

Always on alert - GPS buoys reliably warn against shark attacks thanks to long-life batteries from Panasonic

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Due to their high reliability Panasonic batteries are often used in safety-related applications – but until the present time not in a solution that keeps the public safe from sharks. That all changed when the Australian government commissioned the Spanish company Marine Instruments to supply special solar buoys as part of a shark management strategy launched in 2015. Marine Instruments developed a GPS buoy for the detection and mitigation of sharks along the NSW coastline. Panasonic batteries in each buoy ensure that the solution is reliable and has a long life.

Australia has the highest number of fatal shark attacks in the world: Over the last 100 years in Australia there have been more than 573 shark attacks, of which 134 have resulted in tragic deaths. The statistics also show that the number of attacks is steadily increasing - researchers suspect that this is due to rising temperatures and the large number of people in the water. The region of New South Wales (NSW) in particular faced a major problem, since sharks posed an increasing danger for local residents and tourists. For this reason, the government responded by investing around AUD 16 million in protection against shark attacks in August 2015. Part of that strategy includes SMART drumlines, an abbreviation that stands for Shark-Management-Alert-in-Real-Time drumlines. This cutting-edge technology differs greatly from traditional drumlines in that it provides a real-time alert to the competent authorities when an animal is caught. The detected sharks can then be marked with direction-finding tags and released alive.

Solar buoys for real-time shark alerts

SMART drumlines consist of a bait and a solar-powered satellite buoy. If a shark takes the bait, the solar buoy is activated by the resulting pressure on the line, which immediately sends an alert with its exact GPS position to the responsible authority. This information is transmitted by e-mail, SMS and telephone call. Within just 15 minutes, the scientists or contractors travel to the buoy and fit the animal with two direction-finding tags in order to be able to follow it in the future. As soon as a new shark is marked, the information will be made available to the public via an app called "Shark Smart" and a Twitter feed. So if you want to get into the water, you can find out in real time about the presence and activities of the sharks in the area via the app or the Twitter feed.

There are currently 100 SMART drumlines in use along the 1300 km coastline of New South Wales. Solar buoys play a crucial role in this, as they provide real-time

warning when a shark is caught. The buoys are developed and manufactured by Marine Instruments, a young and innovative company based in Nigrán, Spain. The company specializes in high-quality tracking and remote monitoring products for harsh marine environments and sustainable fishing. "We are a world leader in tuna fishing and sell our products in over 30 countries", says Gabriel Gómez, Managing Director of Marine Instruments. When the NSW government contacted us, a new application opened up for our buoys. "We were asked to consider whether we could offer a technological solution to the shark problem."

Reliable and safe thanks to Panasonic batteries

Marine Instruments then developed the Mli-S – an adaptation of the M3i, the company's best-selling buoy originally developed for tuna fishing. The Mli-S consists of a satellite transceiver with iridium communication, GPS, a magnetic on/off switch and a redundant power supply system. The latter is crucial for the reliability of the entire solution. Under normal conditions, the buoy is operated by solar cells and excess energy is stored in Nickel-Metal Hydride (NiMH) batteries. A buoy contains a total of 10 NiMH and 16 Alkaline batteries from Panasonic. "The NiMH batteries are constantly being charged. In addition, we use Alkaline batteries in case the buoy turns and is not powered by solar energy or if another failure occurs", explains Gabriel Gómez. "A side effect is that the additional weight of the batteries has a positive effect on the buoys' buoyancy."

While the Alkaline batteries have been supplied by Panasonic since the beginning of production, Marine Instruments initially used a competitor's NiMH batteries. Finally, the company switched to Panasonic because they were very satisfied with the performance of the NiMH batteries. "We need reliable products that can withstand the harsh sea conditions and fluctuating temperatures", explains Gabriel Gómez. "In addition, our buoys must have a long life cycle, so quality is extremely important. That's why Panasonic is the right partner for us." Marine Instruments now uses Panasonic batteries across the entire range - from satellite buoys for tuna fishing to radio buoys for longline fishing.

The ideal battery for every application

Vendors and engineers from Panasonic assisted the developers of Marine Instruments in selecting the right battery types for the application. It was important to ensure that the batteries met the high demands for reliability and long-term use. "With regard to the rechargeable Nickel-Metal Hydride batteries used in the buoy to store solar energy, we recommended a long-life type that provides a high discharge current even at high temperatures", says Oliver Sonnemann, Sales & Marketing Director at Panasonic. "NiMH batteries from Panasonic can be used in a

broad temperature range and are subject to fewer transport regulations than lithium-ion batteries, for example, due to their safety characteristics."

