

ELIOS IN ACTION | MARITIME INDUSTRY

# INSPECTING THE BALLAST TANK OF A CONTAINER SHIP

## INTRODUCTION

CMA CGM required the internal inspection of a ballast tank of one of its container ships, the CMA CGM ANDROMEDA. Flying in complex and pitch-dark confined spaces, Elios has demonstrated its capacity to deliver a quicker and safer method to inspect ballasts.



## CUSTOMER NEED

CMA CGM required an inspection for one of its container ships, the CMA CGM ANDROMEDA, a 323 meters vessel. They needed to inspect one ballast tank for general integrity, corrosion status as well as the monitoring of the anodes within the ballast. The ballast was 15 meters long and 12 meters deep. Two manholes located at the top of the ballast served as entry points and the ballast was divided in 2 floors with 3 sections each. Floors and sections were connected by manholes with dimensions of 600mm by 400mm. Usually, the inspections of ballasts require three to four men and extensive safety equipment such as gas and oxygen monitoring detectors, ropes, flashlights, and harnesses.

**SOLUTION AND PROCESS**

Three flights of 10 minutes each with a single pilot were carried out for the inspection of one tank. All the flights were performed entirely from above the ballasts with the pilot controlling Elios beyond line of sight (BLOS). The robot's collision-tolerance allowed it to navigate safely in contact with the structures, rolling on the walls when required. The onboard LEDs allowed performing the inspection without any external lighting.



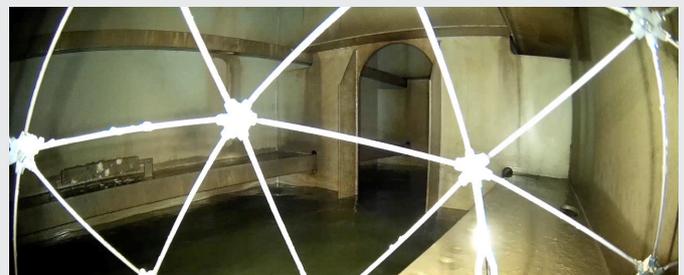
**RESULTS**

The two ballast tanks, as well as their corrosion monitoring anodes, were inspected in less than 2 hours from deployment. The general integrity of the tank, as well as the states of the anodes, were assessed to be satisfactory. With over 25 similar ballast tanks per vessel and a fleet of several hundred vessels, a substantial increase in workers' safety and efficiency of inspection are achievable with Elios.

**MISSION PICTURES TAKEN BY ELIOS**



General Visual Inspection



General Visual Inspection



Exhaust Funnel Inspection



Anode integrity checking

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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.