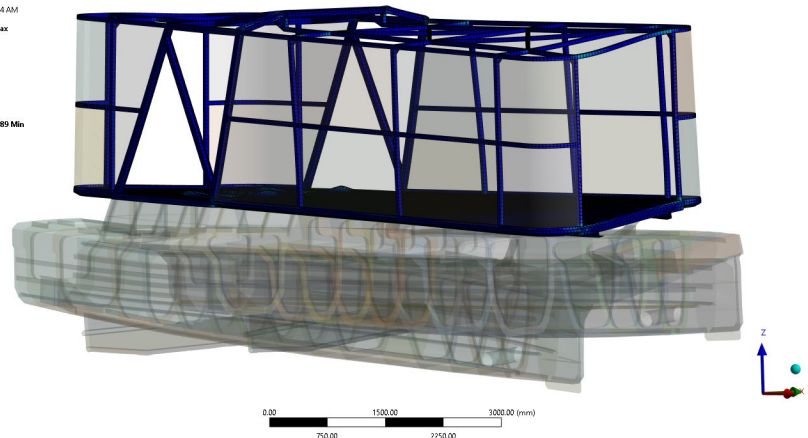
Dados coletados pela TideWise, acima e abaixo da linha d'água, em serviço prestado na Bélgica. Maio/Junho de 2022.

Soluções desde o primeiro rascunho Até as operações no mar



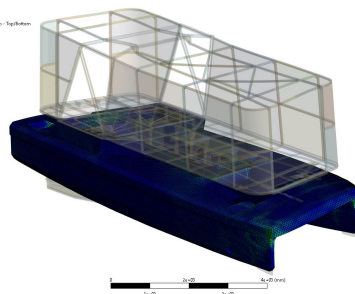
V: Quartering Sea
Equivalent Stress
Type: Equivalent (von-Mises) Stress - Top/Bottom
Unit: MPa
Time: 1 s
6/19/2023 10:24 AM

6.1753 Max
5.4899
4.6872
4.1171
3.431
2.785
2.0589
1.3728
0.68873
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Nosso ciclo de desenvolvimento de soluções



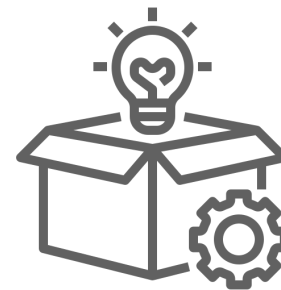
Ideação



Integração



Prova de
Conceito



Entrega da
Solução

Business Model

Drone as a Service e consultorias

Clientes

Óleo & Gás

Renováveis

Operadores portuários e offshore

Saneamento

Entidades governamentais

ONGs

DaaS e consultorias



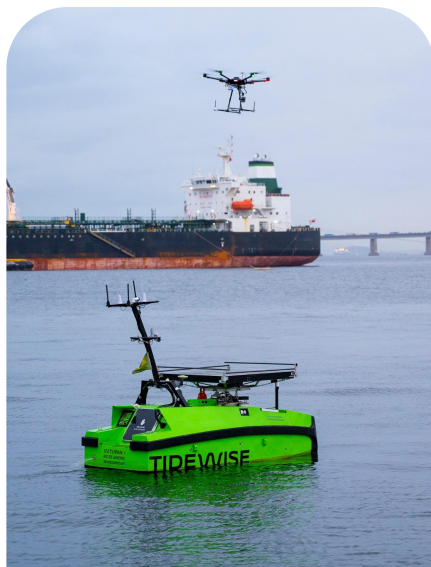
B2B & B2G

Principais aplicações de robôs marítimos no Brasil



Onshore

- Monitoramento de qualidade da água;
- Inspeção de barragens;
- Vigilância;
- Batimetria;



