PERCEPTO

PERCEPTO EMPOWERS ENEL WITH AUTONOMOUS DRONE TECHNOLOGY

FIRST EVER AUTONOMOUS DRONE SYSTEM DEPLOYED AT AN ENERGY SITE

Energy giant Enel officially announced it completed the integration of a Percepto autonomous drone system at the Torrevaldaliga Nord power plant, Civitavecchia, Italy. The system was integrated to perform round-the-clock monitoring including security, safety and inspection missions, providing real-time alerts when needed.

Enel, one of Europe's largest energy firms, continues to lead innovation for industry 4.0. Percepto's autonomous drone technology enables Enel to digitize infrastructure while providing paramount security and safety standards for uninterrupted operations of their multi-location facilities.

Enel is continuously investing in advanced technologies to help accelerate innovation and transform the energy sector.

This case study explores Enel's implementation of Percepto's solution to deliver fully autonomous patrol, inspection, and data insights, and the potential capabilities and benefits for energy facilities.

THE CHALLENGE

Operations and security managers are always seeking to acquire deep, meaningful insights to optimize facility production and reduce maintenance costs and response times.

A large number of drone solutions offered in industrial settings are pilot dependent, limiting their value and availability. Existing drone technologies lack the competencies needed to capture the constant, continuous data required to obtain meaningful insights and perform deep analysis, and only provide sporadic, segmented snippets of information.

THE OPPORTUNITY

Percepto's autonomous drone solution makes it possible to perform round- the-clock data acquisition for real-time monitoring, analysis and alerts while reducing the dependency on pilots and support teams.

Percepto's easy to use management system provides for seamless team integration, allowing your on-site team to gain a new skill set in a cutting edge field.

Percepto's real-time monitoring and alerts enable Enel to:

- REDUCE HUMAN RISK
- IMPROVE DECISION MAKING
- IMMEDIATELY RESPOND TO EVENTS
- REDUCE MAINTENANCE COSTS
- CONDUCT PREEMPTIVE MAINTENANCE
- CONDUCT ON-GOING VISUAL DATA COLLECTION

HOW THE PERCEPTO SYSTEM WORKS

SPECIFICATIONS:

WEIGHT:
8.5 Kg [19 lbs]

FLIGHT TIME:
Up to 40 minutes

PAYLOAD:
2 x cameras (4K day camera and radiometric thermal camera)

CHARGING TIME
40 minutes [100%]

MAXIMUM FLIGHT RANGE:
16.5 km [10.2 mi.], round-trip

MAXIMUM FLIGHT ALTITUDE (REGULATED):
130m [400 ft.]

MAXIMUM SPEED:
65 km/h [40 mph]

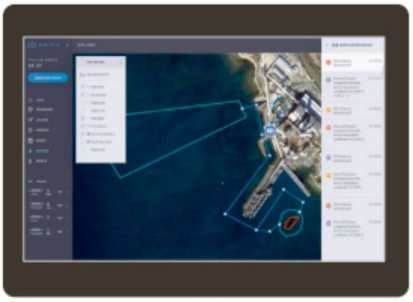
MATERIAL:
Carbon fiber composite

4K RES DAY AND NIGHT (THERMAL) VIDEO STREAMING
Standard payload is equipped with a dual camera set including a high-resolution day camera and a thermal camera.

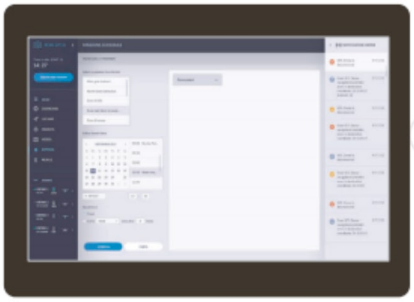
PERCEPTOCORE
integrated proprietary technology enables advanced computer vision and AI capabilities in real-time.

PERCEPTOBASE™
located on-site ensures on-demand operations with fast charging and drone protection while not in use.

