

# Over The Horizon windfarm bathymetric survey with no support vessel.

DriX was used to perform the bathymetric survey of boxes surrounding the 80 monopiles of the Saint-Nazaire windfarm site (France) prior to the installation of the wind turbines. The survey operation was entirely supervised from a shore control center.

## CHALLENGE

DriX OTH operation in a complex environment, with no support vessel.

## SOLUTION

DriX equipped with a Kongsberg EM2040 07 multibeam echo sounder, communication over the horizon via 4G/ satellite link.

## RESULTS

Efficient survey operation exclusively conducted from the shore

**In March 2022, the DriX USV performed a multibeam survey on the Saint-Nazaire offshore windfarm site prior to wind turbines installation. The operation was supervised remotely at a distance of 800km.**



▲ DriX remotely controlled from shore during Saint-Nazaire Operation

## Partners



## Introduction

iXblue completed the bathymetric survey of the Saint Nazaire offshore wind farm (Atlantic Coast, France) using its DriX Uncrewed Surface Vehicle (USV). Relying on 4G and satellite communication, the operation – located 20km off the West coast of France – was remotely conducted by the iXblue teams of surveyors from their Remote Operation Center in la Ciotat, South of France.

The purpose of the bathymetric survey inspection was to check for possible hazards on the seabed before the deployment of Jan de Nul's *Vo/Jack-up Installation Vessel*. iXblue DriX USV, fitted with a Kongsberg EM2040 MBES, successfully acquired accurate and high-resolution bathymetric data at a fraction of the time usually observed using traditional survey methods.

### 1. "Over The Horizon" survey operation without support vessel

For the first time, the operation was entirely conducted from a remote operation center, without the requirement of a support vessel on site. The team in La Ciotat, including a hydrographic surveyor and a DriX engineer for each shift, was able to supervise the operation, using 4G and Satellite communication, ensuring safety of operation and data QC from a distance of around 800 km.



▲ DriX engineer operating DriX from La Ciotat control center

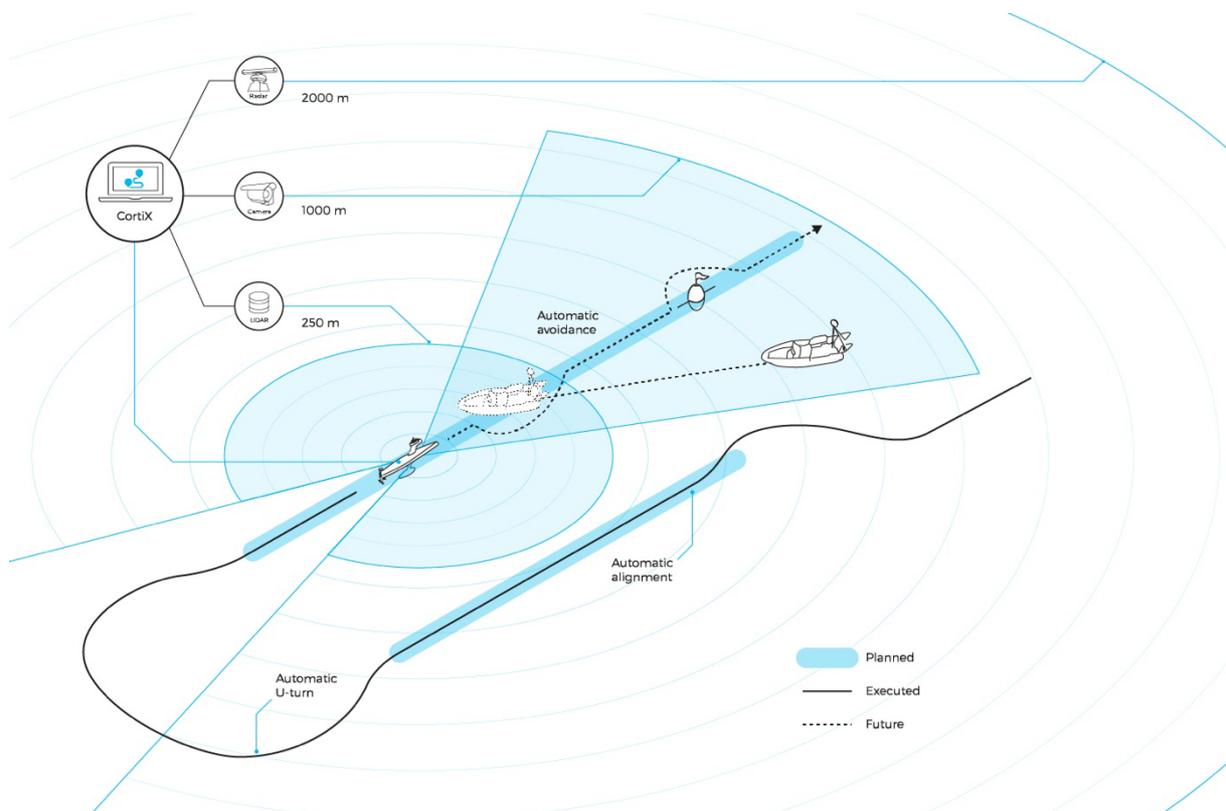
### 2. Inspection all over the site and up to within 20m from the monopiles

