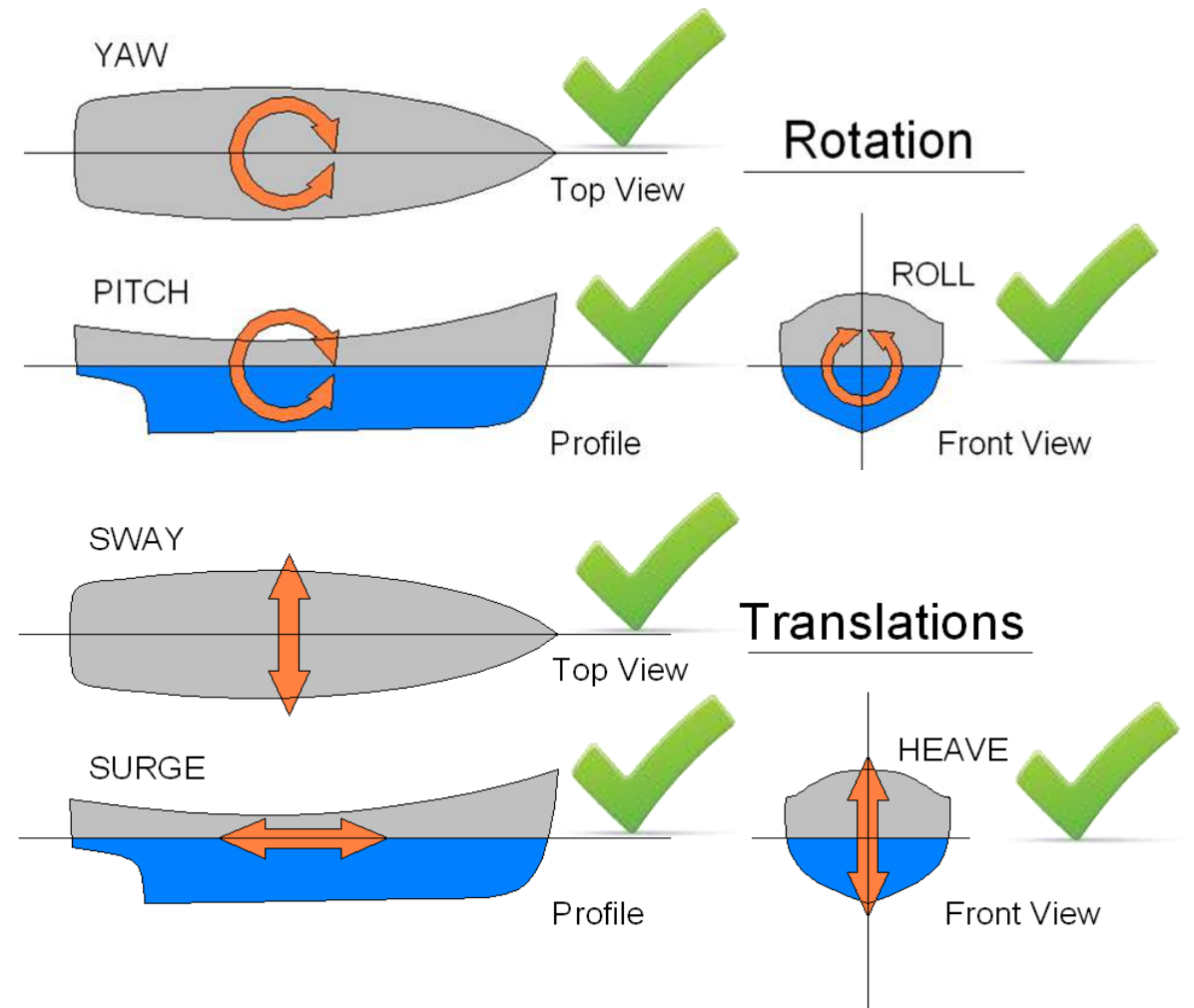
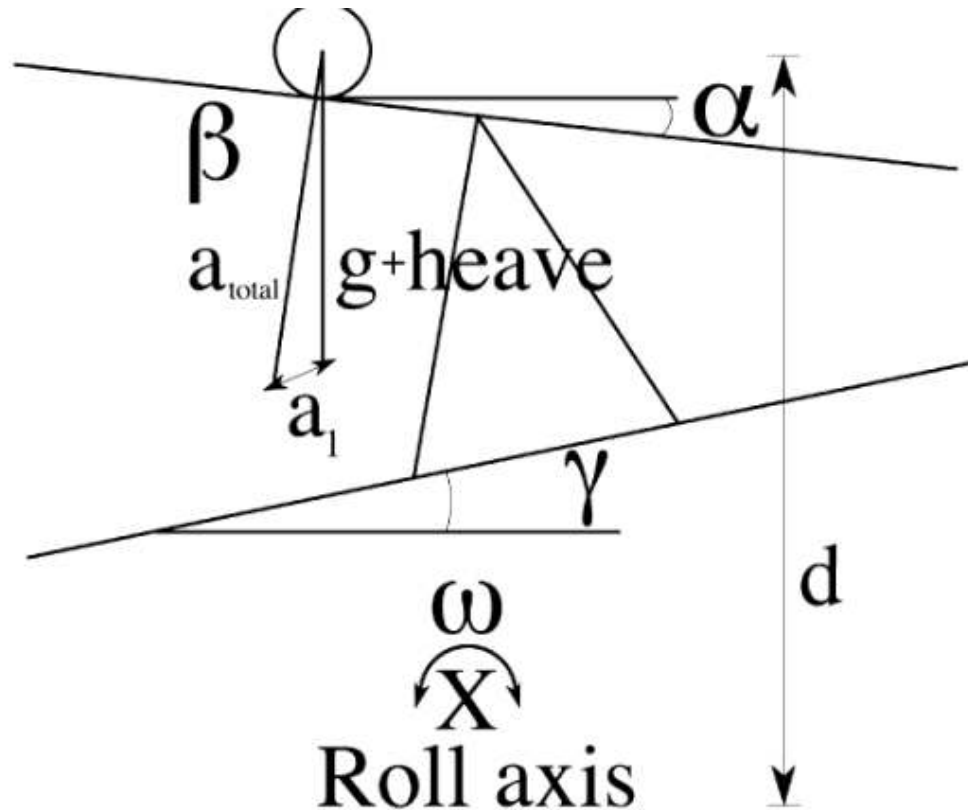




