Tegis®

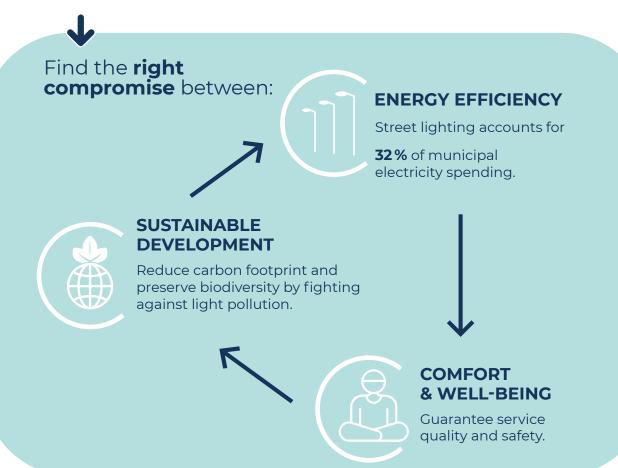


Connected solutions for smart street lighting management





I What are the main challenges facing cities when it comes to street lighting?



I Our solutions for smart lighting

Smart local management

Simple, autonomous, locally-controlled devices to:

- Reduce energy consumption and optimize lighting
- Limit investments and digital footprint

Smart connected management

Connected devices linked to a dedicated platform and remotely controlled to:

- Control, monitor and analyze street lighting systems in real time or on a programmed basis
- Optimize and reduce operating and investment costs.



Tegis supports local authorities in the management of their connected street lighting Overy city manager faces the same **C** challenges when it comes to deploying an intelligent connected management solution. With Tegis, we offer you a concrete solution to manage your street lighting in an efficient way.

| Your challenges

I The Tegis answer*



Control investment and operating budgets

Faced with increasingly tight budgets, local authorities need to:

- achieve and justify energy savings;
- invest in the most efficient way and optimize human and material resources;
- prioritize investments and optimize maintenance costs.

The right level of service

- Cabinet or light point offer that integrates management of third-party services as required.
- Dimming of light points.

Optimization of switching

• Cabinet control (synchronized

astronomical clock, special

Fewer field interventions

• Remote equipment management with advanced monitoring and error analysis.

Easy monitoring of energy management

• Feedback and analysis of power Consumption.



Ensure the attractiveness of the city and the safety of its inhabitants

To improve the well-being of citizens and guarantee safe territories, local authorities need:

- the right light at the right time in the right place;
- to be able to intervene quickly;

* According to offer.

• to limit the risk of cyber-attacks.

Lighting adapted to different areas:

- Synchronized astronomical
- Personnalised calendars
- Lighting scenarios (dimming/detection).

A secure offer:

- Use of standardized security protocols;
- Regular system updates: equipment and platform.

Real-time monitoring and control:

- Alert system (SMS/email);
- Remote override of equipment (on/off switching);
- Lighting adustments based on external sensors.

| Your challenges

| The Tegis answer*



Simplify the operation of public lighting systems

Faced with the diversity and complexity of solutions, local authorities need to:

- be autonomous in the deployment and use of tools;
- intervene at the right time, in the right place, with the right teams;
- benefit from expert support when needed.

Ease of installation and maintenance

- Easy-to-wire products;
- Turnkey offer from product to platform.

Intuitive vizualisation and monitoring

- Map vizualisation;
- Configurable monitoring;
- Fault analysis.

Intuitive, ergonomic digital tools:

- Dedicated platform with personalised setting;
- Real-time forcing smartphone application.

Complete, personalized support:

- Single point of contact from pre-sales to after-sales;
- Dedicated training offer.

Your challenges

| The Tegis answer*



Prepare for the future

Today's challenges are not those of tomorrow. Local authorities must:

- Local datifornies mast.
- Rely on interoperable solutions;
- Meet constantly evolving needs

Compatibility with other systems:

- TALQ and proprietary APIs;
- Standardized designs (DALI 2 / D4I, Zhaga, Nema).

