

# SENTINEL

INDUSTRIAL SAFETY

The **SENTINEL** system comes from the need to develop an extremely precise **monitoring technology** for the fast identification of possible **malfunctions** or **accidents**, such as toxic gas leakages in chemical plants. The two robots composing this system, an **aerial drone (Horus)** and a **robot on a fixed track (Cart)**, acquire data in real time that can

be visualized on a **dashboard**.

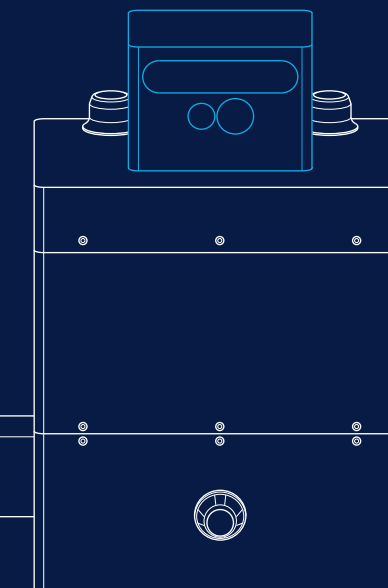
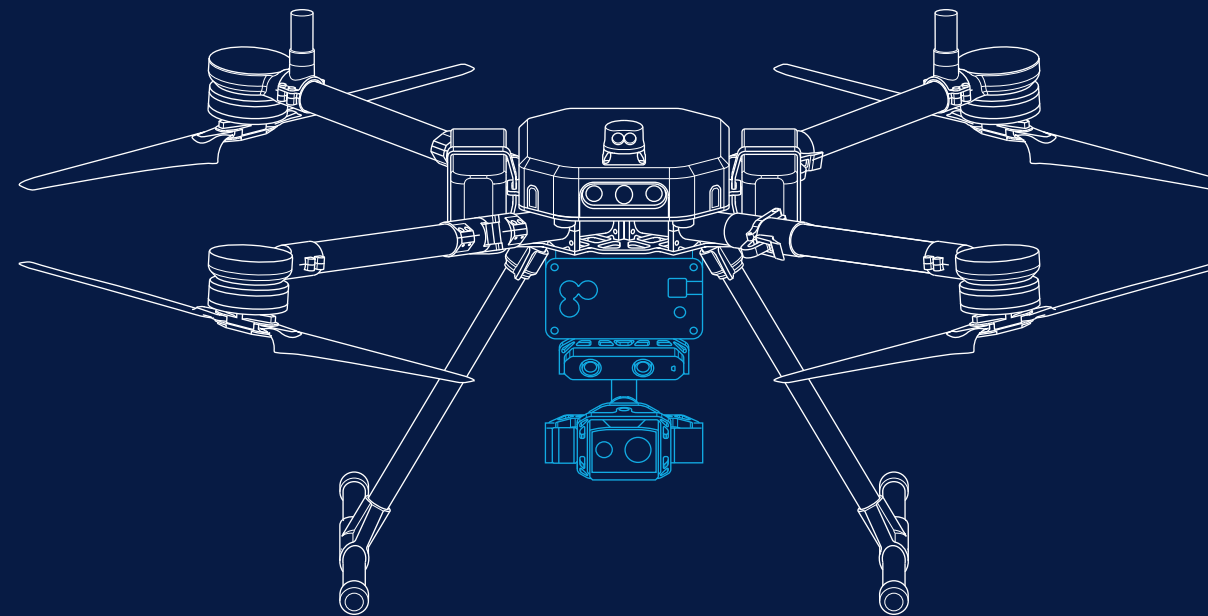
Notifications about events are sent via the system app, available even for smartphones and tablets.

All information acquired are also saved in a database and used for prevention activities.



