

Offshore Drilling Case Study: SpotBot Cellular



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Industry: Offshore drilling and exploration

Application: Offshore drilling equipment

Situation: A major offshore drilling company was moving equipment from their operations base to a loading dock 115 miles/185 kilometers away, on a coast in South America. From there it was loaded onto a ship and transported to a drilling platform 120 miles/193 kilometers offshore.

The equipment consisted of various motors, pumps, and other gas injection equipment used for offshore oil and gas exploration. The motors and pumps were built into long metal cylinders. At the base of operation, nine cylinders are packaged within a thick steel container and loaded onto the back of a truck before taking a trip to the shipping yard. Once there, the container will sit two or three days before being placed on a ship for the final leg of the trip. A single rotation in this cycle will take five to seven days.

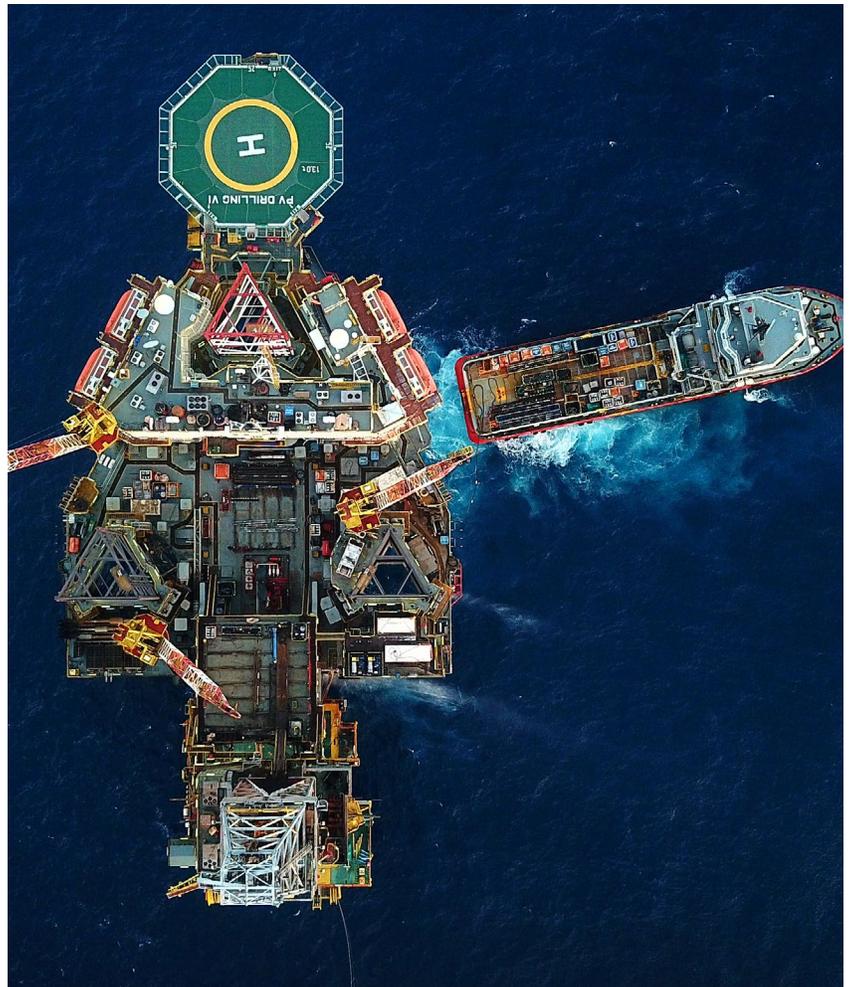
At any given time, there are 80 containers of equipment either being transported from the base of operation, sitting at the shipping yard, or on a ship bound towards an offshore drilling platform.

Problem: The company's equipment was frequently damaged during the trip which caused several problems

- Cost of the damaged equipment
- Operational downtime at the drilling site
- Interruption to a complex schedule

but there was no way to allocate blame. Without a checkpoint at the shipping yard, the damage wasn't realized until it was already at the drilling platform. Workers claim there was not damage to the equipment when it left the operations base and the contractors at the shipping yard were not accepting fault.

The company estimated that when equipment arrived damaged to a platform, they were losing \$140,000 per day until new equipment arrived.



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Solution: The [SpotBot® Cellular](#) impact monitor with real-time 3-axis impact alerts and location, visualized on the SpotSee® Cloud was successfully implemented into the company's supply chain. It gave the company the ability to see when, where, and ultimately why their equipment was breaking.