As a back-up system for the buoys, Alkaline batteries of the Panasonic Powerline series are the ideal choice. They have been specially designed for the industrial market and are in great demand due to their low self-discharge, reliability and durability", explains Oliver Sonnemann. "The Powerline series ensures a constant and reliable power supply." Due to their high reliability, the Alkaline batteries are not only ideal for use in buoys, but also in safety-related applications such as smoke detectors or blood pressure monitors.

"We are very impressed with the performance of the Panasonic batteries we use", says Gabriel Gómez. "In order to supply robust and perfectly functioning products at all times, we carry out intensive quality tests for each component at our factory in Spain. For example, we charge and discharge Panasonic's NiMH batteries for 24 hours to ensure that the battery supplies the required energy. All Panasonic products pass these tests with excellent results." High quality standards that lead to excellent results - not only in terms of buoy performance, but also in terms of the shark campaign: since the program was launched in August 2015, there have been no shark bites where these systems have been deployed.

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Infobox: Application video

Panasonic, together with all the partners in this project, has produced a video that illustrates this application and provides interesting additional information - from the work of scientists in Australia to the operation of marine buoys and the role of Panasonic batteries in this innovative solution. The video is now available on the company's YouTube channel and website.

<https://www.youtube.com/user/PanasonicEUBatteries>

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Captions

Pic. 1: Excess solar energy is stored in the buoy in nickel-metal hydride (NiMH) batteries, alkali-manganese batteries are used as backup system

Pic. 2: Gabriel Gómez, Managing Director of Marine Instruments, is very impressed with the performance of the Panasonic batteries used

Picture: Marine Instruments

Pic. 3: If a shark bites into the bait, the solar buoy is activated by the resulting pressure on the line, whereupon it immediately sends an alarm to the responsible authority

Pic. 4: Lead scientist Dr. Paul Butcher oversees the Australian government's program; he and his team tag and release sharks alive

Pic. 5: The buoys are developed and manufactured by Marine Instruments, a young and innovative company based in Nigrán, Spain

Pic. 6: To ensure that products always function perfectly, Marine Instruments carries out intensive quality checks for each component - all Panasonic products always pass these tests with excellent results.

Picture: Marine Instruments

Pic. 7: Due to their high reliability, the alkaline batteries are not only ideal for use in buoys, but also in safety-relevant applications such as smoke detectors or blood pressure monitors

Pic. 8: Panasonic NiMH batteries can be used in a wide temperature range and are less subject to transport regulations than lithium-ion batteries, for example, due to their safety

Pic. 9: Via the SharkSmart App or the Twitter account of the same name, residents and tourists can find out where the sharks are at the moment

Pic. 10: Because the buoy transmits the exact GPS position in real time, the sharks can be tracked down quickly and easily

Pic. 11: The detected sharks are marked with locators and released alive again

Pic. 12: Within only 15 minutes, the scientists or contractors drive to the buoy and equip the animal with tracking devices so that it can be tracked in the future

Pic. 13: Solar buoys provide real-time warning when a shark is caught

Picture: Marine Instruments

Pic. 14: The rechargeable nickel-metal hydride batteries used in the buoy to store solar energy have a long service life and deliver a high discharge current even at high temperatures

Pic. 15: As a back-up system for buoys, alkaline manganese batteries of the Panasonic Powerline series are in great demand due to their low self-discharge, reliability and longevity

Meta-Title: Always on alert - GPS buoys reliably warn against shark attacks thanks to long-life batteries from Panasonic

Meta-Description: Panasonic Alkaline and NiMH-batteries ensure that the innovative shark tracking solution is reliable and has a long life.

Keywords: Battery, Alkali-Manganese Battery, Alkaline, Nickel-Metal Hydride, NiMH, rechargeable battery, renewable energy, solar energy, shark attack, industrial battery, buoy, solar buoy, GPS buoy, shark tracking, solar batteries, Australia shark attack, NSW shark, smart drumlines, longlines, drumlines

Deep Links:

<http://eu.industrial.panasonic.com>

<https://www.youtube.com/user/PanasonicEUBatteries>

<http://www.marineinstruments.es/?lang=de>

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