STABLE
stableonboard.com

Stabilized platforms – neutralizing movements onboard since 2002...

Technology – the challenge

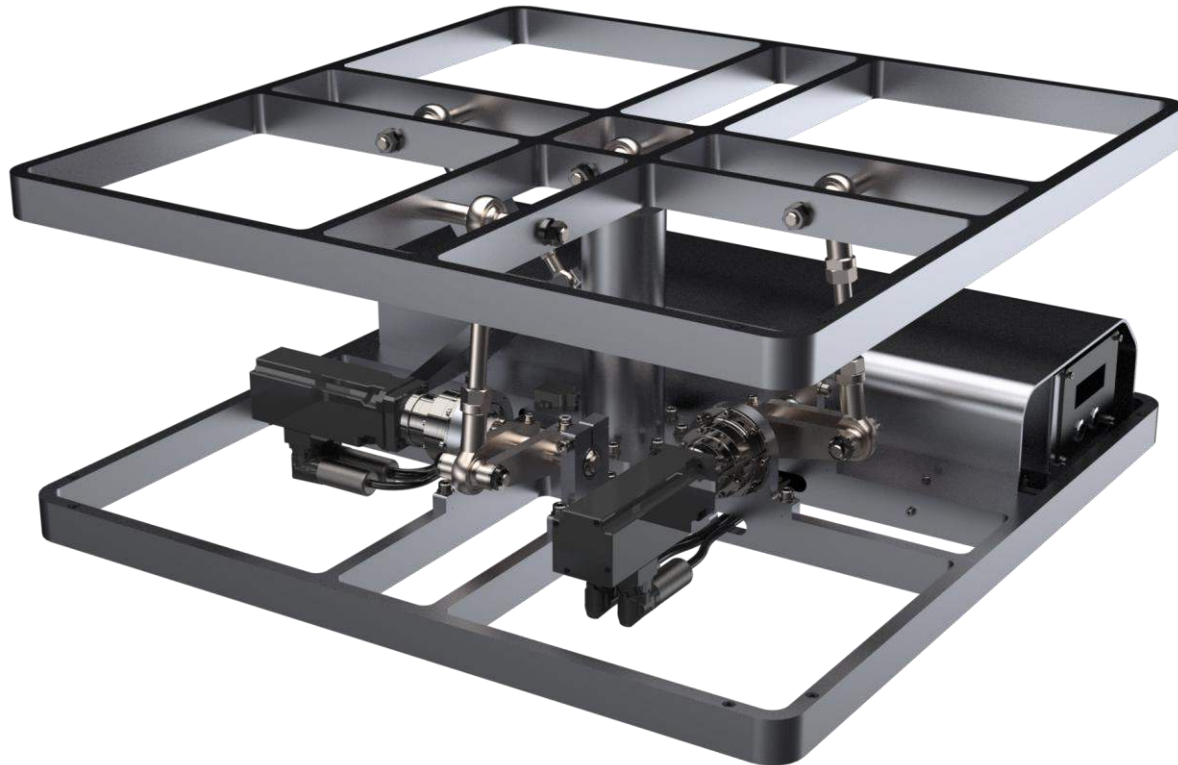


Technology – the challenge

Acceleration free vs
Horizontal mode



Technology – the solution



Acceleration free or Horizontal!

