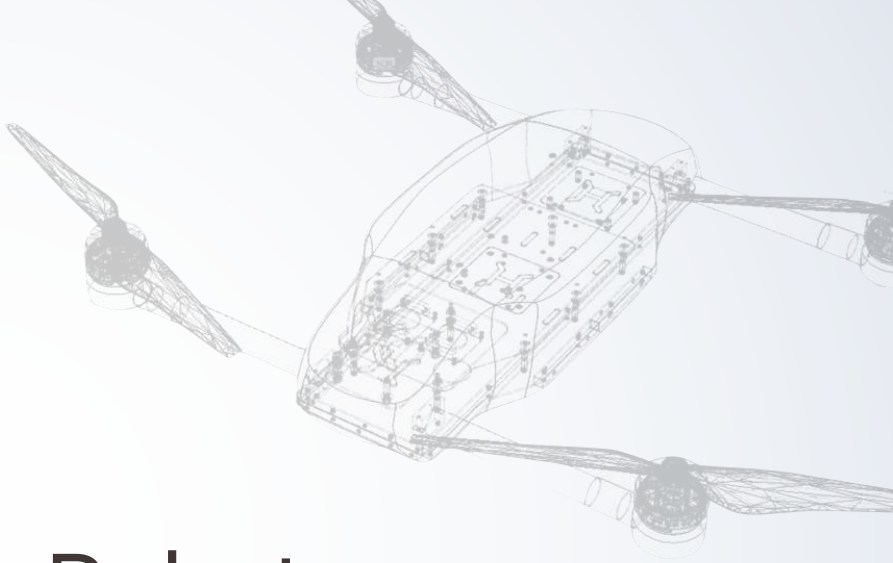
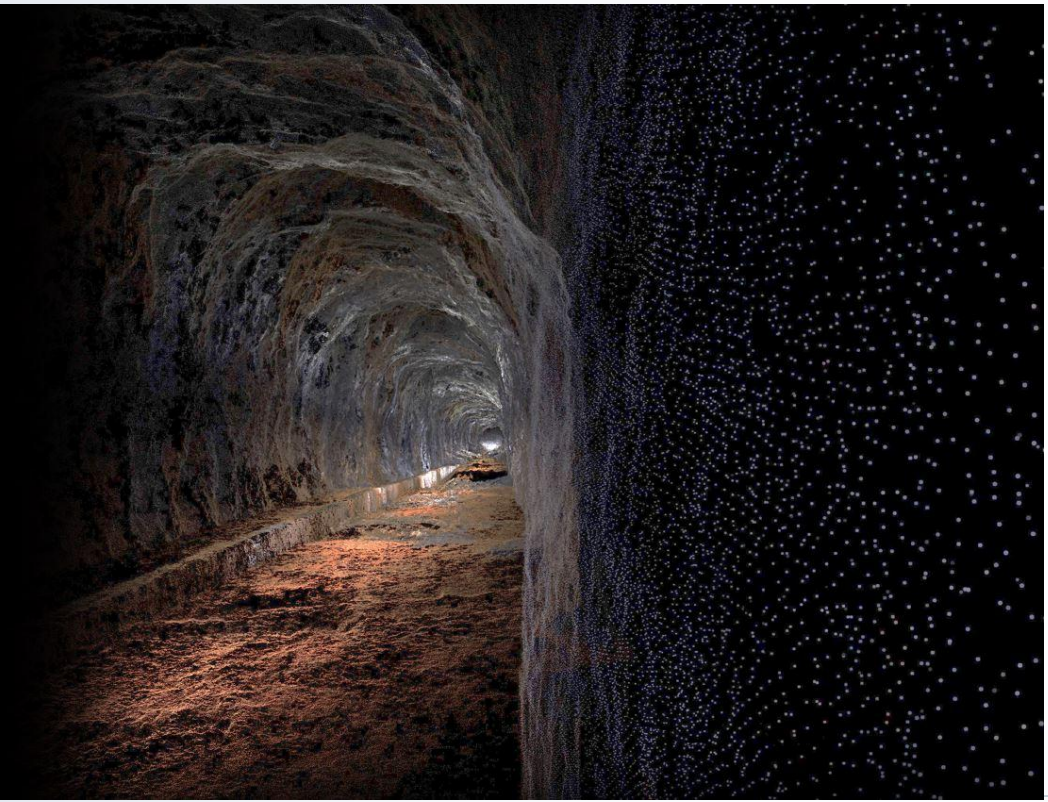
HOVERING
SOLUTIONS



