RAJANT

CASE STUDY

Reios IoT Solutions Transform Energy Efficiency and Safety for Italy's Mirato

Mirato, located in Landiona, Italy, dates back to the 1960s. It is a leading Italian manufacturer of personal hygiene products, including deodorants, soaps and shower gels, hair care products, aftershave, makeup, and fragrances. From its humble one-product Splend'Or hair spray to the sustainable natural cosmetics of today, the company is transforming operations to have low environmental and social impact. Working with solutions supportive of this cultural shift to sustainability, Mirato looked to providers of IoT devices to improve energy efficiency and safety within its manufacturing. It also wanted to optimize vehicle utilization within the plant operations.

The Challenge

To fulfill Mirato's business needs, fellow Italian-based Reios was brought in as the solution provider. Rajant's Reios IoT platform allows data-bridging and edge computing from the field to bring comprehensive, predictive intelligence and automation. Reios brings intelligent operational insights through various devices supporting the platform's applications – Smart Lighting, sTrack, Iot BMS, sDesk, and Smart Picking. The two Reios offerings of most significant interest were Smart Lighting and sTrack. Reios Smart Lighting provides energy-efficient, cost-saving optimized illumination that enables sophisticated IoT applications and services throughout the covered space. Reios sTrack is a real-time locating system (RTLS) that monitors staff health and safety on the worksite and tracks equipment and valuable materials anywhere for cost optimization management and security.

The Solution

Reios Smart Lighting industrial LED lamps have replaced all outdoor-area lamps (250-400W, the majority being LED) with higher efficiency and lower energy consumption. Reios street and flood lights, have been coupled with IoT devices to cover the outdoor area, boost efficiency, and enable Wi-Fi and IoT applications. Further, the Reios sTrack has been deployed on vehicles and people, helping to improve paths and procedures while promoting safety.

Location

- Landiona (Novara), Italy

Customer

- Mirato, a leading Italian manufacturer of personal hygiene products

Collaborators

- **Rajant Corporation –** Pioneers of peer-to-peer radio communications enabling real-time voice, video, and data to connect machines, robots, and people together as part of a secure private mobile network.
- **Reios –** Bringing intelligent insights to all facets of IoT operations through various devices that support the platform's di erent applications – Smart Lighting, sTrack, Iot BMS, sDesk, and Smart Picking.

Technology Solutions

- Smart Lighting
- sTrack

Outcome/Impact Statistics

- 2.4 years investment payback time
- 77% reduction in electricity bills for lighting

Reios Smart Lighting industrial LED lamps have replaced all outdoor-area lamps (some LED) with higher efficiency and lower energy consumption. Lamps, such as street and flood lights, have been coupled with IoT devices

(sky.Act LC - Wi-Fi/BLE Light Controllers) to enable smart lighting, while providing the tracking application infrastructure. Some have also been coupled with mesh nodes, providing seamless Wi-Fi to enable IoT to services. Luminosity sensors (sKy.Lux) are used to collect data at strategic points and turn on/off/dim the lamps accordingly. People presence is detected through sKy.PIR and in low-traffic areas, the lights are turned on/off only when necessary through specific wireless actuators (sKyact.Switch).

For sTrack, in addition to already installed wireless lamp controllers (sky.Act LC), additional gateways (sGate) have been placed in key points to improve coverage and accuracy. The forklifts and work vehicles have been equipped with tracking sensors (sTag) to get their position across the facility and register it to the database. Specific dashboards have been built to show the equipment pathways using the timelapse function. Some employees, such as security and maintenance, wear tracking sensors for facility safety monitoring. The sTrack can send alerts of people entering restricted areas, being near dangerous equipment, and more. The sTrack can send alerts of people entering restricted areas, being near dangerous equipment, and more.

According to Giovanni Tedesco, Plant Manager at Mirato, “By analyzing vehicle movements with sTags placed on our forklifts, sTrack is helping us enhance safety and efficiency. We get the real-time fleet position in the plant to enable monitoring and reduce downtime. In addition, the analysis of data we collect continuously allows us to identify ways to optimize paths and use of our resources.”

