

 FLYABILITY

# ELIOS 2

APPLICATIONS  
CATALOGUE







SAFE DRONES  
FOR INACCESSIBLE  
PLACES

## MULTIPLE INDUSTRIES

Flyability has customers in both industrial inspection and public safety.

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## THE PIONEER AND LEADER IN INDOOR DRONES

Applications requiring indoor inspection and explorations cover tens of industries. Flyability is the pioneer and leader of this segment.

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## ONE COMMON GOAL: SAVING COSTS AND SPARING LIVES

Customers often break even on their purchase after a few months of use, some even after a single flight. Reducing risk is paramount to all our customers. In addition to keeping workers safe, they often have the possibility of inspecting and exploring spaces that were previously inaccessible, shifting the cost-benefit ratio of their work.

## INDOOR DRONES IN:

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## OIL & GAS SAFETY FIRST

Because safety is paramount to the Oil & Gas industry and because this industry is facing more and more cost pressure, our customers are turning to innovative solutions allowing them to improve the quality of their inspection and preserve their assets. By choosing Elios, they are increasing the safety of their workers while cutting inspection costs by performing more thorough and frequent visual inspections and benefiting from a visual support for a better maintenance planning.

# APPLICATIONS



## CHIMNEY / SMOKESTACK

Performing a General Visual Inspection to detect cracks and anomalies on the inside of a sky-high chimney within an oil refinery.



## OFFSHORE RIGS, FPSOS, AND DRILLING SHIPS

Checking the inside of ballasts and tanks for possible anomalies of the structures on offshore rigs, FPSOs, and drilling ships.



### **Julien Da Vela** — *UAVs & Robotics Officer, TOTAL*

Among the many use cases we identified for robotics at TOTAL, confined spaces inspection is probably the one that gave us the best satisfaction. This has been possible thanks to the Flyability Elios, which the TOTAL inspectors pilot day after day. Whether for planned or unplanned shutdowns, this is a fast decision-making tool which enhances our safety and the availability of our assets.

**INCREASE SAFETY**



## STORAGE TANK

Looking for cracks and corrosion on rafters, walls, and roof sections of storage tanks during integrity-assessment turnaround, by performing close visual inspection beyond line of sight.



## REFINERY

Performing the visual inspection of critical production units of petroleum refineries such as Fluid Catalytic Cracking and Cokers.



**Lorenzo Morandi** — *EPC Project Manager, GE Oil & Gas*  
I used one of the drones of Flyability to inspect a WHRU in an oil plant and we benefit a lot from the results. It took short time to prepare the inspection and few hours to perform it. If we had to build scaffolding inside the WHRU it would be much more impacting for our customer.

**DECREASE DOWNTIME**



## JETTY

Collecting close up images underneath a jetty to check its structural integrity as well as the integrity of the piping it carries.



## ASSET DECOMMISSIONING AND REHABILITATION

Assessing the extent of damages inside an asset in order to plan for its decommissioning or rehabilitation and evaluate the cost of the operation without putting humans at risk.



**Danny Landry** — *Unmanned Operations Manager, Premium Inspection & Testing*

We have developed an internal service of 6 pilots, flying Elios up to 100 times per month at our customer's refineries and petrochemical facilities. Providing our services with the Elios to our clients has been a win-win: It has helped our customers in reducing the cost of their inspections and their downtime, and us in supplying unmanned inspection services for new and existing relationships.

**SAVE COSTS**



# POWER GENERATION ALWAYS ON!

Electricity availability is a given to our society. We take its provision for granted and our productivity gets paralyzed when downtimes happen. Power Generation professionals are constantly acting to preserve the level of production to make sure the grid is always on. By choosing Elios, power plants maintenance teams are able to regularly and thoroughly assess the integrity of their assets, preventing downtimes, or reducing them by rapidly collecting visual data to make educated decisions and get things fixed.



# APPLICATIONS



## COAL-FIRED BOILERS

Assessing the integrity of burners, refractory, and superheater piping inside the combustion chamber and detect cloggings, wears, and tears inside air pre-heaters.



## NUCLEAR POWER PLANTS

Controlling for suspected leakage and assessing the integrity of equipments in radioactive parts or nuclear plants without having to expose humans to radiations.



**Ian Henderson** — *Managing Director, EneffTech Services Ltd*

Having supplied the Elios and trained a number of nuclear staff to fly this technology, we would agree it has many benefits. Although there are some areas you would not use this or any other rotary wing aircraft due to rotor wash, but for most restricted or no man access situations it delivers and has the potential to save hundreds of thousands when compared to conventional methods.