Vessel movements are estimated based on sensors.

Platform is automatically adjusted by computer controlled electrical actuators.

Roll, pitch and lateral forces are eliminated.

Technology – visualized




Click me / <https://www.youtube.com/watch?v=EztWGnLuoLU>

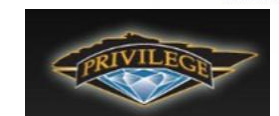


Click me / <https://www.youtube.com/watch?v=J8j688zDfFI>

STABLE AS in short

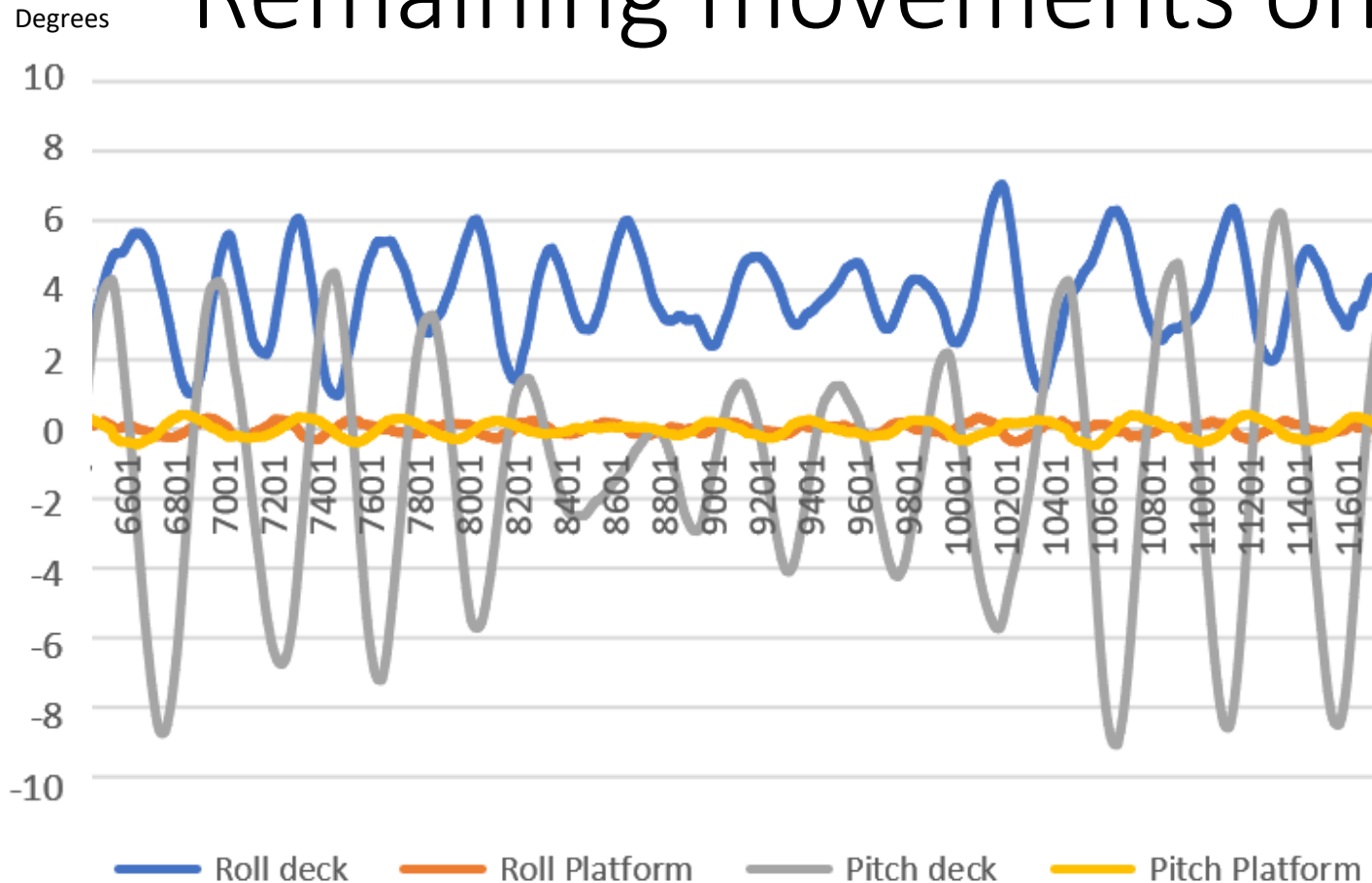
Founded 2002:

- Head office in Arendal, Norway.
- 5 Employees, inhouse development, engineering and testing.
- Local manufacturing by long term 3rd party relations.
- References; Yachts, Cruise, Offshore, Ferry, Navy and Fishing vessels.
- StableCare AS founded in 2015, technology adopted to Ambulances.
- Awarded #18 “**Outrageous Acts of Science**” by  **Discovery** in 2017 (<https://www.youtube.com/STABLEonboard channel>).



Example only:

Remaining movements on a STABLE platform



Movements collected from a <20m boat

- Boat movements = Blue and Grey.
- STABLE platform movements = Yellow and Orange.

Typical accuracy values, depending on technology:

- 90% roll/pitch suppressions for roll period more than 4 sec.
- 98% roll/pitch suppressions for roll period more than 10 sec.

Stabilized use cases – Examples



Beds



Billiard/Pool



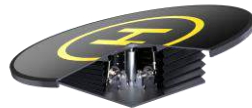
Lounge sofas



Wine Cellar



Telescope



Drone pad



Drone Hangars



HAPI / VGSI



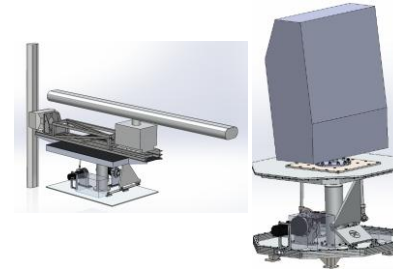
Seats



Working table



Stretcher



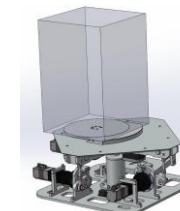
Radars/Lidars



Containers



Antennas



Sensors

pro

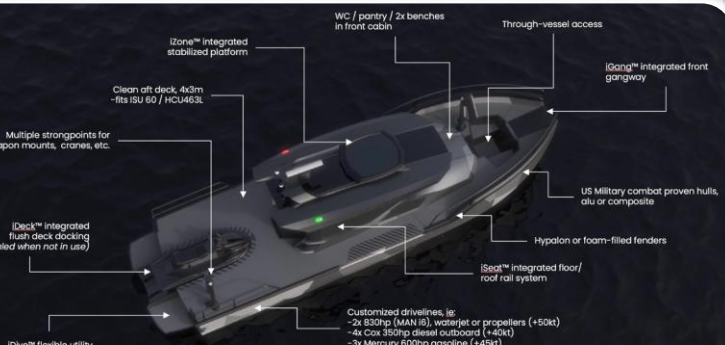
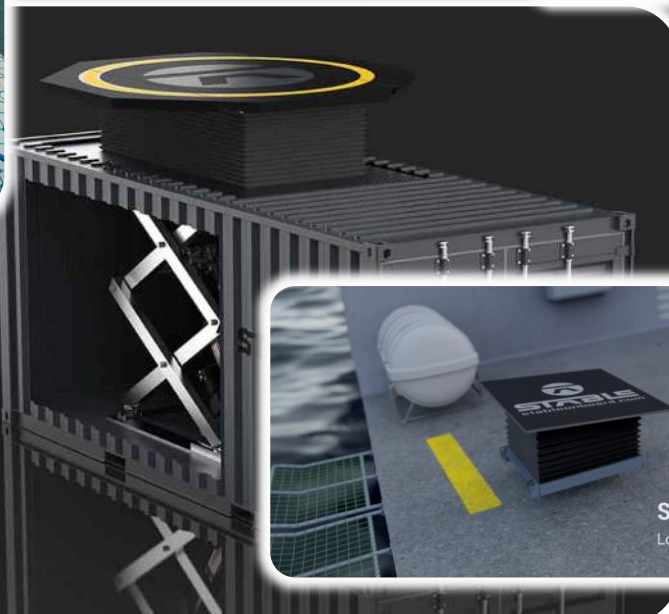
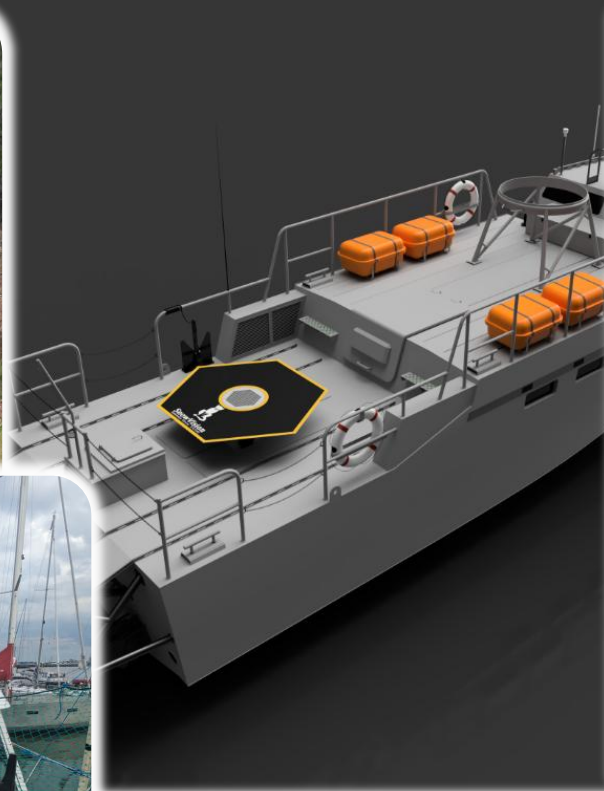
INTEGRATION OF UNMANNED AERIAL SYSTEM