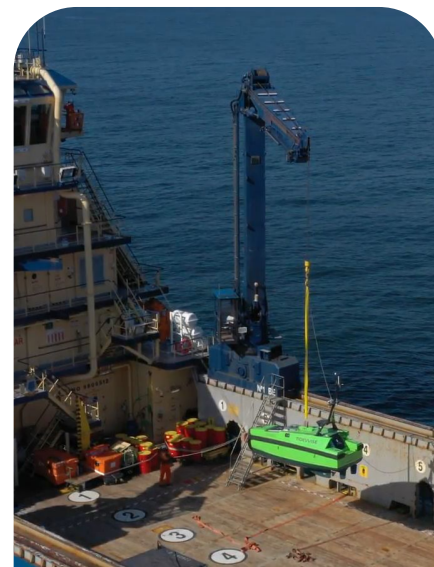
Portos

- Batimetria;
- Leitura de marcas de calado;
- Inspeção de sinalização;
- Vigilância;
- Monitoramento de vazamento de óleo;



Costas

- Inspeção de Shore approach;
- Monitoramento de biodiversidade marinha;
- Monitoramento de vazamento de óleo;



Offshore

- Inspeção e monitoramento de ativos offshore;
- Transbordo;
- Coleta de dados meteoceanográficos;

Fundada em 2019, globalmente reconhecida



Capa da revista **Uncrewed Systems Technology**,
A mais relevante publicação da área em todo o mundo

TideWise USV Tupan | **Dossier**

In Brazil, offshore energy is big business. The country is the world's eighth largest oil producer, most of which comes from basins off the southeast coast, and its output is expected to rise, with some new oil and gas fields now coming on stream.

Brazil is no stranger to clean energy supply, and 80% of its electricity comes from renewable sources. Oil the latter, 80% of it comes from hydroelectric dams. However, because Brazil's low-rain season coincides with its high-wind seasons, wind farms are also in huge demand to complement its hydroelectric sources.

Wind turbine construction is therefore accelerating across Brazil's maritime regions, with a mathematically exponential rise in installed plants, from just 27 MW in 2006 to more than 2,000 MW in 2021.

The country's energy security and push of its economy therefore relies increasingly on an immense number of wind farms, hydroelectric dams, oil rigs and other infrastructure containing to operate without failures.

Inspectors and other maintenance duties across such infrastructure are typically performed using highly dangerous and costly approaches, such as suspending workers from helicopters.

To take thermal images of sections of concern or manually perform repairs. This, and the consequent expansion of harbours and other coastal and riverine structures, has generated an enormous demand for uncrewed and potentially autonomous inspection solutions to remove the risk of human casualties and the costs of crewed vehicles.

Enea Tidewise, based in Rio de Janeiro and formed by maritime autonomy experts Rafael Coelho (its CEO) and Suleih Joyeux (CTO) after the two met in 2016 while working on a project together.

At the time, Coelho was head of design at ASV Global (now part of L3Harris) where he had worked for 7 years on USVs such as the C-Cat 3 (featured in issue 16, February/March 2018), while Joyeux was technical director at O Robotics, now Korean Robotics Brazil.

"We both knew the huge market for 'floating inspection robots' to service Brazil's energy industry, and our technical skills were highly complementary," Joyeux recounts. "The planned

The checking crew

Brazil's surging market for inspecting maritime oil, gas and wind power facilities motivated the founding of Tidewise and the creation of the USV Tupan (image courtesy of Tidewise)



Regarding security and feasibility: During the test, no incidents, RSE (Brazil Safety Environment) accidents or near misses occurred. Under current legislation USVs can not operate fully autonomous or remotely in open waters off the Belgian coast. Therefore, with support from Drie Boeven of the IMCC (Shipping Assistance Division of Belgium Coast Guard) and Jean-Baptiste Merveille (Director General Shipping in Belgium), the USV was always followed by a support vessel to ensure safety and security throughout the t/c.



Artigo na **Offshore Engineer**



Tidewise Tupan has been working offshore Belgium for Enea, supporting UAV, Lidar and seabed surveys. Photos from Tidewise.

Tidewise Targets Foundation and Turbine Base Inspections

Brazilian startup Tidewise has been making in-roads into USV-based operations. Co-founded in 2019, by a naval architect and a robotics specialist, it launched its first USV, the 4.95 m Tupan, the same year.

It initially developed a UAV-hosting capability, primarily for oil spill detection, for Rapsol Sinopec. But this year, for Belgium's Enea, it demonstrated Visual Inspection capability for offshore wind substations, alongside multibeam data collection, to assess the subsea cables, and lidar, to create a point cloud of the structure.

