

Technology innovation enables more practical boat monitoring

Why and how Skyhawk Oversea achieves what other boat monitors can't

When we set out to build Skyhawk Oversea, our goal was to create a boat monitoring system that would be usable by every sort of boat and boater.

As technology enthusiasts, we applauded the early entrants in the boat monitoring field, but as boaters we saw product limitations that made these systems much less useful or appealing to the wider range of boat owners.

A category in need of innovation

Boat monitoring systems have used the boat's battery as their primary power source. But this "vampire drain" limits how long one can monitor their boat between boat uses, and most boats are used very infrequently.

Setting up monitoring systems has also been difficult. Wiring a gateway to the boat batteries has often required the cost of a professional installer. And adding sensors has also often required complex wiring installations, as well as cumbersome network setup processes including passwords and pairing.

These were the key problems that we set out to solve with Oversea – to develop a boat monitoring system which could offer year-round monitoring and not drain the boat battery. One that would be easy enough for anyone to setup. One that would be at a price that any boater could justify. Four years of research and development later, we're launching Skyhawk Oversea.

Skyhawk – An innovator in the IoT world

Skyhawk has led the Internet of Things (IoT) industry in the development of battery-powered remote monitoring systems that combine cellular cloud connectivity and long-range connectivity to sensors.

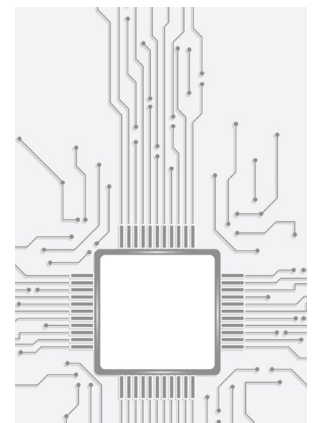
The company launched its first IoT products in 2019, breaking new ground in the use of advanced cellular IoT networks and sensor design. Today, Skyhawk products are in use in multiple industries at thousands of locations. This field-tested experience has been critical in the refinement of the Oversea platform.

Another key enabler of Skyhawk's ability to innovate is that it is part of the PICA Group, a leading manufacturer of electronics that for more than 20 years has designed and built products for industry leaders in electronics.

Our vertically integrated ability to design, prototype, test and manufacture products at our Derry, New Hampshire offices has been critical in the development of Oversea. It also allows us to offer the Oversea system at a significantly lower price than other boat monitoring systems.



The Skyhawk Oversea Hub is the first boat monitoring gateway that is powered by AA batteries. It delivers location tracking and sensor monitoring for years



Oversea devices are designed, manufactured, assembled and tested at Skyhawk's New Hampshire-based headquarters location.

Reducing the power requirement without compromising function

The most significant innovations in the Oversea system revolve around the reduction of the power needed to operate the Oversea Hub. The Hub had to be able to perform the following functions while running on AA batteries with a power lifetime of at least one year:

- Monitor for sensor alerts from sensors with near real-time response
- Reliably connect to sensors as far away as thousands of feet
- Reliably connect via the cellular network to send alerts, boat location and other device status information
- Initiate and complete active GPS and other location finding methods

To achieve these functionalities with the required battery lifetime, the Skyhawk team leveraged new methods and algorithms along with its proven technology platform, such as:

- Skyhawk FlockSense™ – A proprietary technology for low-power check-ins between the Hub and the Oversea sensors to determine if there are alerts or data that need to be transmitted
- A combination of hardware and firmware methods used to enable ultra-low power GPS, Verizon® cellular IoT and RF utilizing Nordic Semiconductor's new NRF9160 cellular IoT module
- Skyhawk PRIoT™ Platform – back-end services architecture for alert and data routing and device management

The unique capabilities of Skyhawk Oversea

- **Self-Powered:** Oversea runs for years on off-the-shelf batteries and will never drain your boat's batteries
- **Ease of Install:** Since they don't require external power, Oversea devices are drop and go
- **No passwords or pairing:** Setting up your sensors on the network is as simple as scanning a QR code
- **Long-range sensor connectivity:** You can monitor multiple close-by boats or other assets on a single Hub
- **Location on demand:** Know your boat's location at any time, whether its outdoors or in storage

The results are in

Skyhawk was able to reduce the power required for the combination of long-range sensor monitoring with a cellular cloud connection to 1/300th of the power utilized by the average IoT gateway.

Standard IoT gateways draw more than 200 milliwatts while in a resting state, requiring them to be plugged in to operate for any length of time. The Oversea Hub draws less than 1 milliwatt while in a resting state. This power efficiency allows Oversea to run for five to ten years on AA batteries when used as a standalone tracking device, and one to three years when also monitoring sensors. Also designed for power efficiency, the Oversea sensors have a five-to-ten-year battery life.

For boaters, this translates into the ability to monitor their boat all year long, without draining their boat battery. In addition, the Hub supports long-range sensor connections, allowing boaters to monitor multiple boats of theirs and others, or nearby assets. The innovations also make Oversea much easier to install compared to other boat monitoring systems and allow us to offer it at a fraction of the price of other systems.

The launch version of Oversea is just the beginning. We're continuing to innovate both on the networking hardware and with new sensor technologies, to make sure every boater can keep their boat safe, secure and ready to go.