The survey boxes were starting from a few hundred meters up to around 10m from the monopile. It required to operate the DriX USV at distance down to 20m from the structure. The survey was performed in a very efficient way and all the 78 boxes could be surveyed within

27 hours in total. 2 boxes could not be surveyed as vessels were currently operating in their vicinity.

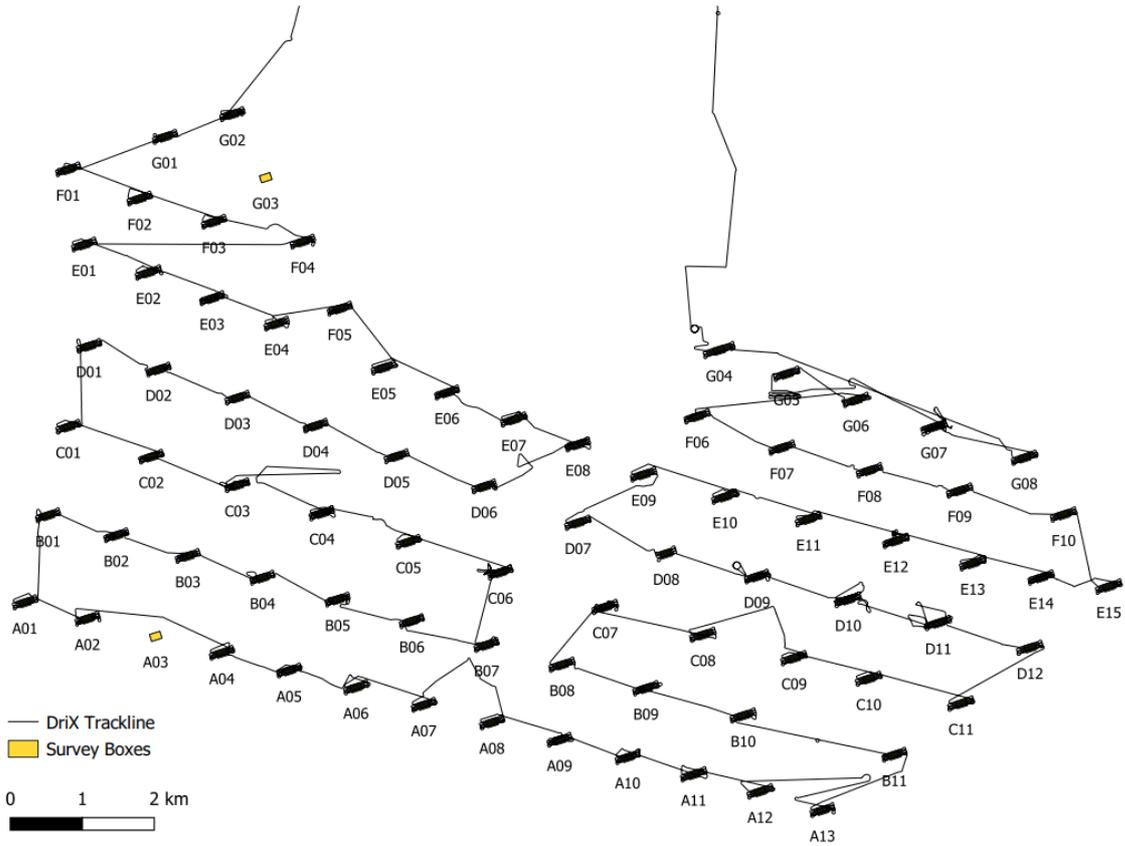
The OTH survey was conducted within an obstructed environment, with structures close by, as well as construction ships, and fishing vessels crossing the site. Buoys used to measure metocean parameters and record noises that could result from the end of the monopile construction were presenting a further challenge for OTH operations.

