

## ELIOS IN ACTION | MARITIME INDUSTRY



EVERY SHIP ON THE OCEAN NEEDS A CLASS SURVEY TO TRAVEL – AND THAT MEANS FREQUENT INSPECTIONS. IT'S A BIG JOB, AND ONE THAT REQUIRES SIGNIFICANT TIME AND MONEY TO COMPLETE. ENGINEERING COMPANY PLIMSOLL IN BRAZIL IS SAVING THEIR CLIENTS BOTH BY USING THE ELIOS TO TAKE A CLOSE LOOK INSIDE THE HULL.

THE COST BENEFIT IS CLEAR:  
AT \$21, 600 FOR ROPE INSPECTORS AND \$2,500 FOR THE DRONE TEAM, THERE IS NO QUESTION THAT IT IS LESS EXPENSIVE TO USE ELIOS FOR A VISUAL INSPECTION.

### CUSTOMER NEEDS

Ships are made of steel. The longitudinal stiffeners, brackets, and long plates that make up the hull tend towards corrosion, cracks, and indents: that's why the inspections are necessary.

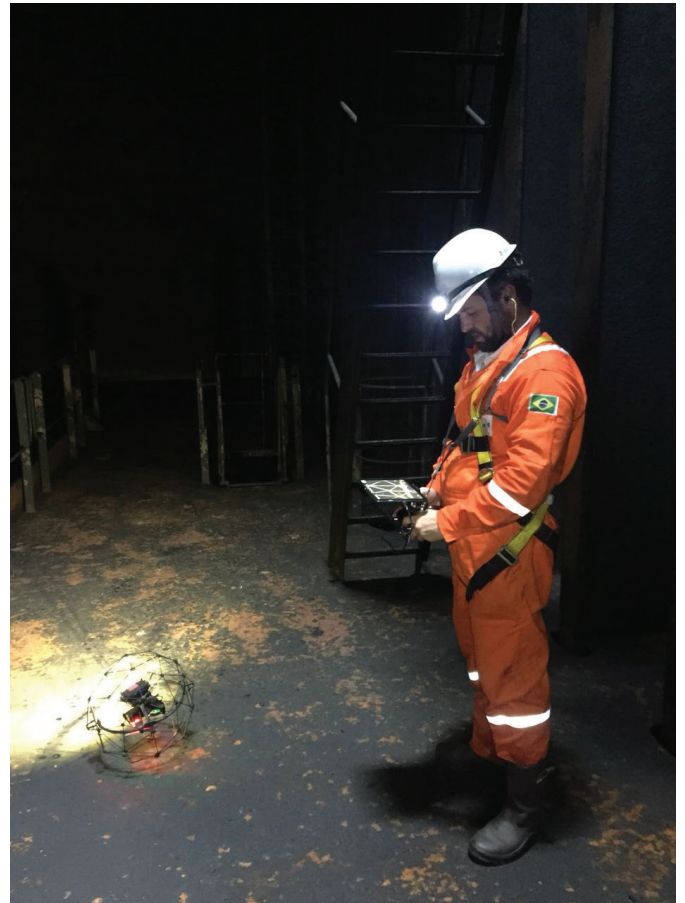
Inspecting tanks inside the hull of a ship is a difficult task – and one that needs to happen regularly. According to current class society rules, at least 30% of every tank in the hull of a ship must be inspected every 2.5 years to ensure that there is no corrosion or structural damage. The number of tanks varies in each type of vessel, but it's always a significant effort. Some may carry 40-50 vessels. Others – oil carriers, for example – may only have 20: but those tanks will be larger.

The tanks are hot, dark, and dangerous. The work is usually performed by a team of inspectors climbing on ropes. The ropes are attached to anchor points inside of the tanks, but the team works entirely without safety nets; the risk of a fall is constant. Inside the tanks, the rope inspectors are exposed to dangerous gases. There are inert gases which are not detectable by smell but are poisonous to the inspectors: there is also the risk in some tanks of explosive gas. If ropes cannot be used, the team must build scaffolding – a major job, as the scaffolding may need to be constructed 30 feet high.

It takes a team of 3-4 rope inspectors 18 days to inspect 6 tanks. At a rate of \$1200 per day, that's \$21,600, major risk, and significant downtime for one inspection.

### SOLUTION

Using the Elios drone for use in confined spaces, a team of two was able to inspect 6 tanks in a single day – and get enough data to satisfy the class society requirements.



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There are two types of inspection that may be required: a visual inspection of the hull structure and an NDT, a non-destructive test, which involves performing an ultrasound to test the thickness of the structure. If the report submitted to the class society provides clear enough information from a visual inspection to ensure that a structure is

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undamaged, an NDT may not need to be performed at all: “...which saves a lot of time and money,” says Marcello Belleti of Plimsoll. “Once we’ve done a visual inspection, it’s up to the class society to decide whether or not an NDT is needed,” he says. “We built a detailed report with footage taken from the Elios.”

The team inspected 6 tanks in one day, at a daily rate of \$2500, and required only 2 people. While inspectors must climb to the focus area of the tank, “The drone can get to the inspection site in just a few seconds,” says Belleti.

Because the Elios carries its own light, the team did not have to ask the client to provide lighting inside of the tank, eliminating more cost and time.

## RESULTS

Drone expert Marcio Anselmo and Naval Engineer Belleti say that Elios saves Plimsoll’s clients time, money and risk. The cost benefit is clear: at \$21,600 for rope inspectors and \$2,500 for the drone team, there is no question that it is less expensive to use Elios for a visual inspection. The single day that Elios requires to complete the job is also a stunning advantage over the nearly 3 weeks that the rope inspection requires.