UAS is an excellent "Range Extender" and add benefits to many operations. With the aft open deck, in addition to a solid roof construction, the P-45 supports multiple UAS Vertical take-off/landing areas, making integration of UAS no match.

The vessel can be equipped with an unique stabilized landing platform "STABLE", greatly improving operation of UAS's at high vessel speeds and harsh weather conditions.

LANDING PLATFORM

Stabilized UAS landing platform - a quick attached, stand-alone take-off / landing platform add-on solution. Alternative placement on aft deck.



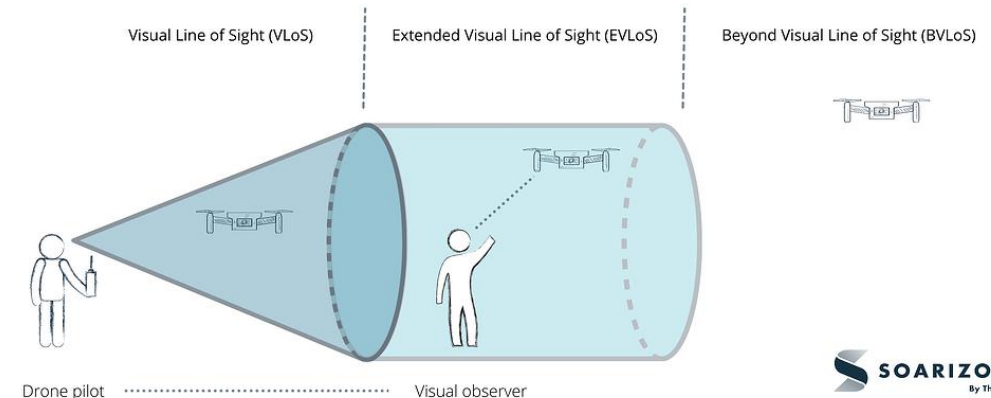
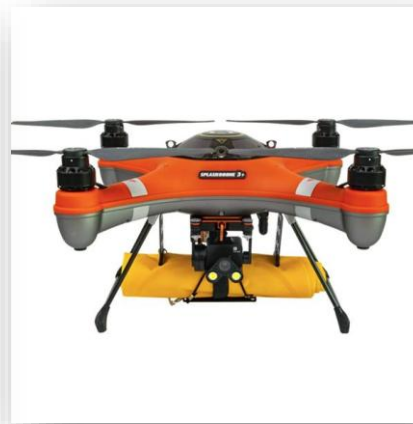
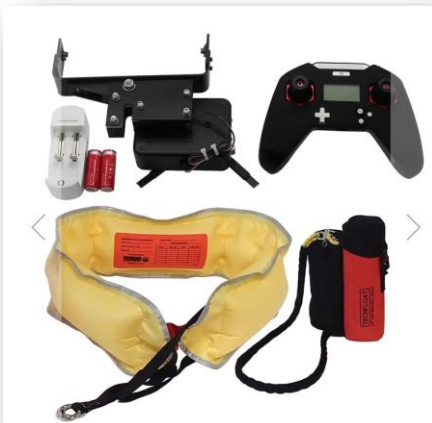
Why UAV?

