Orbiton
unmanned aerial systems

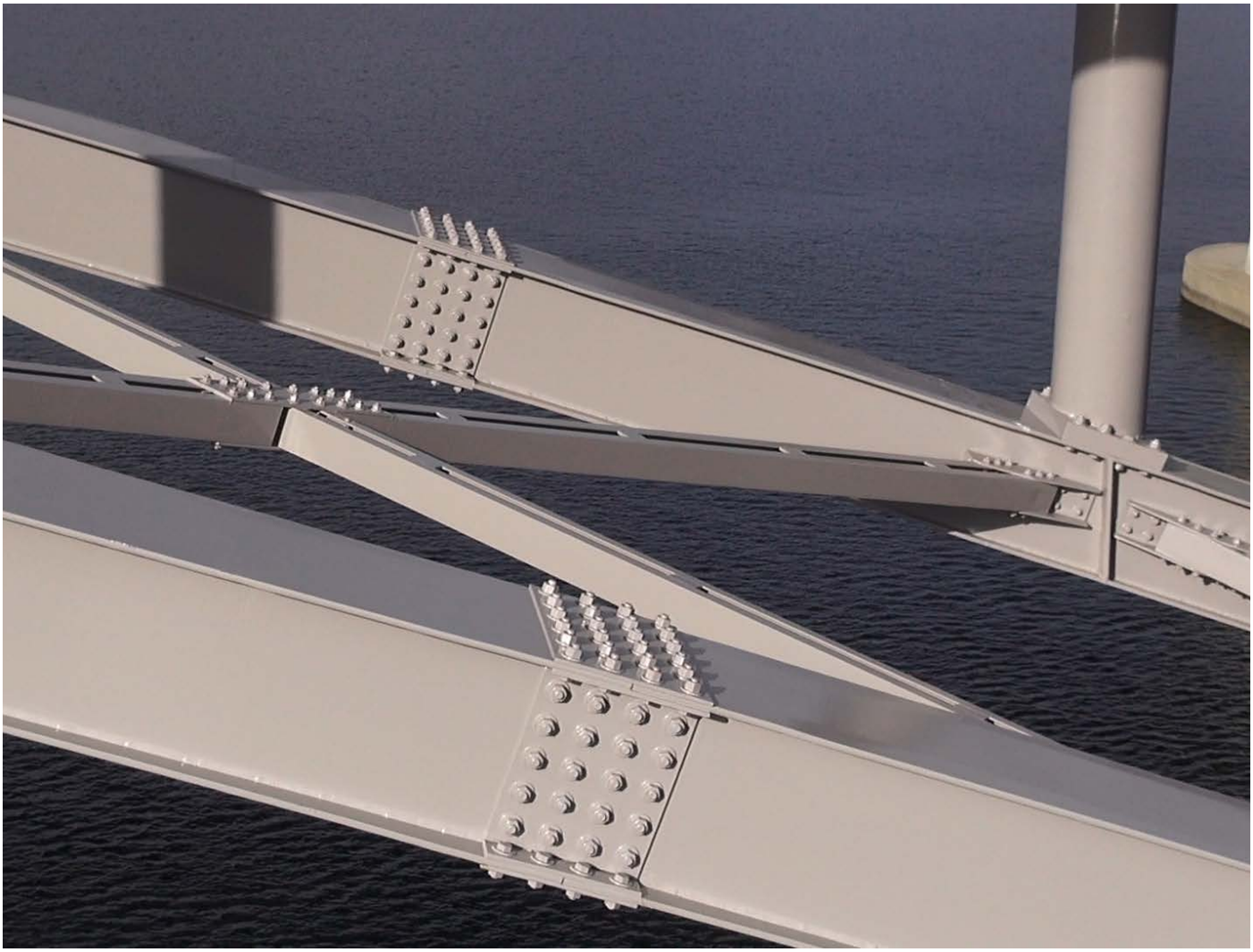
CASE
BRIDGE INSPECTION

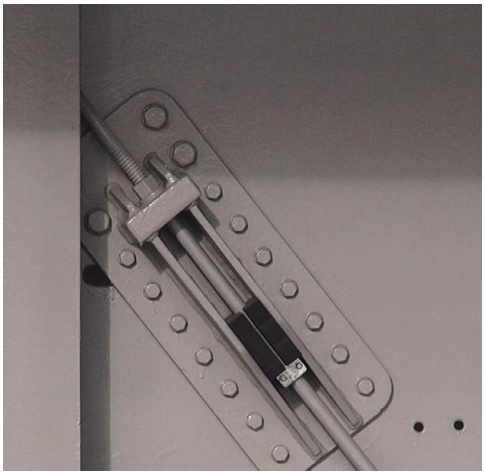
Client: Dr. Ing. Aas Jakobsen/ Norwegian Public Roads Administration, Region East