This complex environment required a high level of situational awareness to supervise the DriX USV. The multiple transits on-site could be managed safely and efficiently owing to the DriX advanced obstacle detection and avoidance system. The DriX Obstacle Management System combines multi-spectral / multi distances perception means including Camera, Lidar, Radar and AIS to detect, locate and track obstacles and fusion in a single unified georeferenced representation.



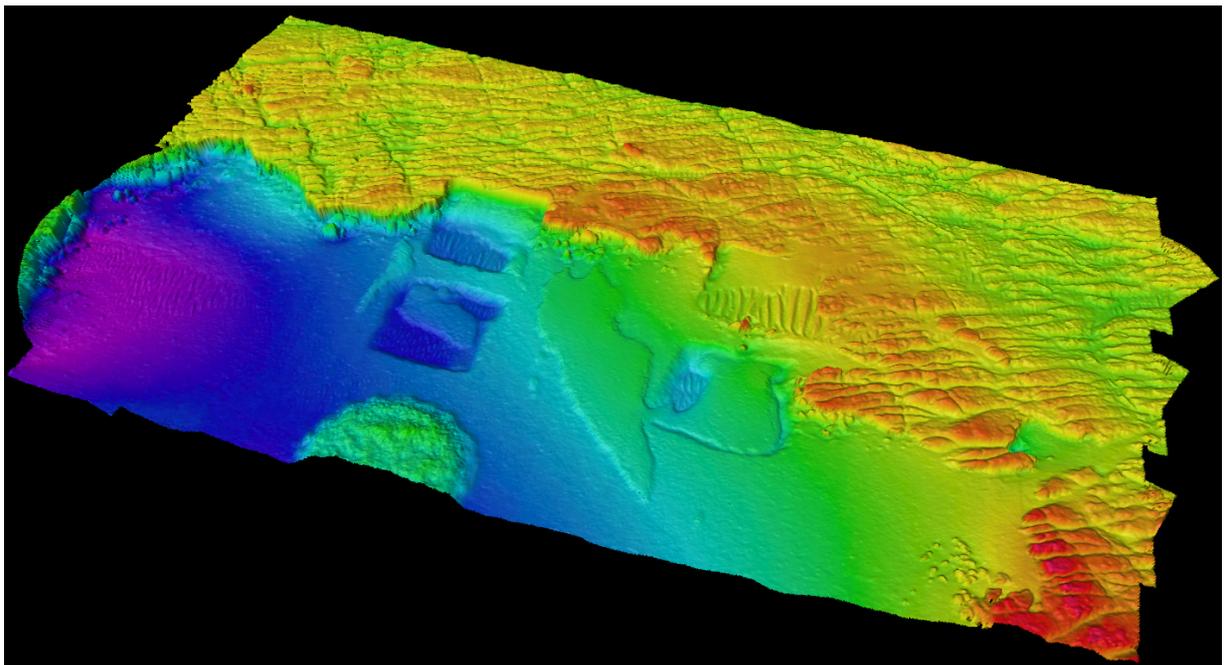
The strong wind and cross tidal current, a known characteristic of the Atlantic coast, were also challenging conditions for line keeping. Owing to its unique hull shape and its advanced motion control, the DriX maintained its survey planned line despite side currents of more than 2.5 knots and Wind Speed up to 20 knots.

The figure below illustrates the efficiency of the survey. It shows the DriX trajectory, from the moment that it entered the field, to the moment it left.



▲ DriX tracklines during the survey of the Saint-Nazaire windfarm site

The survey was performed at an average speed of 7.5 knots, while still allowing to record high quality data.



▲ MBES Data example of one of the survey box of the Saint-Nazaire windfarm site