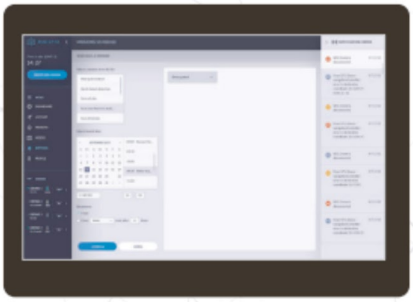
EMPOWERING TEAMS
MULTI-SITE, MULTI-DRONE MANAGEMENT MADE EASY



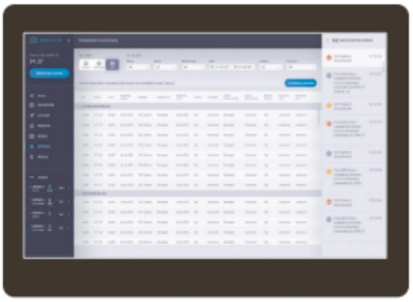
SITE SET UP



MISSION PLANNING



MISSION SCHEDULING



DATA ARCHIVE

LIVE OPERATIONS

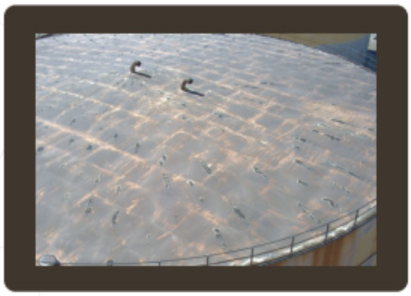
FLEET MANAGEMENT

ENERGY SITE APPLICATIONS

GAS LEAK DETECTION

TANK INSPECTION

ELECTRICAL FAULT DETECTION

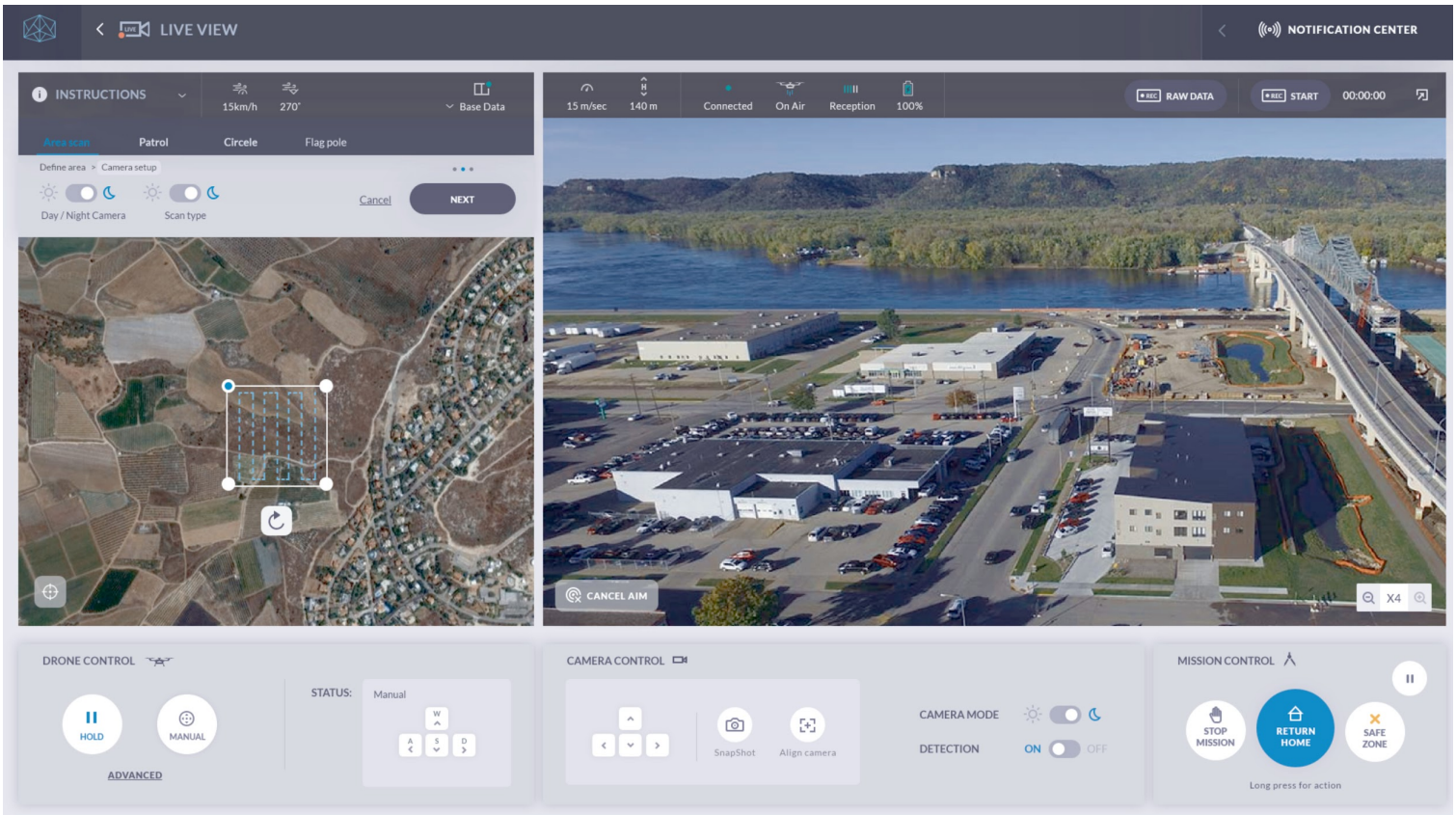


ROOF TOP INSPECTION

INTEGRATED ELEVATION MAPS

HUMAN DETECTION AND TRACKING

With Enel, the PerceptoBase is located ON-SITE**, operating missions within a** 5-KM RADIUS WITH BUILT-IN SAFETY **mechanisms preventing the drone from posing any risks.**



A screenshot of the Percepto system software interface for operators.

PERCEPTO & ENEL

By combining computer vision and Artificial Intelligence capabilities, Percepto provides Enel the following insights:

- MONITORING CAPABILITIES
- REAL-TIME ALERTS
- HUMAN & VEHICLE DETECTION
- OBJECT INSPECTION & TRACKING
- ANOMALY RECOGNITION

PERCEPTO

NO CHALLENGE IS TOO BIG

“ Torrevaldaliga Nord is the first power plant in the world to use Percepto systems, confirming Enel’s leading role in technological innovation. This cooperation generates positive impacts not only on the overall plant efficiency, but also on our workers, who can now operate the most advanced technologies, acquiring new skills along the way. “

- **Nicola Rossi, Head of Innovation at Enel’s Global Thermal Generation**