Next steps within the Reios/Mirato roadmap include:

- Replace lighting fixtures indoors, extending wireless lamp control, Wi-Fi coverage, and tracking
- Delivery of ATEX lamps and additional devices to comply with stringent indoor safety regulations
- Control of water wells through dedicated IoT sensors to ensure the highest quality and purity of water

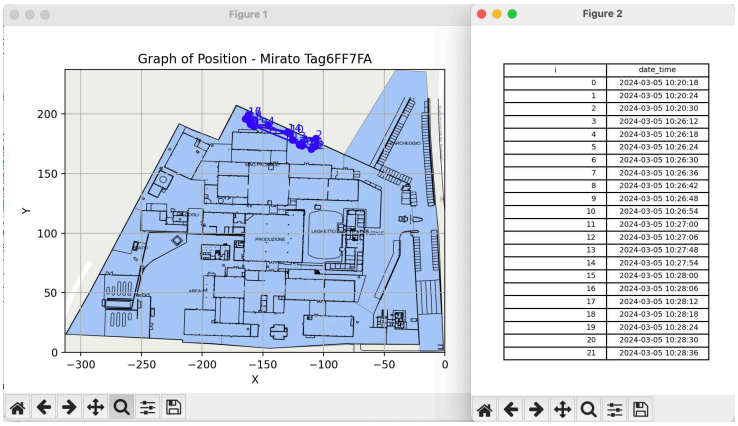
The Results

Mirato has gained optimized energy efficiency, safety, security, and future-proofed profitability controls through deploying Rajant Reios. Mirato went from an annual consumption of over 33,000 KWh to 7,500 KWh with an energy saving of 77 %. Taking into account the cost of purchasing the equipment and installation, the payback time on investment equalled 2.4 years.

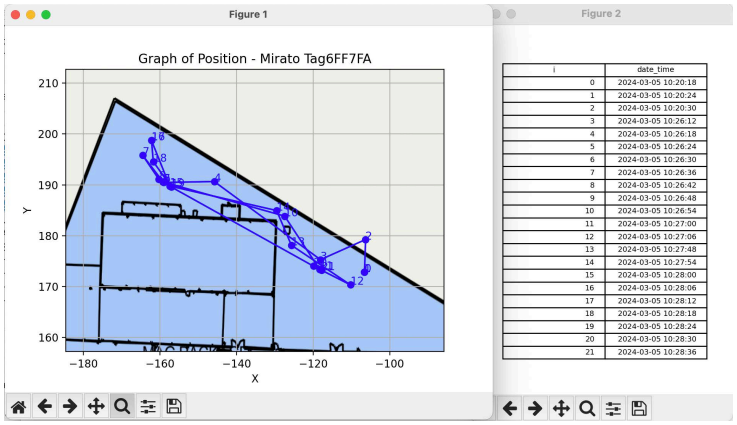
> “Mirato’s adoption of Reios has paid back the investment in only 2.4 years, and this only with Smart Lighting. Atop that, IoT enablement has propelled our plant into a realm where innovation translates directly into tangible advantages, like the tracking of human and machine activities for the safety of our workers.”
>
> **— Fabio Ravanelli**
> Chairman at Mirato Group

Lights switch on at the optimum intensity and only when needed. The lifespan of the lamps is greater,and carbon emissions are reduced. Overall cost savings is achieved. As for automation, vehicle movements can be analyzed, and pathways and processes improved. Real-time alerts about people and devices provide gains in safety and machine health. Reios is fast and easy to deploy. As need and budget dictate, the Reios IoT platform can grow, integrating with new sensors and lamps to provide long term operational stability, data-bridging, and edge computing that is comprehensive, predictive, and automated.

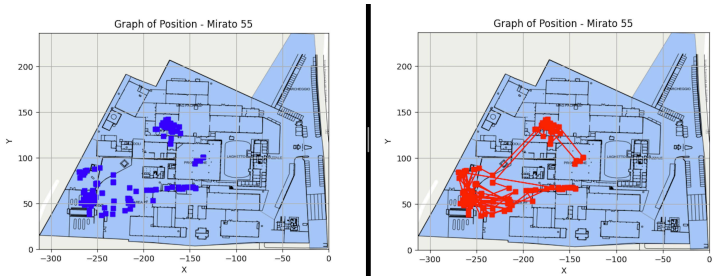
> “Mirato’s transformation with Reios Smart Lighting is remarkable. We also slashed energy bills by 77% and ensured extended fixture lifespan. Integrating IoT devices into the fixtures means not just smart illumination; it’s a paradigm shift towards sustainable, optimized, and connected spaces.”
>
> **— Giovanni Tedesco**
> Plant Manager at Mirato



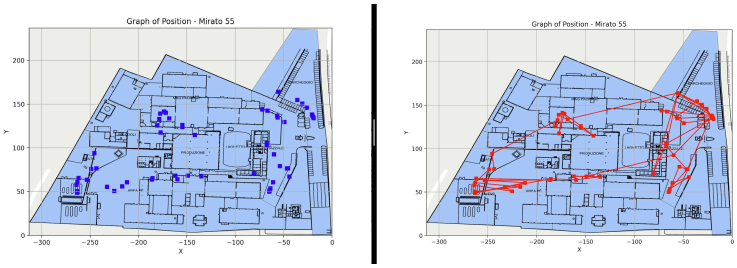
Track of a sTag associated with a forklift with related timelapse. Each geo-referenced position (numbered 1-21) is time stamped to keep track of the positions overtime. This data is available to export through Reios dedicated API and is used in Mirato business intelligence tool to perform analysis.