Autonomous Flying Robots

To digitize indoor and **underground** areas

The Problem



- Thousand of kilometers of underground infrastructure **need to be inspected** every year
- Inspections are necessary / mandatory for **critical infraestruture**
- These tasks are timeconsuming and usually involve **high risks for humans**

Solution: Autonomous Flying Robots

We build autonomous flying robots for digitalization of underground or indoor infrastructures, making inspection and digitalization process faster, safer and more accurate

Main advantages

AUTONOMOUS NAVEGATION
No pilot required. Beyond line of sight.

No GPS required

No radio communication

Can operate in complete darkness

Resistant to humidity, dust, (toxic) gases

Our Data Acquisition Process

First step

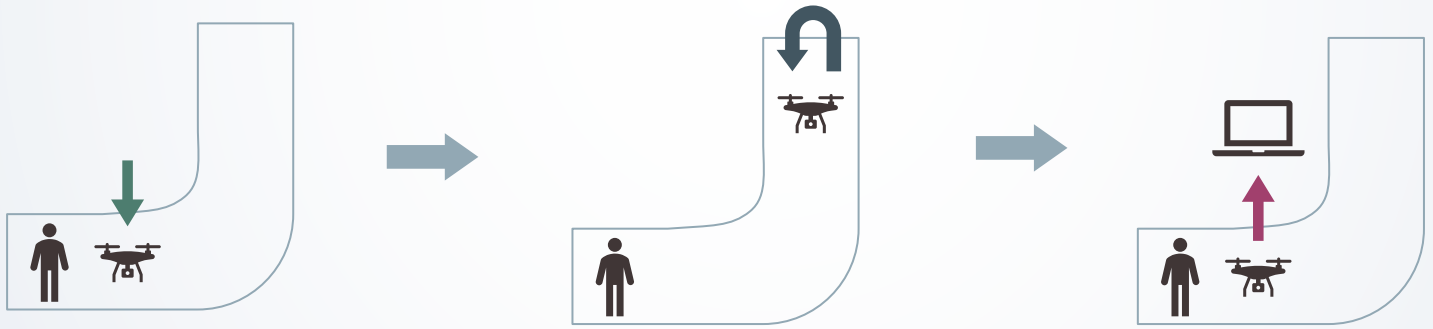
Placing robot at starting point (safe area)

Second step

Autonomous fly. The drone reaches the end of the inspection point, where it is either retrieved by another operator or returns to the starting point autonomously.

Third step

Download and check of collected data in few minutes



Operational / Business Models

OPERATIONAL MODEL

RISK FREE
Autonomous Fly

Cloud data computing

3D visualization and inspection in office

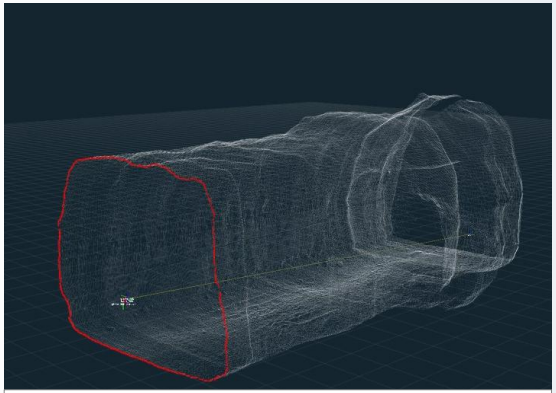
BUSINESS MODEL

Pay per use. Safe costs.
NO CAPEX investment

Some Key Numbers

15 - 60 min
scan time per battery

0,75 – 1,90 m/s
typical scanning speed



up to 7 km
range per battery in large tunnels

Types of Autonomous Robots

Mini

- Dimensions: 350x350x85mm
- Max. range per flight: 1000 m
- Ø : 800 - 2300 mm
- Max. time per flight: 16 min.

Standard

- Dimensions: 620x695x150mm
- Max. range per flight: 2300 m
- Ø : 2300 - 5000 mm
- Max. time per flight: 42 min.

Maxi

- Dimensions: 1480x1570x200mm
- Max. range per flight: 7000 m
- Ø : 5000 – 10000 mm
- Max. time per flight: 62 min.