What: Bridge inspection

Where: Region East, Norway

CASE STUDY //





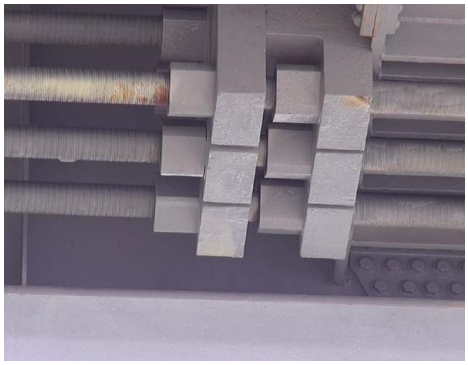
THE MISSION

In October 2015 Orbiton – in collaboration with the engineering firm Dr.Ing. Aas-Jakobsen -was awarded Norway's first ever comprehensive RPAS tender, for bridge inspections for the National Public Road Authority (NPRA).

The contract concerns the main inspection of about 300 bridges annually in Østfold, Akershus and Oslo in the period 2015-2020. Of these 300, the main inspection of inaccessible structures will mainly be carried out using drones.

This is the first time the NPRA focuses on systematic use of drones for the inspection of their infrastructure and the project represents a groundbreaking and pioneering initiative in Norway.

DATA COLLECTION

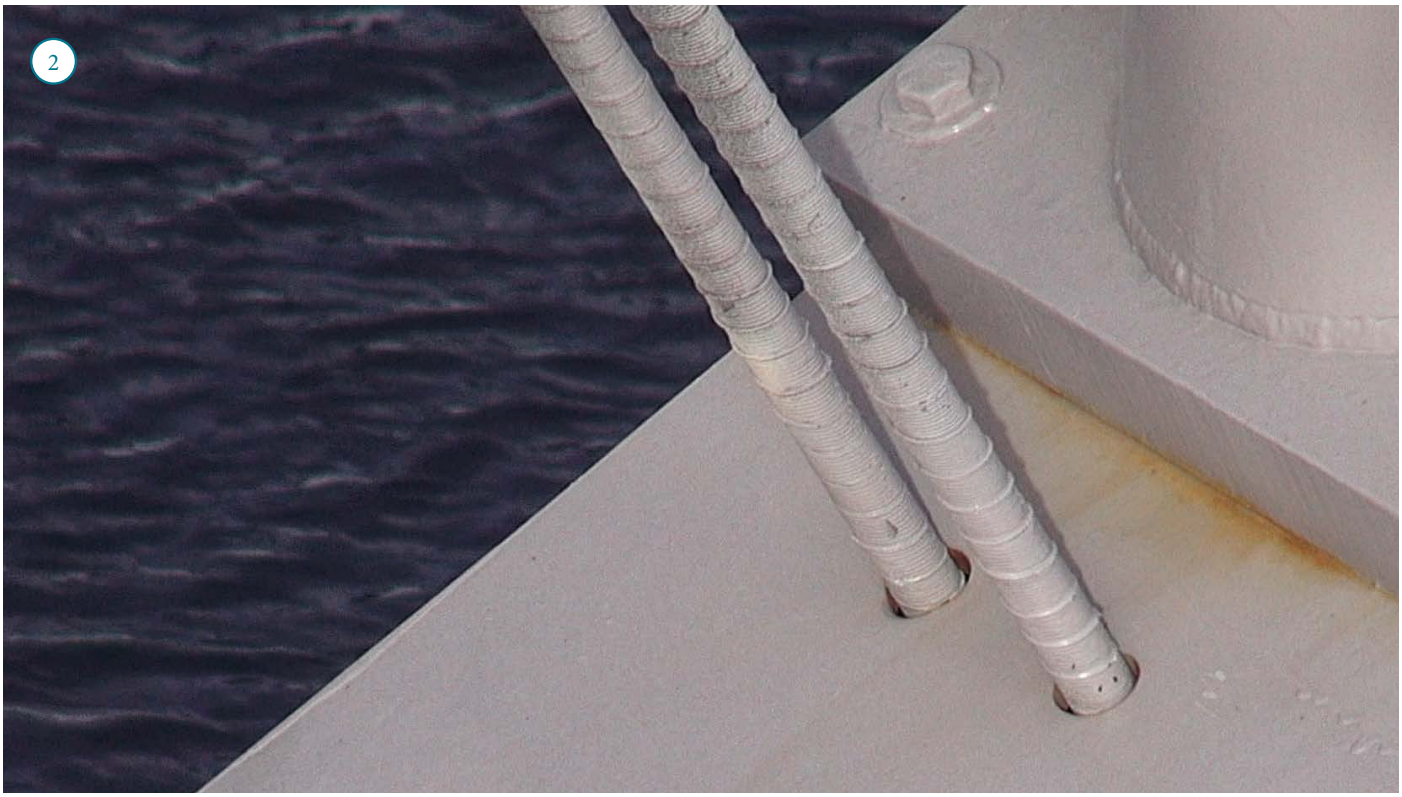


A SMOOTH AND EFFICIENT SOLUTION

The first inspection was completed on Monday October 12th at Langset bridge at Minnesund in Akershus. Shortly thereafter, 6 other bridges on the E16 and E18 were inspected. The bridges have previously been visually inspected from ground level, using ladders, snooper trucks, scaffolding, boats or climbers. In most cases, traffic must be stopped or re-routed, and operations often take place at night.

Using drones, the inspections could be carried out in daylight without closing the road and without the comprehensive and costly procedures that come with nighttime operations. Inspections were mainly conducted without displaying signs, albeit after a thorough SJA and approval by roadwork safety personnel. Because of its size, the drone is so difficult to spot by motorists that it does not affect normal traffic flow.

RESULTS



1. During the inspections, several types of sensors and lenses were tested. The choice finally fell on a 24 Mpix sensor with a fixed 50mm lens. Stills were also chosen over video. In this way, data with a high degree of detail were assured.