Shared infrastructure and easy integration of new services:

• Transformation of the public lighting network into a permanent power supply network (e.g. integration of video protection).



Maintain a sustainable and smart territory

To guarantee consistent, sustainable regional development, local authorities need to:

- choose robust and reliable solutions;
- capitalize on their investments;
- $\bullet \ \text{reduce their environmental impact}. \\$

Durable and reliable solutions:

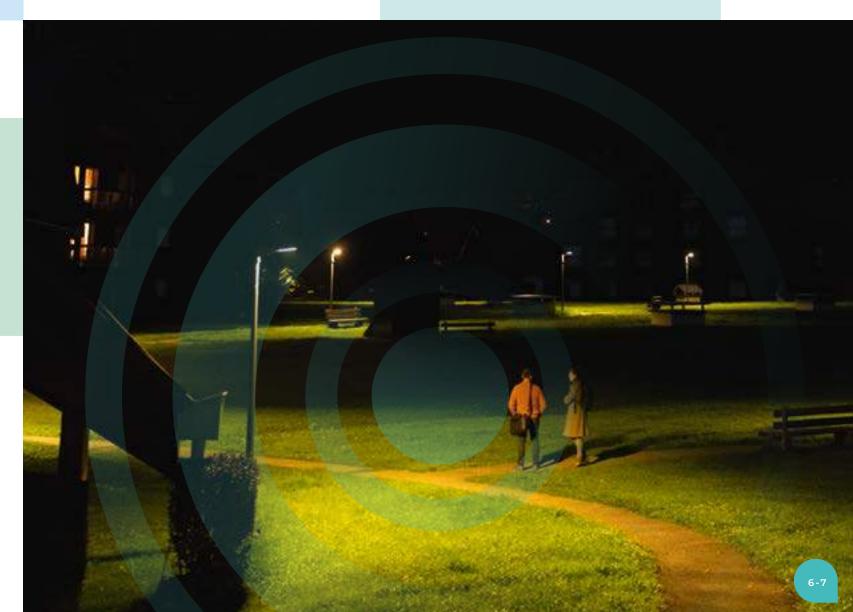
- 40 years of expertise in street lighting
- Eco-designed products from our factories in France;
- Regular equipment updates.

Use of existing infrastructures:

• Broad, scalable offer, adapted to field constraints and existing equipment.

Reduction of light pollution and preservation of biodiversity:

- Dimming scenarios that respect local flora and fauna;
- Autonomous and/or connected detection systems;
- Creation of dark corridors.



Tegis, a modular and connected solution adapted to the needs of local authorities

Qach customer is unique and has specific needs in terms of street lighting management.

From cabinet control to light point management, **Tegis is** modular and scalable and meets current and future requirements of local authorities.