**SAVE COSTS**



## HEAT RECOVERY STEAM GENERATOR

Assessing the integrity of supporting pins, burners, and lancers inside an HRSG during the power outage of a combined cycle plant.



## WASTE INCINERATOR

Visually inspecting refractory, burners, tubes and pipes of the combustion chamber during periodical and unplanned shutdowns.



## WIND TURBINES

Inspecting inside the blades of wind turbines during planned shutdowns and inside the pillar and basement of the turbine while operating.



**Colbey Ryan** — *Co-Founder and head of Business Development, Exelon AeroLabs*

At Exelon, we have realized significant safety improvements and cost-reduction using the Elios to perform indoor asset inspections at our facilities. We feel this is a valuable asset every generating station should have on-hand.

**INCREASE SAFETY**



## HYDRO POWER PLANT

Gathering visuals to check for the integrity of various confined spaces of a dam such as surge tanks, water canals, penstock, and flood gates.



## **PULP AND PAPER MILL RECOVERY BOILER**

Visually inspecting refractory, burners, tubes and pipes of the combustion chamber or recovery boilers during periodical and unplanned shutdowns.

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## **TRANSFORMERS**

Collecting information, such as liquid levels or leaks, at the top of high-voltage underground transformers to assess their proper functioning.

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## **ASSET COMMISSIONING**

Performing prior-to-commissioning inspections of coal-fired boilers to certify the proper execution of the work done by a plant constructor.

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## **CHIMNEY / SMOKESTACK**

Performing a General Visual Inspection to detect cracks and anomalies on the inside of a sky-high chimney within a power plant.



## CHEMICALS NO ENTRY TO CONFINED SPACE.

Confined space entry is a daily question at some of the worlds largest chemical sites and tier-one corporations are putting in place policies to reduce and eventually remove confined space entry on a global scale. By choosing Elios, Chemicals professionals have in hands a tool that contributes to this goal by reducing confined space entry for visual inspection to the strictly unavoidable minimum.

# APPLICATIONS



## PIPE RACK, CABLES, CONDUITS

Flying between indoor pipe rack, cables, and conduits in a production facility to check the integrity of welding and detect potential leaks.



## FERMENTER TANKS

Increasing the quality of batches by systematically inspecting the shaft and blades of fermenter tanks in an enzyme production facility.



## FIBERGLASS STORAGE TANKS

Checking the walls and welding of a fiberglass-made acid-containing tank of a chemical plant.



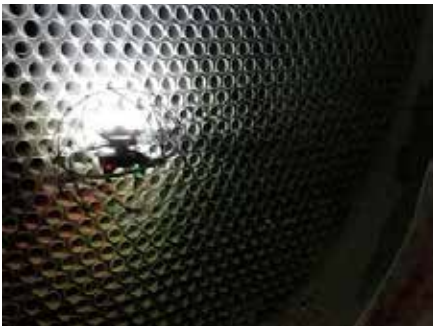
## PRESSURE VESSELS / STORAGE TANKS

Inspecting decommissioned pressure vessels and storage tanks of a chemical facility.



## SUCTION DUCTS

Flying inside suction ducts, from bottom to top, inspecting welding and checking for product build up on the walls and at the dust collector.



## HEAT EXCHANGERS

Looking for tubes clogging of a heat exchanger of a soda ash plant, while piloting beyond line of sight from the outside of the heat exchanger.



## STORAGE SILOS AND BINS

Checking actual cleanliness and assessing the amount of remaining product in a recently-cleaned soda ash silo. Looking for product build up as well as evaluating the integrity of the gauging cable in storage bin.





# MINING

## ACCESSING THE INACCESSIBLE.

Mines are very hostile environments for humans and mining companies are turning to technology to prevent the exposure of humans to their riskiest operations. By choosing Elios mining companies are benefiting from a tool allowing planning and significantly better decision-making. Elios gives mining professionals access to visual data collected in places where humans are not allowed, for obvious safety reasons, resulting in an increased productivity and a safer working environment for their employees.



# APPLICATIONS



## OPEN STOPE

Explore restricted areas such as excavated open stopes to support backfilling operations by detecting shadow areas and understanding ground conditions without putting humans at risk.



## CONVEYOR BELT

Assessing the integrity of conveyor belts without disturbing their operation and stopping ongoing excavation.



**Eric Romersa** — *Co-founder, WSdata3D*

“The economic benefits of using the Elios for mining equipment inspection are clear. Since the mine doesn’t have to stop production for over an hour, the company sees an immediate savings of between \$100-\$150,000 in production costs.”