The safety benefits are paramount. With no climbing required, the risk of a fall is eliminated. Exposure to dangerous gases is significantly diminished. “As you reduce the number of people inside the tank, you reduce the risk – fewer people and no height risk make the drone a much better solution,” says Anselmo.

## CONCLUSION

“We think that we increase security, we reduce costs, and we’re more efficient,” says Belleti: “...and in the oil and gas industry efficiency is very important. Whenever you can save time, that’s a good thing...”



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“This is a big deal for this industry,” he says.

ABS, the American Bureau of Shipping, now recognizes Plimsoll as external specialists using drones for marine inspections. That certification is something that the industry recognizes – and Plimsoll is working with their clients to use Elios more often for inspections in confined spaces. “We’re trying to educate people,” says Belleti. “In the beginning, we were essentially going door to door: but now we have companies calling us and asking us for a presentation on how they can use drones.”

“We’re talking constantly to clients about how drones can help with confined space inspections – we’re getting good feedback,” says Anselmo. “This is a very disruptive thing for the business.”



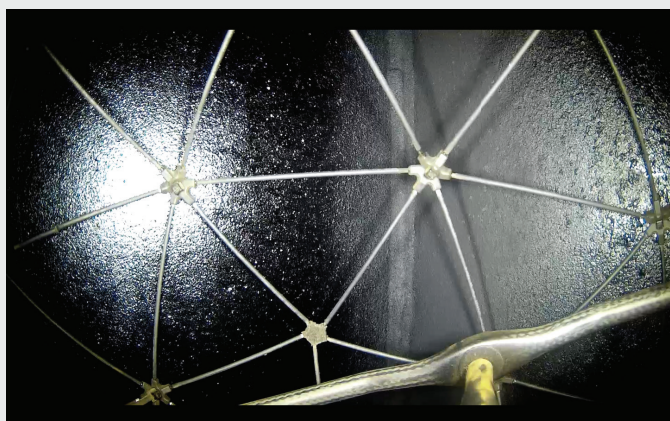
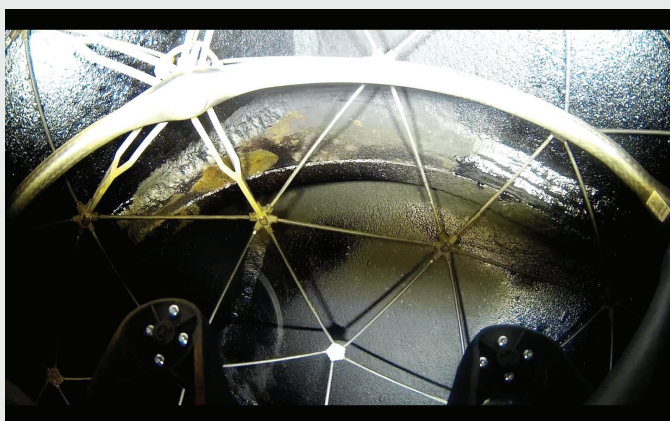
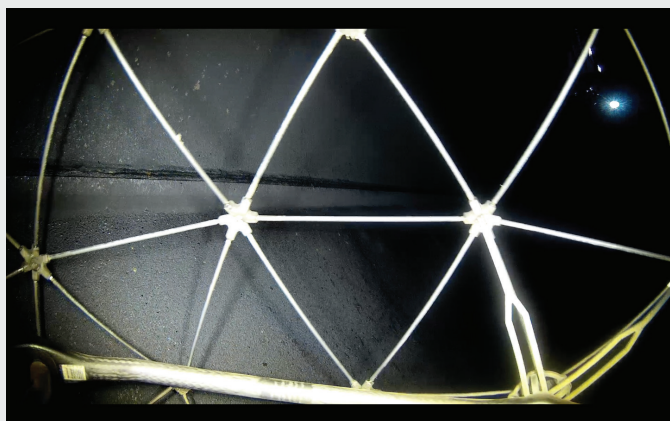
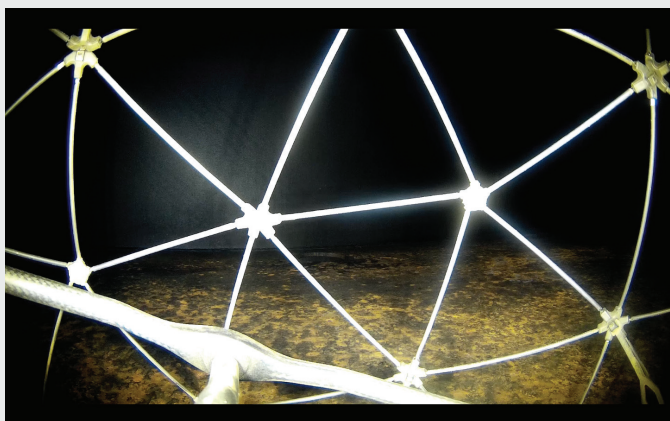
## ELIOS IN ACTION I

We're using more and more technology and engineering tools, and drones are definitely part of that."

Using Elios for inspections is a major positive change – but the team sees even more benefit

as usage increases over time and they establish a history of data. "Once we have all the data collected, you will actually be able to predict maintenance – then you will be able to save even more time and money," Belletti says.

## MISSION PICTURES TAKEN BY ELIOS



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## TIME – COSTS – SAFETY

Flyability builds **safe drones for the inspection of inaccessible, confined, and complex places**. Focusing on the Energy, Oil & Gas, Chemicals & Maritime industries, Flyability enables end-users to save time, costs and reduce risks during visual inspections.