TNX24

CONNECTED CONTROL Cabinet

Tegis Astroconnect

CONNECTED MANAGEMENT Cabinet and light points

Tegis Lighting Plus

ADVANCED CONNECTED CONTROL Cabinet

Tegis Astroconnect Plus

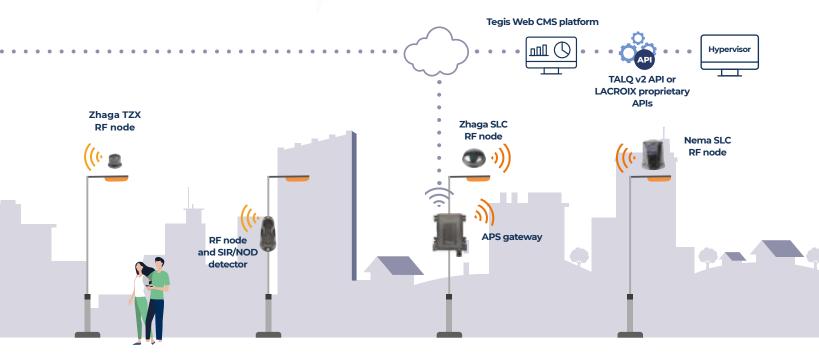
DETECTIONStand-alone
or connected

Tegis Lighting Plus & Détection

CONNECTED MANAGEMENT Cabinet

Tegis Lighting

CONNECTED MANAGEMENT Light points
Tegis Plus



Tegis control unit Powerline Control

Combined cabinet and light point management

+ 3rd party services

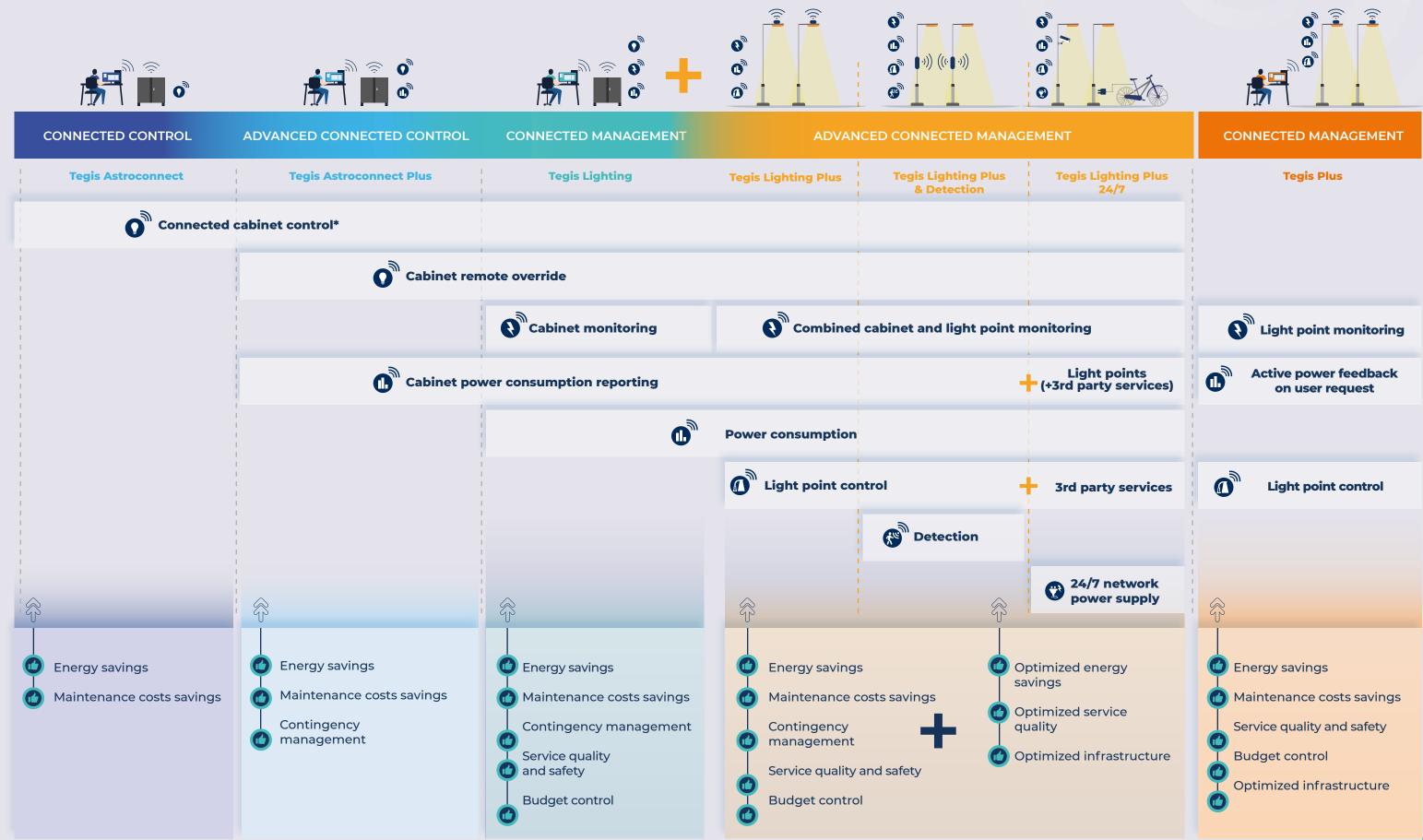
TNX24 node

Light point management

Tegis Lite

Tegis,

from cabinet control to light point management



* Central remote control optional.