The 4D: **dull, distant, dirty and dangerous**

Increase the range of SAR operation.

Beyond line of sight (BLOS).

Usage of various sensors.



Why STABILIZED?

Increase the weather window!

Statement from one of the largest European Tethered-UAV manufacturer:

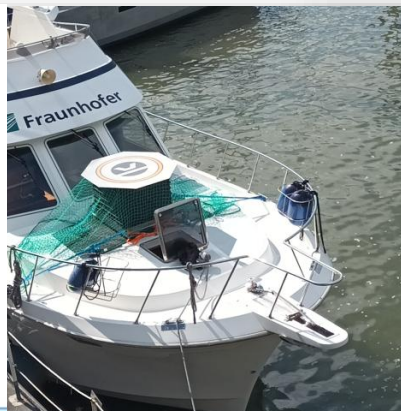
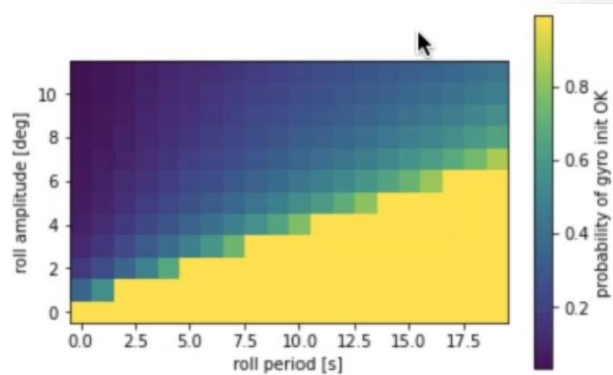
Do you experience difficulties in taking off without the Stable platform?

Yes, we do. The take-off and landing are the most critical parts of the flights and may cause potential crashes. Although the modern autopilots are quite successful stabilizing the drone platform at desired altitude, it is almost impossible to land on a boat platform that makes pitch or roll movement during the touch down.

A stabilized landing platform may:

- Mitigate challenges from roll/pitch movements AND wind/velocity!
- Enable gyro sensor initialization/calibration prior to take-off.
- Secure take-off horizontally – or platform tilted towards the wind.
- Secure landing horizontally – or tilted towards the wind / speed of vessel.
- Safeguard drone when landed, acceleration free modus.
- Enable safer autonomous UAV operations.

Gyro initialization vs ship movements
Example only, depending on drone-type, sensors etc.