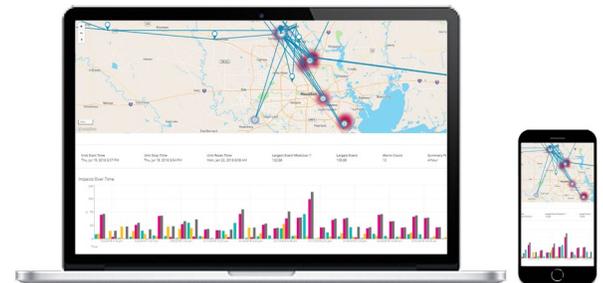
Due to the size of the assets, two SpotBot Cellular units were placed on each container in order to get 100% coverage. One recorder was mounted on each end of the container.

The company monitored five containers during the initial trial, implementing a fleet of ten SpotBot Cellulares. It was discovered that their equipment was damaged during three instances.

1. The initial loading of the container at the operational base.
 - Offloading/movement via crane at the shipping yard when a container was moved horizontally and slammed against another container from the side.
2. The inside of the cylinder is made of tungsten, a very sturdy material, but one that would break when it took a lateral impact, 25Gs or higher, from the side.
3. When the container was loaded onto the ship via crane.
 - This was the most common instance. The crane is sitting on the dock, loading the ship below.
 - While the container is being loaded, the water causes the ship to rise or fall 20-30 feet/6-9 meters from its original point. When the crane operator sets a container down on the ship while the ship is rising, the impact causes the cylinder to crack.

SpotBot Cellular gave the company the ability to:

- See where the damaging impacts were occurring.
- Identify the events that damaged their equipment.
- Identify a specific G-force level, direction, and acceleration of impact that would damage their equipment.
- Prevent damaged equipment from moving further through the supply chain, causing more delays and associated costs.
- Consider new container designs, equipment material, etc.



SpotBot Cellular Overview

Best in Class Impact Data

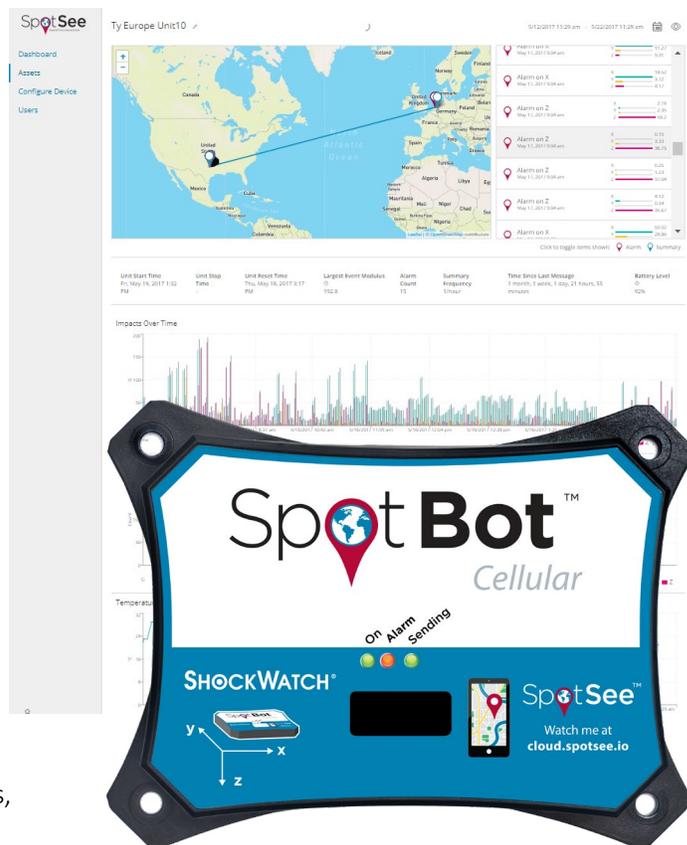
[SpotBot Cellular](#) generates accurate data on impacts up to 65G providing more than four times (4X) the range of the best competitive alternative (which captures impacts up to 16G). This range of impact monitoring is best suited for products between 100-60,000 lbs.

Longest Battery Life

With off-the-shelf lithium batteries, [SpotBot Cellular](#) delivers up to 80 days of monitoring (set to hourly summary reporting). This represents a battery life that is greater than 50% (1.5X) more than the next best competitor.

Flexible Settings & Download Capabilities

The user easily defines impact settings specific to the product being monitored and SpotBot Cellular will deliver a location and time stamp of alerts from impacts over the threshold. After the trip, the user can easily download a PDF file with the top ten largest impacts, a CSV file with the top 50 largest impacts, and a slot-time report from the SpotBot Cellular.



SpotSee Cloud

The [SpotSee Cloud](#) is where trip data is aggregated in real-time. Graphs are easy to read and include data such as specifics of impact with locations, impacts over time, impact histogram, and temperature.

SpotSee Cloud Features

- Access to your data from anywhere with a secure web portal
- Real-time reporting and tracking of incidents
- Alarms with location, time, impact g-level, direction of impact, and temperature
- Impacts-over-time visualization of each asset
- Histogram of the total impacts to an asset
- Temperature over time graph