Robots are designed and manufactured entirely in Spain, adapting them to each mission profile

HOVERING SOLUTIONS

Results

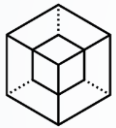
Processed Deliverables

A comprehensive set of information to complete your digital twin and support O&M activities

VIDEO

- high definition

POINT CLOUD



- georeferenced
- precise measurement
- coloured according to the infrastructure surface

IMAGES

- panoramic 180°
- georeferenced
- high-resolution definition of defect and damages

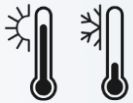
3D TEXTURE

new

- immersive realistic scenarios
- facilitate an advance engineering assessment
- enhances O&M activities planning

THERMAL MAP

new



- Identification of temperature changes

Services on Deliverables

A comprehensive set of information to complete your digital twin and support O&M activities

REPORT

- defects database
- georeferenced defects
- according to EN 13508-2
- supports national or company inspection format

CAD

- plans and elevations
- drawings adapted to the client's requirements

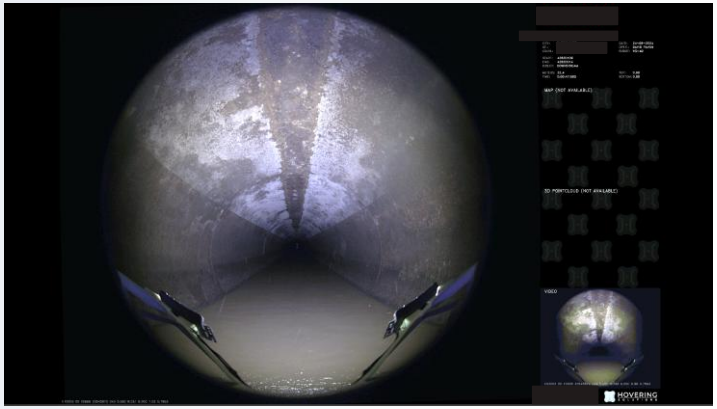
BIM MODEL

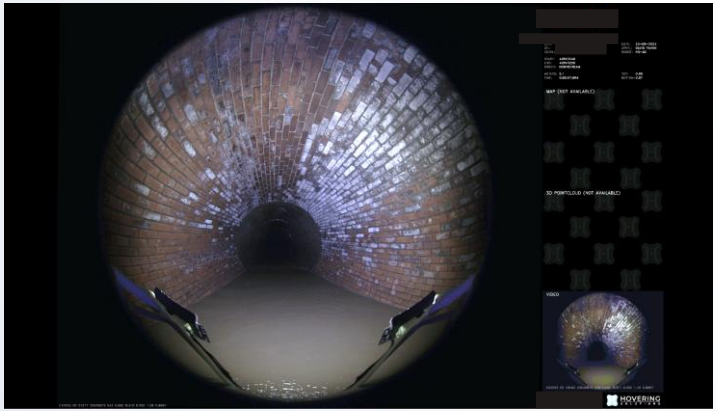
- in accordance with client requirements
- exchange files
- attributes for database integration

GIS

- creation of GIS files for infrastructure management
- incorporation of information into existing platforms
- support in the development of use cases