STABLE
stableonboard.com



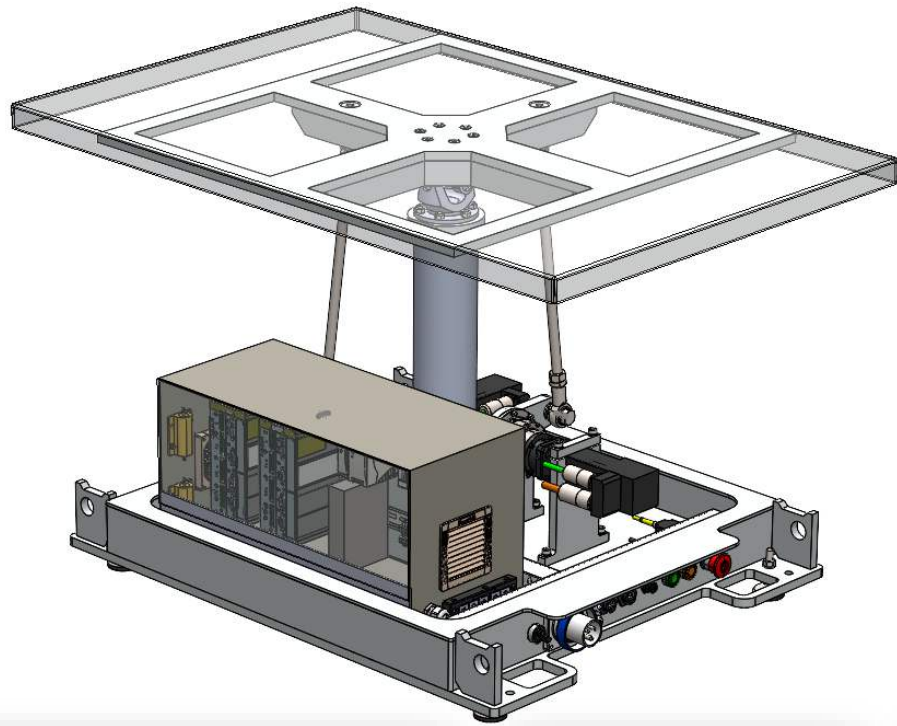
stableonboard.com

stableonboard.com

<https://youtu.be/h5ngh78uIGI>



Use cases - Examples



Stabilized drone platform “Euro Pallet” format

- Size prepared for EURO standard pallet and coaming.
- Single EURO top-plate or double EURO sized.
- Baseplate prepared to be strapped to deck.
- Weather protective curtain.
- Push buttons and separate cabled LUI panel.
- May also be adopted for land based vehicles.



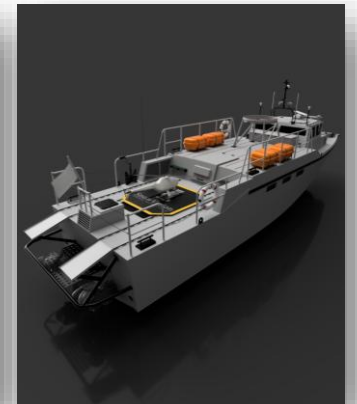
Use cases - Examples



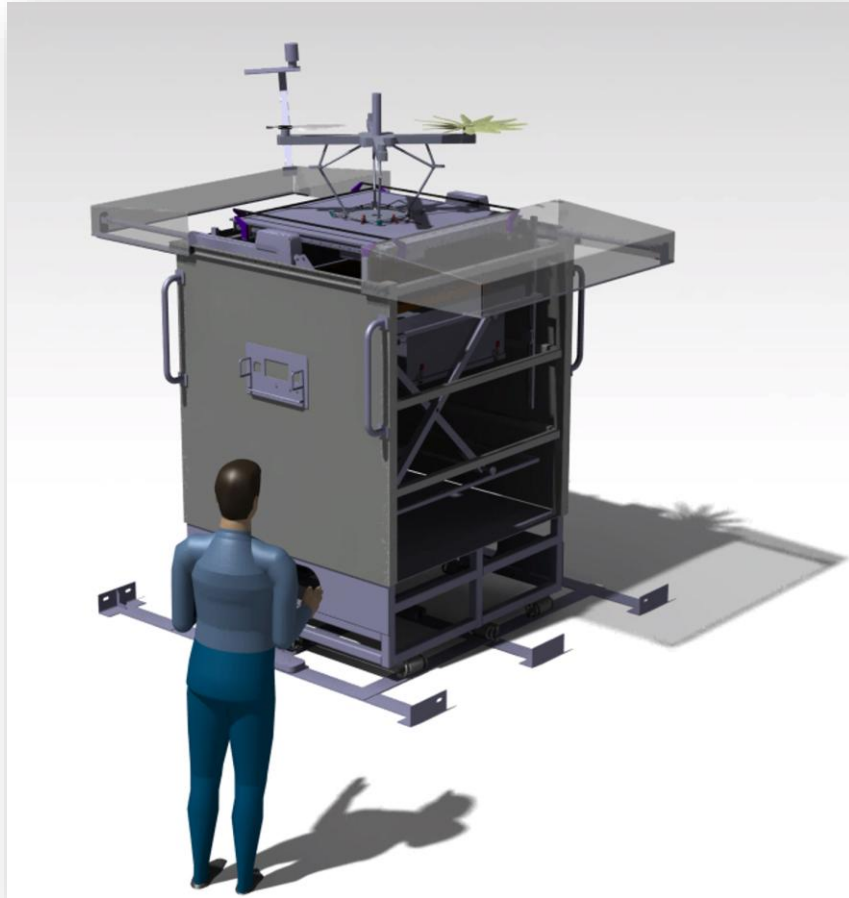
Design Idea

Next generation Stabilized UAV platform

- Engineered for volume production.
- Ruggedized.
- Weight focus.
- Easy deployable / stowable.
- Flexibility in drone sizes and payload.



Use cases - Examples



Drone In a Box

- Stabilization hardware integrated in DIB.
 - Or stabilize the complete DIB.
- Power supply, operation and control may be combined with the overall design.
- High level of flexibility.
- Telescopic, or on top of integrated lift solutions.
- May be combined with charging, tethering or mechanical locking systems.