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INDUSTRIAL MONITORING



## SIGMAINGEGNERIA

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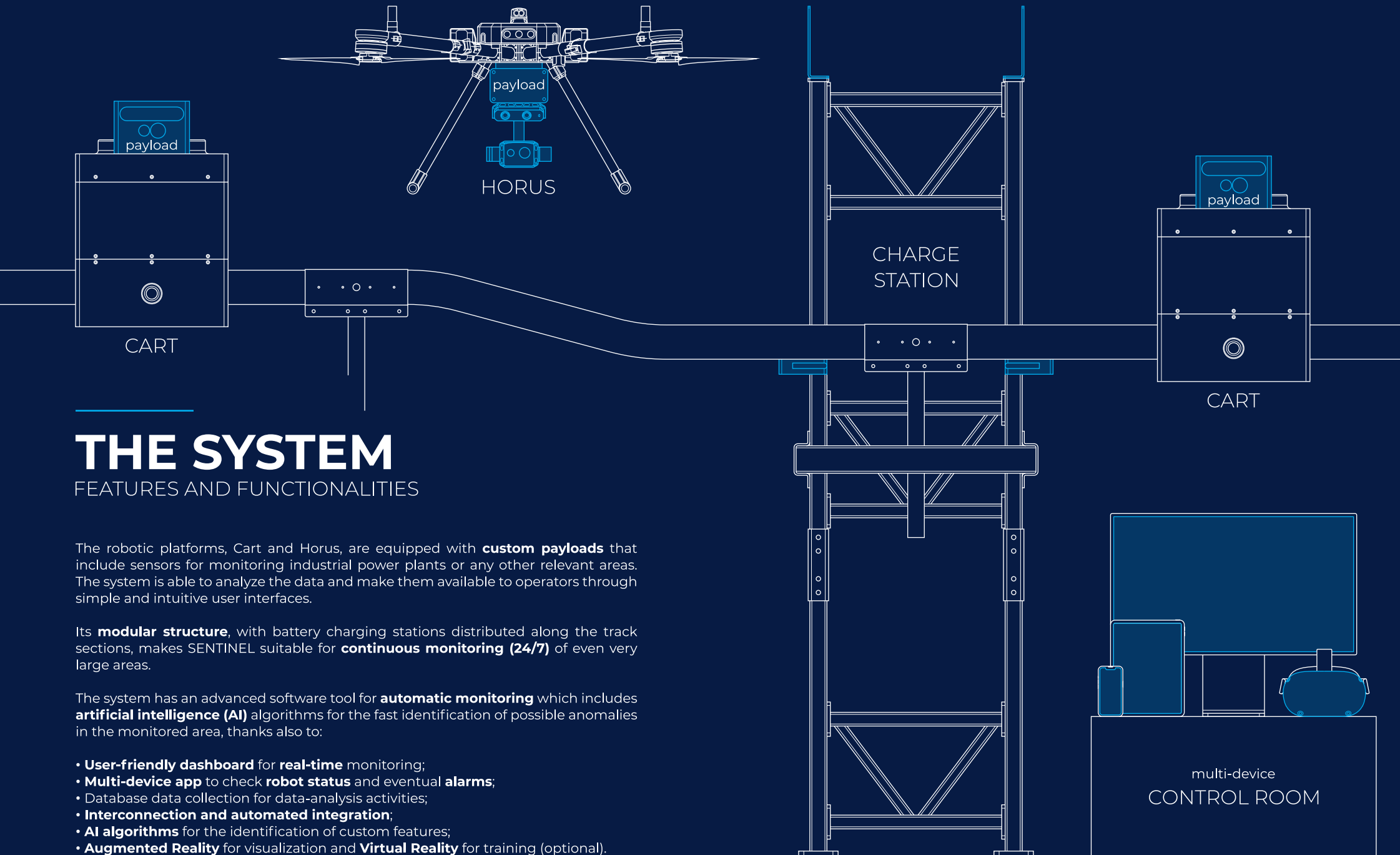


Battery BMS powered by:

**ENEPAQ**  
Power In Shape



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# THE SYSTEM

## FEATURES AND FUNCTIONALITIES

The robotic platforms, Cart and Horus, are equipped with **custom payloads** that include sensors for monitoring industrial power plants or any other relevant areas. The system is able to analyze the data and make them available to operators through simple and intuitive user interfaces.

Its **modular structure**, with battery charging stations distributed along the track sections, makes SENTINEL suitable for **continuous monitoring (24/7)** of even very large areas.

The system has an advanced software tool for **automatic monitoring** which includes **artificial intelligence (AI)** algorithms for the fast identification of possible anomalies in the monitored area, thanks also to:

- **User-friendly dashboard** for **real-time** monitoring;
- **Multi-device app** to check **robot status** and eventual **alarms**;
- Database data collection for data-analysis activities;
- **Interconnection and automated integration**;
- **AI algorithms** for the identification of custom features;
- **Augmented Reality** for visualization and **Virtual Reality** for training (optional).

# HORUS

## MULTI APPLICATION REMOTE MONITORING

Horus is a **quadcopter** capable of carrying payloads of up to **10 kg**, with high flight performance and endurance. It features a 4-motor design with a structure made from composite materials, engineered FDM plastics, and aluminum.

### Field of Applications:

- Laser reconstructions or treatments in agricultural and forestry sectors;
- Logistics 4.0;
- Risk Management: nuclear, chemical, civil protection;
- Industrial and Environmental monitoring.

The drone's design includes four **CFRP** (Carbon-fiber reinforced polymer) arms equipped with 28 inches propellers and a central body made of **aluminum** and **Onyx** (Micro carbon fiber filled Nylon) inserts.

The foldable arms, easily collapsible through a quick-release connection, are the result of a blend of traditional engineering design for high-precision mechanical parts, electronic analysis for power and signal connections, and innovative structural design associated with 3D printing.