**SAVE COSTS**



## DROP RAISE

Flying tens of meter down a dusty, wet, and rocky drop raise in an underground mine to locate clogging or assess potential for rehabilitation.



## SAG, BALL, AND GRINDING MILL

Getting inside of SAG, Ball, and Grinding Mill to assess their integrity and detect clogging without having to stop the entire production line.



**Matt MacKinnon** — *Founder, UAS Inc.*

Mining is an extremely hostile and dangerous environment to be in. Being able to remove the human element is key... Elios will help make the industry safer.

**INCREASE SAFETY**



## STOCKPILE FEEDER

Collecting visuals of feeders by flying through the stockpile hole to assess their integrity and plan for their maintenance without having to put humans at risk.

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## CRUSHER

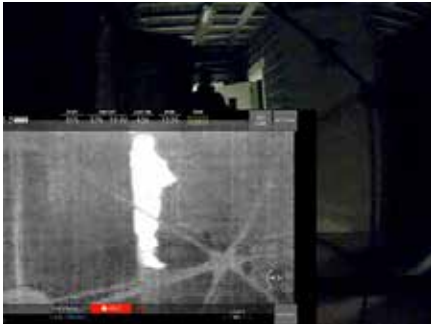
Performing preventive maintenance of crushers by having a mean of indoor visual inspection to replace parts before they break and paralyze production.



## **PUBLIC SAFETY** **PRESERVING HUMAN LIVES.**

Police officers, firefighters, and first responders are devoted to the noble cause of protecting and saving the lives of other human beings. Every day they expose their own life to the threats of their working environment and every mean to reduce risk is a blessing. By choosing Elios, Public Safety professional are relying on a dependable technology to gather field intelligence and support situational awareness to quickly and safely assess and unlock critical situations.

# APPLICATIONS



## SPECIAL FORCES

Flying safely and rapidly through an entire building to support special operations in corridor and room clearing operations.



### The Raid

Elios is a groundbreaking and unparalleled product when it comes to indoor use.

**INCREASE SAFETY**



## COAST GUARDS

Preventing coast guards' exposure to threats during assaults, or when searching for smuggling cargos on maritime vessels.



## SEARCH AND RESCUE

Preventing the need to send humans in contaminated or collapsed structures to look for potential victims and plan a more informed rescue.



## FIREFIGHTERS

Supporting firefighters in the research of victims and the exploration of structure threatening to collapse.



## OTHER INDUSTRIES SAVE COSTS. SPARE LIVES.

Applications requiring indoor inspection and explorations cover tens of industries. Flyability's UAVs are currently used by over 300 customers around the world with the common goal of saving costs and sparing lives. Indeed, reducing risk is paramount to all our customers. In addition to keeping workers safe, they often have the possibility of inspecting and exploring spaces that were previously inaccessible, shifting the cost-benefit ratio of their work

# APPLICATIONS



## CARGO HOLD

Providing visuals of hard-to-reach places during cargo holds cleanliness surveys to ensure a thorough check prior to loading a new cargo.



## BALLAST / FUEL TANKS

Remotely performing the General Visual Inspection of various confined spaces of a maritime vessel such as ballast and fuel tanks.



## ENGINE ROOM

Exploring the engine room of a maritime vessel after a fire to ensure its proper extinction while the room is still inaccessible for humans.



## PORT CRANE / SHIP TO SHORE CRANE

Inspecting the inside of large metallic structures such as crane on shore to prevent breakage and plan for maintenance.



## SEWER

Flying over running water in sewers, looking for cracks, and potential pipe obstruction, with the pilot standing on the ground.



## JET ENGINE TEST BED

Inspecting the silencers of a jet engine test bed without dismantling the control vanes at the entrance of the inlet stack.



**Jon Lorimer** — *Security Risk Management Specialist, Thames Water*

We've used Elios in a shaft 75m underground and for a culvert inspection, which both proved extremely successful. Amazing technology, saving significant costs not to mention the Health and Safety risk reduction.

**INCREASE SAFETY**



## BRIDGES

Assessing the structural integrity of bridges by inspecting in between beams and inside box girders without having to deploy a bucket truck.





## FACTORY CEILING

Perform indoor ceiling inspection over a factory floor in less than half the time of traditional methods and without shutting down production.

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## STEEL MILL

Inspecting several assets such as blast furnaces, crop shears, or cranes during team shift and without interrupting production.

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