Video

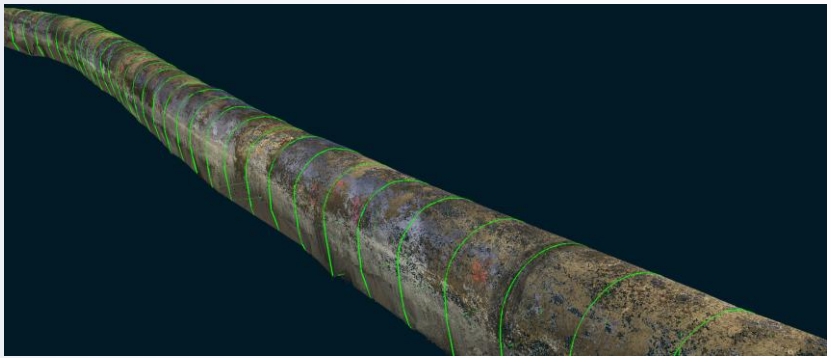


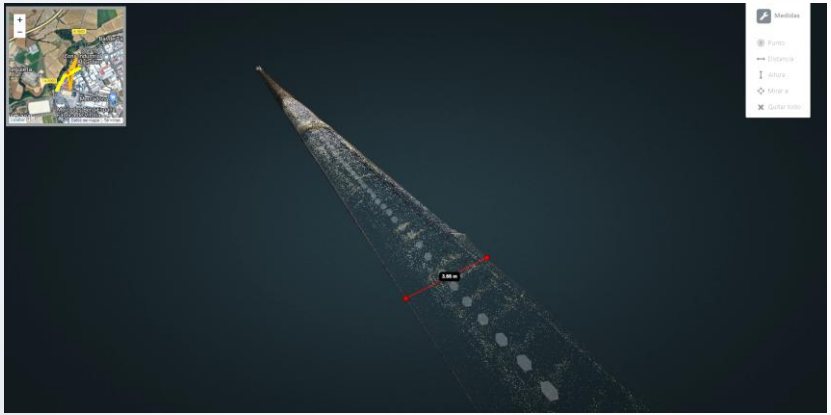


Characteristics

- Video MP4 format.
- 25 FPS video.
- Video & image combination.

Point Cloud





Characteristics

- Georeferenced Point Cloud.
- Possibility of taking measurements online.
- Allow to produce the georeferenced panoramic images.

Georeferenced panoramic images

Characteristics

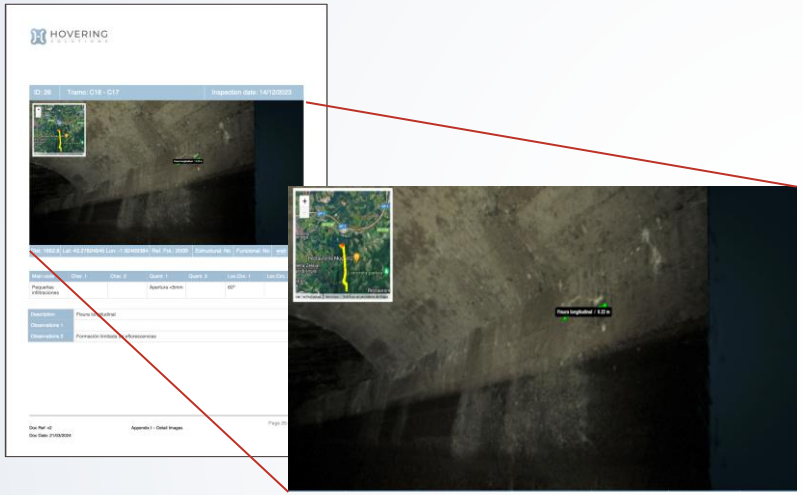
- Image resolution: 1-2 mm/pixel (allows detecting faults from 2 millimetres).
- It is possible to download images of a specific damage or pathology.
- All images are georeferenced.
- There is the possibility of taking measurements online.

3D Textured Model

Characteristics

- Provides realistic scenarios for integration into Virtual Reality
- Facilitate walk through facilities to support inspections, training and preparation of O&M activities
- Support the production of a Digital Twin of the infrastructure.

Condition Assessment Report



Characteristics

- Creation of defect mark-ups in the Online 3D Viewer.
- Enables monitoring of defect progression over time.
- Includes geolocation of defects.
- Accessible online and available in PDF format.

3D Viewer

The ultimate tool for navigating digital data

VIDEO | POINT CLOUD | IMAGES | 3D TEXTURE | THERMAL MAP | REPORT

ACCESS TO ONLINE 3D VIEWER

- View high-resolution images, georeferenced point clouds, and defect annotations in one platform.
- Rotate, zoom, and navigate the tunnel or asset as if you were physically present.
- Access data from anywhere, using any device with an internet connection.
- No need to install specialized software, making it user-friendly and accessible.

Clients & Credentials

Canal de Isabel II
IBERDROLA
enel
edp
VEOLIA
global omnium
sacyr
VOITH
Berliner Wasserbetriebe
STADTENTWÄSSERUNG FRANKFURT AM MAIN
Gemeinsam für sauberes Wasser.
Thames Water
enusa
facsa
ciclo integral del agua
socamex
BOLIDEN

- Water distribution
- Hydropower
- Construction
- Nuclear
- Mining

Newspaper Articles*

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enel
GEO WEEK
EL CORREO
Silicon
EL MUNDO
AGUASRESIDUALES.INFO
EL PAÍS
iagua
deia

Company Overview

- Founded in 2016
- Exclusively focused on underground challenges
- Proprietary and patented technology
- 100% private capital company
- 1000 sq meters facilities in Madrid
  VISIT US!

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