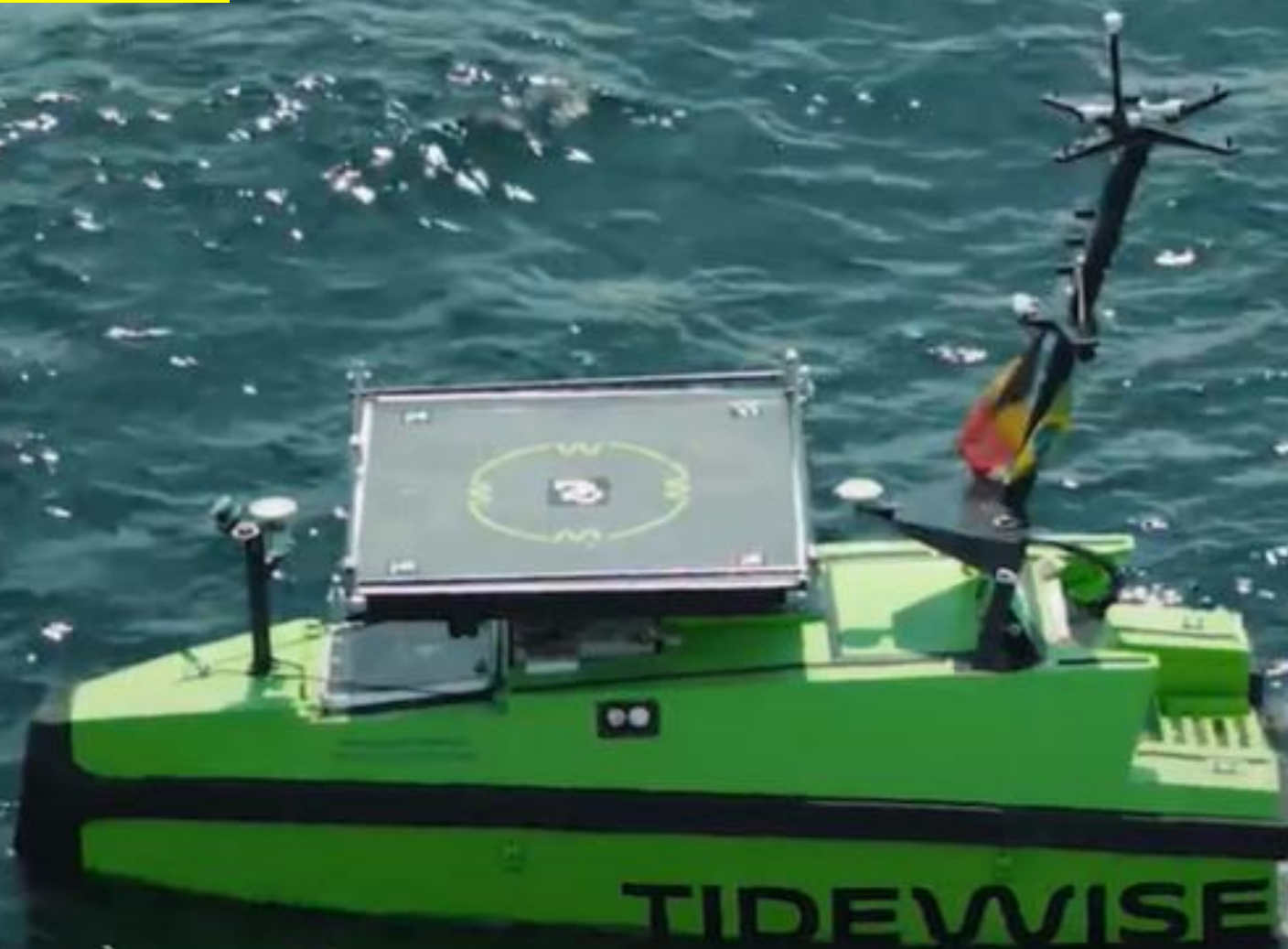
Use cases - Examples



20ft. or 10ft. drone hangar
Incl. stabilized UAV platform

- Assures essential calibration of drone sensors, prior to take-off.
- Provides horizontal landing site, even during heavy ship movements.
- Works like a garage for charging, fuelling, storage- and maintenance of the drone.





So today we have a multibeam,
a lidar and a drone platform,

Stabilized drone platform Integrated with USV

Tidewise (Brasil) USV “Tupan” – abt 5m.

STABLE UAV platform, delivered in 2020:

- Engineered for vessel specific hydrodynamic requirements.

- Lightweight.

- Large roll and pitch angles.

- Exchange of data / data communication / remote control.

- Adopted for ordinary UAV and Tethered UAV.