2. Bridge inspections with drones place high demands on personnel and equipment due to many potential hazards. Flights were carried out alongside roads with heavy traffic, in urban areas and along railway tracks and overhead lines. This required a thorough initial risk analysis. The pilot and sensor operator had to handle various – and simultaneous – obstacles. Difficult lighting conditions require extensive photographic knowledge as well as technical understanding of the sensors in use. The drones are exposed to varying atmospheric conditions, and electromagnetic radiation is also a particular hazard that must be strictly observed.

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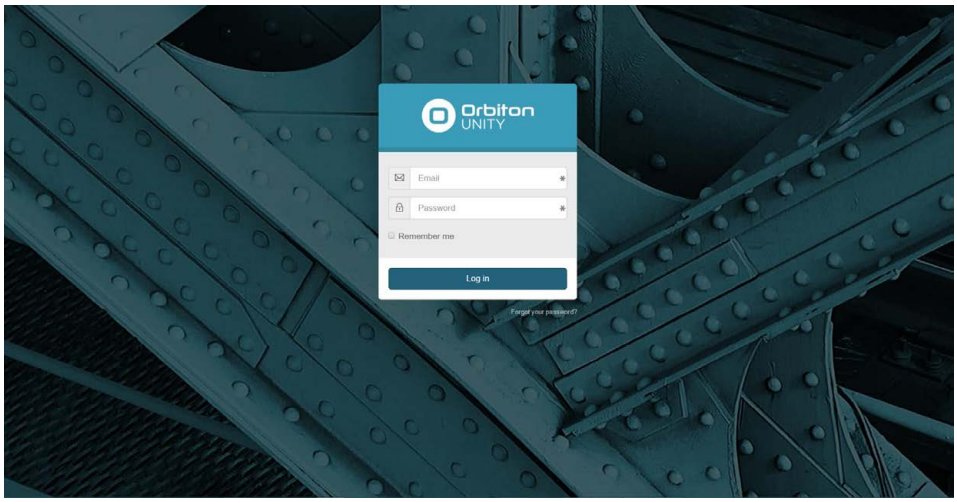
Orbiton AS is one of Norway's leading drone companies. The company provides certified inspection services and autonomous computing solutions for industrial and infrastructure operators. Orbiton has provided services for the Norwegian Public Roads Administration, Norwegian Water Resources and Energy Directorate, Rambøll, AF Group, Lemminkäinen, Dr. Ing. A. Aas Jakobsen, et al. The company has also undertaken special missions for the Prime Minister's Office, Norwegian police and for NRK - the Norwegian Broadcasting Corporation. Deliverables consist of complex imagery, technical scanning and processing.

In addition to pixel based data, Orbiton supplies georeferenced orthophotos, digital elevation models, 3D models, CAD and GIS files, infrared scanning as well as certified inspection and validation reports.

Orbiton UNITY



Orbiton Unity is a data analysis and management software-suite linked to the use of unmanned systems.

Orbiton Unity gives customers the opportunity to manage, process and analyze the results of their drone data using various technical tools.