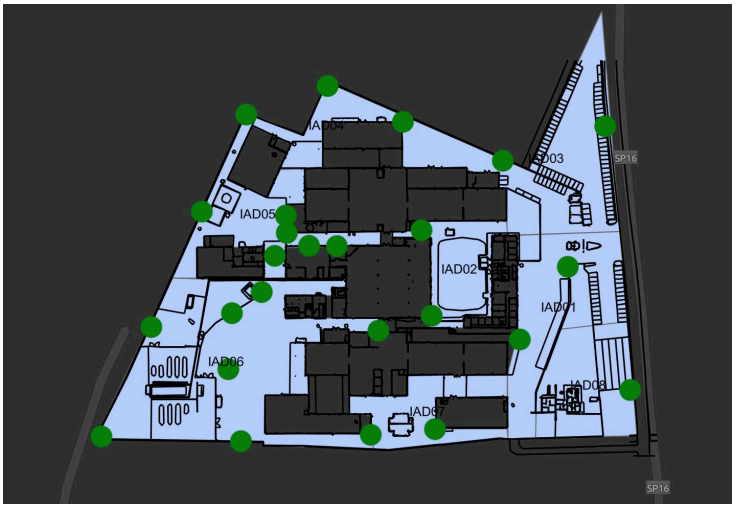
Same as to the left, with in addition the left hand side shows the location of the reference points (sGate gateways) next to the tracking map and the list of time stamps. What is interesting to show is that in the top corner of the plant there are only three gateways located approx. 45m / 150 ft. apart (on each tip of the contour of the plant) and the location of the forklift in that area (points 13-21) is precise and within the boundaries of the site



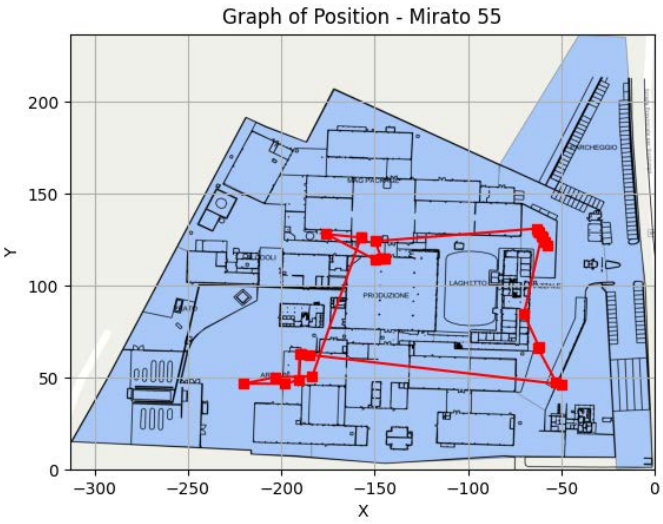
Two maps showing different ways to display the same data, i.e. historical positions of the plant guard with a sTag BLE badge. In Blue is just the superposition of all locations over a given period of time. Red is the superposition of all locations connected to reconstruct the actual path of the guard patrolling (static timelapse). Location captured every 6 sec, this is configurable



Same principle as to the left showing the guard doing its patrolling. Location shown every 12 sec.



Live positions of the sGate gateways constituting the infrastructure to track the sTag associated to forklifts and personnel. All sGate are live (green dots). Some are mounted with the lighting fixtures and also perform lights control, others are placed standalone to enhance the coverage just for the tracking.



Tracking of the guard wearing sTag BLE badge patrolling the worksite during the night shift.

This is a lighting fixture with the sKy.Act LC mounted with Nema socket (the cylinder on top) to control the light. The box to the right contains the sGate and the Mesh node for connectivity. With this installation we can control the light scenarios and at the same time thanks to the sGate we participate into the infrastructure for the tracking.

Lighting fixture with the sKy.Act LC mounted with Nema socket in the parking lot. Only Smart Lighting on this poles because in that area so far was not requested to have the tracking.

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