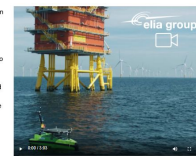
Artigo na revista **German Wind Power**

Regarding output quality: In the bathymetry model of the seabed surface that the USV collected, it is possible to identify sand waves, dynamic features of the seabed such as mega-ripples, cable fixation structures, and footprints left by dredging and trenching from the cable installation phase (see image 18). The UIMR scan produced a high-resolution model with sufficient points per square meter of the USV to create an accurate 3D model of the structure. The drone produced high-resolution video footage of the USV, enabling the detection of possible damage and corrosion.

Regarding sustainability: A survey mission with an USV can reduce fuel consumption and the amount of CO2 emissions per hour by over 80% when compared to a mission with a survey vessel.

Regarding cost: With large reductions in fuel consumption and a reduced need to plan for trained staff to go offshore, USV promises to substantially reduce the costs associated with inspection surveys.

The IOC shows that USVs have reached the maturity to support offshore O&M activities. Besides that, USVs have the potential to address further use cases such as the collection of mid-ocean data, the transportation of goods, and the onboarding of other equipment. As of now, further tests are necessary to validate the development, explore operational challenges and develop a regulatory framework.



Artigo na **Offshore Energy**

Belgian TSO takes up autonomous surface vehicle inspection (Video)

INNOVATION

June 23, 2022, by Nadja Szelejak

Belgian transmission system operator (TSO) Enea has for the first time used an autonomous, uncrewed surface vehicle (USV) to survey its offshore assets.

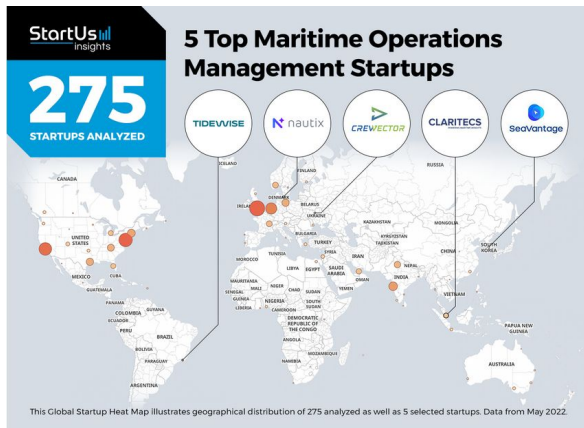
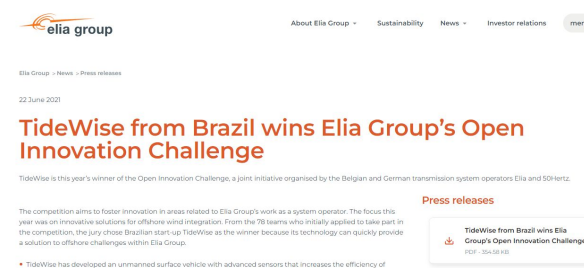
The USV named Tupan, owned and developed by Brazilian start-up Tidewise, inspected Enea's subsea cables to the Modular Offshore Grid (MOG) in the Belgian North Sea earlier this month.

The five-meter vehicle, together with a lidar and drone, was used to carry out the

5 Top Maritime Operations Management Startups

StartUs Insights

Premiada no Brasil e na Europa



Nosso time



Rafael Coelho, MsC. CEng

Cofundador

Arquiteto Naval com 11 anos de experiência no desenvolvimento de USVs. Projetou e construiu mais de 60 USVs em todo o mundo para empresas e marinhas. Navegador desde os 3 anos de idade já navegou mais de 30.000 milhas offshore. Recebeu a medalha Amigo da Marinha em 2021.



Sylvain Joyeux, PhD

Cofundador

Engenheiro de software com forte experiência em integração de sistemas e autonomia de longo prazo. Há 15 anos entrega com sucesso robôs de aplicação marítima, liderando projetos no DFKI (Alemanha), no SENAI CIMATEC e atualmente na TideWise.

Time multicultural e multidisciplinar. Engenheiros, oceanógrafos, designers...





Junte-se a nós para
transformar **para melhor**
a indústria marítima!
Vamos inovar juntos?



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