Tegis Web,

the dedicated platform to operate and manage street lighting assets

An ergonomic and comprehensive platform

A wide range of functionalities to meet the needs of local authorities, installers and operators.

Intuitive management of street lighting via a common platform for all LACROIX devices.

Street lighting cabinet control



- Unlimited remote setting of astronomical clock and night cut-off programs;
- Creation of specific dimming scenarios on an annual calendar;
- Remote real-time override*.

My TEGIS

My Tegis

The application enables **real-time remote override** of street lighting control cabinets equipped with Tegis and Tegis Lite control units.



Control of light points and third-party services*



- Creation of light point groups and dimming scenarios;
- Dedicated management of third-party services:
- Compatibility with the SensyCity detection solution.

Cabinet and light point monitoring*



- Google Maps vizualization of assets;
- Email and SMS alerts with personalized filters based on the type of default;
- Fault analysis.

Reporting and analysis of power consumption*



- Multiple analysis possibilities;
- Measurement of deviations with alerts;
- Light point or 3rd party service power consumption.

*According to offer.

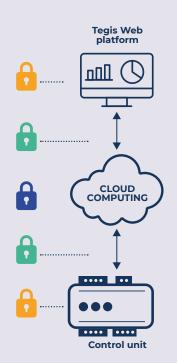
Tegis Web,

a secure and interoperable

platform

Cyber-secure ecosystem across the entire chain

The software services associated with the Tegis management offer ensure a high level of cybersecurity throughout the entire chain.



Optimal response to new cybersecurity risks

• Regular remote hardware security updates.

Communication layer security

- Communications to equipment via secure tunnels (HTTPS, MQTTS) + LACROIX private APN;
- Encrypted object-to-object communication frames (AES standard).

Platform and data security

• Access to interfaces protected by standardized authorization protocols (OAuth2 and MTLS).

Cloud security

- Data hosted in Europe;
- Data confidentiality and protection.

Security-by-design: cybersecurity at the heart of the LACROIX development policy

Cybersecurity is integrated and taken into account at every stage of project development: from design to end-of-life.



Direct interoperability and compatibility between systems

Our management solutions are natively open to integrate with existing systems (CMMS, Hypervisors) as well as with multivendor management projects.



- •Bi-directional communication between equipment and 3rd party systems
- TALQ v2 certification



Tegis, our dedicated team of experts will guide you through a simple, user-friendly process.

Over the last 20 years, we have been at your side to ensure the success of your smart management projects. We put at your disposal teams of men and women to support you from the early stages of your projects to their deployment.

Our mission: to understand your needs and challenges, propose innovative solutions, process your orders quickly and efficiently, and support you in using our products and solutions.

Our ambition: to offer all stakeholders a smooth, easy and pleasant experience, thanks to our continuous improvement program.



Teams at your service to provide customized solutions.



Project design

Right from the design phase, we work with you to:

- identify your needs;
- understand your challenges;
- analyze your expectations as well as your technical and budgetary constraints;
- define customized, reliable and cost-effective solutions;
- present and promote our offers.



Sales administration

Our teams support you:

- we create the conditions for a pleasant commercial relationship;
- we administer orders;
- we garantee compliance with commercial contracts and pricing conditions;
- we manage complaints (excludin breakdowns).



Technical Customer Service

Our teams are responsible for:

- supporting you in the field, both upstream and during the deployment
- providing responsive and efficient technical assistance;
- validate intelligent management orders (consistency, traceability);
- handling after-sales service requests.



