



# *Smart Lighting*



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# *An Intelligent Light Systems for our Cities and Nations*

**Light** is a fundamental element of our cities. Through an Intelligent LoRa Network infrastructure, City Councils have the precious opportunity to give the territory improved usability, offering urban safer night scenarios gaining more efficiency and greater beauty.

**T.net** proposes to Municipalities a wide offer of lighting solutions, in line with the latest technological standards and achievement-oriented.

**Our solution** is a simple joint of multiple objectives: economic savings, energy efficiency, enhancement of pre-existing network infrastructures, increased resilience, on line monitoring and last but not least, light pollution avoidance and citizen satisfaction.

The **modularity** of our offer, perfectly customizable on the basis of customer specific needs, allows you to ensure, through new tools and an organization redesigned process, constant attention and concrete support throughout the intere solution lifecycle

# EFFICIENT LIGHTING

Today's challenge of transforming cities into "smart cities", making them increasingly functional, efficient and sustainable also addresses the fundamental issue of public lighting with the same importance.

T.net has started from 2017 to introduce intelligent solutions for the control of public lighting by introducing innovative technologies and networks (6Lowpan and LoRa).

T.net operates on the market through various partners to propose intelligent lighting solutions that meet the most advanced and stringent requirements.



## Wide Range of LED Lamps

- Complete and flexible offer with luminous efficiencies up to 160 lm / W and lifespan up to 100,000 hr.
- Maximum adaptability to design needs thanks to a wide range of optics and product sizes available: from 3,000 to 20,000 lumens.
- Surge protection implemented at 12 kW.
- Ready for integration with any remote control system based on radiofrequency protocols, through Zhaga Book 18 and Nema connectors.

## Advantages

-  • **Maximum versatility of application, with solutions (from the most economical to the most performing) adaptable to any type of technical-economic requirement of the customer.**
-  • **Maximization of energy savings (> 65%), thanks to the use of latest generation lighting fixtures with very high performance of luminous efficiency (lm / W).**
-  • **Consequent reduction of CO2 emissions, in line with the Energy Savings achieved.**
-  • **Excellent light quality, guaranteed by the use of the latest generation LED chips with high color rendering, which guarantee correct and comfortable perception of the illuminated environment.**
-  • **Maximum reliability of the installed LED products, with a lifetime from 80,000 to 100,000 hours and a consequent reduction in maintenance costs and expenses.**
-  • **Maximum safety and reliability guaranteed against overvoltage risks, with protection implemented at 12 kV, even in adverse climatic or operational conditions.**
-  • **Flexibility of use of the solution, with the possibility of profiling the emitted luminous flux, through the setting of simple fixed rules in the initial installation phase or by activating more advanced "adaptive lighting" technologies (see following paragraphs).**

## Areas of Operation

T.Net solutions can adapt to all possible design cases, guaranteeing compliance with the lighting requirements set by current regulations.

- **Roads (of each category), junctions, roundabouts, underpasses:** installation of new high-performance LED fixtures with replacement of the old pole-top, assembly of new lighting fixtures and / or possible replacement of the pole and arm if compromised.
- **"Sensitive" contexts (eg. Historical centers, pedestrian areas, squares with architectural value or specific requirements):** installation of new artistic style lanterns or replacement of the old light source with LED retrofit kit plates designed specifically for insertion into the original lighting bodies, preserving and enhancing, with the utmost care, the stylistic, cultural and aesthetic connotations of the specific context.
- **Parks, gardens and green areas:** installation of new street furniture frames characterized by design, aesthetics and technical qualities aimed at giving these environments the increasingly widespread connotation of "urban and social hubs", promoting a sharing of safe spaces and the community spirit of citizens.



# ADAPTIVE LIGHTING TECHNOLOGIES

"Adaptive lighting, or the ability to change street lighting based on real traffic, weather and luminance conditions according to UNI 11248 and EN 1230"

It can be applied in two different ways, which vary **according to the parameters used** to define the operating lighting category.

- **TAI** ("Traffic Adaptive Installation) in which the operating lighting category it is chosen according to the hourly traffic flow only. For this solution, a **traffic meter** is used that can count the number of vehicles in real time per lane and, depending on the sampling, an algorithm allows to raise or reduce the operating lighting category (with a maximum permitted reduction of 2 lighting categories).
- **FAI** ("Full Adaptive Installation"), **provides a traffic sensor combined with a luminance sensor** to sample the luminance of the road surface (i.e., in jargon the "category M") or lighting ("categories C" and "P") and weather conditions. With this mode, there is perfect knowledge at all times of the operating parameters and also depending on the weather conditions, the system can react accordingly (with a maximum permitted reduction of 3 lighting categories).

## Advantages

This solution enables the **smartest possible management** of public lighting, with important benefits for the Administration and citizens.

- 📍 **Maximum energy savings**, eliminating any over-use of lighting and contributing to the reduction of light pollution in the city: from an installation of such type there is a + 20-35% of additional energy savings on already LED lighting points.
- 💡 **Optimal street lighting**, adapting the luminous flux to the actual use of the road in real time (also by acting with an intensification of the brightness if abnormal conditions of use of the road are identified; e.g. in the presence of accidents or road works on nearby roads).
- 👤 **Prudential application optics**, excluding certain light points identified as "sensitive" (eg. Near pedestrian crossings, roundabouts), in which the lighting is always kept at the highest levels.
- 📹 **Possibility of using video analysis** for other value-added services, such as public video surveillance or traffic monitoring for urban mobility plans.

## Requirements

Main Requirements to apply **T.net** Solution

- An **Intelligent Network** to control each lamp
- **IOT Sensors** to detect luminance, asphalt conditions, pedestrians and cycles and traffic intensity
- An **Intelligent Management Systems** to perform savings and manage the whole infrastructure

# Thanks



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