Training

Our training courses enable you to:

- acquire expertise in our solutions;
- optimize the management and use of your installation;
- train your teams for greater autonomy.

Do you have a question? Customer Technical Support support.lighting@lacroix.group

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Tegis,

a reliable solution

with an international footprint

7 or over 20 years, we've been accompanying our customers in France and Europe with solutions matching their local needs.















In 2013, Clermont-Ferrand became the first city in Europe to implement advanced smart management of its public lighting network. The LACROIX Tegis solution was implemented in 240 cabinets and and 16,000 lighting points...

Troistorrents, Switzerland

Intelligent and scalable street lighting solution

With the support of LACROIX's Smart Lighting teams and its grid operator Romande Energie, the municipality of Troistorrents has chosen to deploy the Tegis Lighting Plus 24/24 intelligent management system.

Thanks to the Tegis Web platform, this solution allows the municipality to remotely monitor its street lighting network, enabling quick detection and resolution of operational incidents.

The challenges



To better manage costs by eliminating needless journeys of maintenance teams.



To find a modular solution that enables the remote control and surveillance of 3rd party services such as festive illuminations and CCTV.



To address
environmental
requirements by saving
energy.



The solution

- **84** light points equipped with TNX24 nodes
- Tegis web platform

• 4 electrical cabinets equipped with Tegis control units.



Pau, France **Combining energy** savings and quality of service or the city of Pau, public lighting is a major lever to **T** guarantee its attractiveness. The challenge is to ensure continuity of service, despite rising electricity costs. Pau has chosen not to switch off its street lighting and to control its operating costs through regular investments.

| Multiple challenges



to significantly reduce energy consumption,



to provide a high level of service while maintaining



to reduce energy costs and cope with the energy crisis,



to take care of the environment and the

Differentiated lighting management thanks to scalable and modular solutions

- 252 Tegis control units
- 1,067 SensyCity detection nodes
- 55 Tegis extension modules (PLC)
- 2,864 Tegis TNX communicating nodes
- 2,643 Sogexi junction boxes

I Convincing results



Up to **91%** energy savings



12% reduction in energy consumption



Read the full story



Douai, Francereconciling street

reconciling street lighting with environmental concerns

In 2021, the city of Douai launched a major project to renovate its street lighting network in the pedestrian and cycling areas along the banks of the Scarpe River. The aim was to combine energy cost control and protection of the environment by restoring ecological corridors at night.

Combined use of LACROIX management and detection solutions:

- 25 Tegis control units
- **568** SensyCity detectors
- **791** Tegis PLC nodes
- 835 Sogexi junction boxes

Conclusive result









Up to **180,000€** savings over 15 years

Reykjavik, Iceland

Outdoor lighting meets the Northern Lights: coexistence achieved

Reykjavik, considered as the «greenest city in the world», aims to make certain roads around Lake Raudavatn, which are used by a wide variety of people, safer and more attractive.

This site is unique in that it features two parallel paths: one for horse riders and the other for pedestrians. The detection system and smart lighting management were adapted to illuminate users while preserving the nocturnal environment

Combined use of LACROIX management and detection systems:

- 63 light points equipped with TNX24 nodes
- 1 Tegis control unit

• **66** SensyCity detection nodes



What people say about us

«These solutions combine energy consumption, safety and and protection of the environment. LACROIX smart lighting solutions strongly reduce environmental impacts, respect light pollution and promote the natural beauty of our landscapes.»

Arsaell Johannsson

Project Manager – City of Reykjavik

Tegis, flexibility and operability at its best

Our products for the cabinet



Tegis Lite control unit

Compact communicating control unit 2 relay outputs (astronomical clocks).



Extension modules

PLC and RF extension modules, to enable the control and monitoring of light points in addition to the cabinet.



Tegis control unit

Connected control unit for the mangament of cabinets and light points (control, monitoring, reporting and analysis).

3 relay outputs (astronomical clocks). 7 digital monitoring inputs.



Additional modules

Monitoring module for supervised and remotely controlled elements in the cabinet (11 inputs). MID-certified three-phase electricity meter, to report electrical consumption in the cabinet.

l Our software services

Tegis web platform



Dedicated platform for the remote management of all Tegis equipment. Functionalities depend on the level of service choosen.

API* Tegis



Available in the standardized TALQ v2 format or as a proprietary model, for bidirectional communication between Tegis equipment and third-party systems.

I Our products for the light point or the pole



TNX24 communicating node and associated TRX relay

PLC communicating node, positioned at the base of the pole to control and monitor light points.

Relay node fto control and monitor 3rd party services powered by the public lighting network.

Works in conjunction with the Tegis cabinet control unit and its associated extension module.



SIR detection communicating node

Pole-mounted communicating motion detector. Combined with Tegis control unit, it becomes a radio frequency communicating node. Available as a simple node, without detection.

Works in conjunction with the Tegis control unit and its associated extension module.



TZX communicating node

Standardized Zhaga communicating node to control and monitor light points.

Works in conjunction with the Tegis control unit and its associated RF extension module.



SLC communicating nodes

Standardized Zhaga and Nema communicating nodes for the connected management of individual light points (control and monitoring).

Communication via the Wirepass RF mesh network.

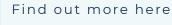
Works in conjunction with the APS communication gateway.

My Tegis mobile application



Mobile app for remote real-time override of cabinets equipped with Tegis and Tegis Lite control units.

Available on iOS and Android

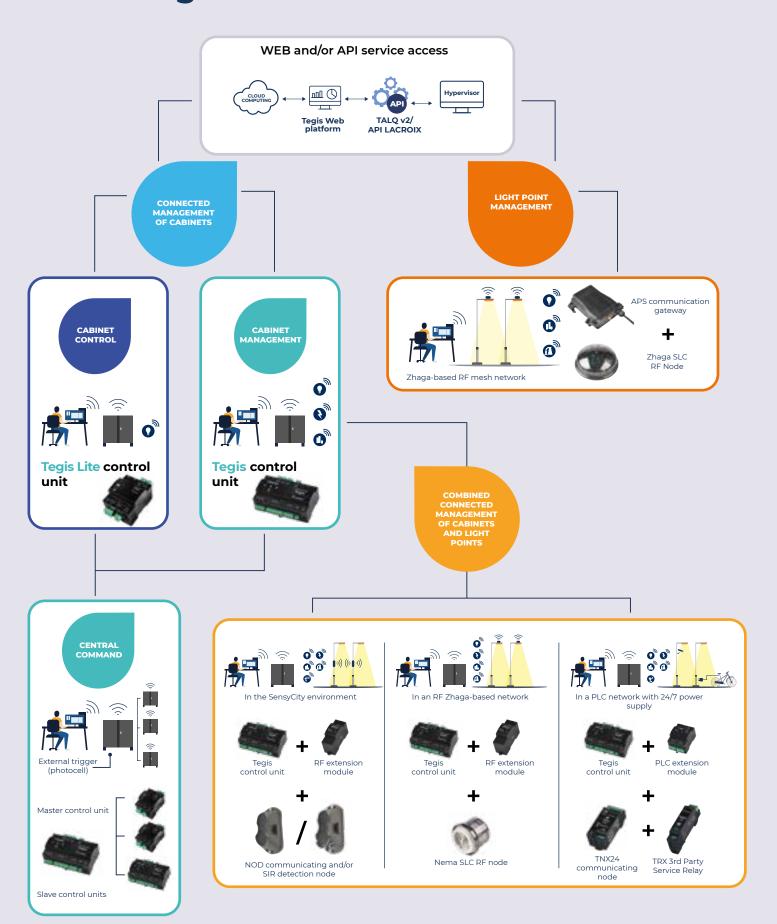




* Application Programming Interface.

Tegis,

Smart and scalable street lighting management







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