



## LEOTEK SUCCESSFUL CASE

# LEOTEK Human-Centric LED Roadway Lighting Systems Reduce Accident Rate by 30% in Taoyuan City

## INTRODUCTION

LEOTEK, a prominent global manufacturer of street, roadway, area, and signal lighting products, has played a vital role in tackling road safety challenges with its innovative lighting solutions. This case study sheds light on the successful implementation of LEOTEK's human-centric LED road lighting systems in Taoyuan City, Taiwan. In this region, nighttime traffic accidents had been a serious concern, particularly in certain rural areas. However, through the adoption of LEOTEK's lighting solutions, there was a significant 30% reduction in nighttime accidents, effectively improving drivers' visibility.

## CHALLENGES & GOALS

Taoyuan City encountered a major issue of nighttime accidents at intersections caused by poor visibility. Certain areas such as Lujhu, Guanyin, and Daxi faced even more severe traffic accident problems due to fewer residents and higher vehicle speeds. The conventional road lighting systems, including yellow lights, failed to effectively attract drivers' attention and alert them to potential hazards. The insufficient focus on road lighting in Taiwan's conventional traffic safety measures highlighted the necessity for an innovative solution.

## SOLUTION

LEOTEK introduced the concept of "dual-color temperature road lighting" in Taoyuan City. The new lighting system was initially designed based on the principles of human-centric lighting, and it involved replacing the existing yellow lights at intersections with white lights. This innovative approach utilized color deviation to increase drivers' attention and enhance visibility.

The system employed lights with different color temperatures to create a color deviation effect. As drivers approached intersections, the yellow lights would transition to white lights, improving their focus and making pedestrians more easily noticeable.

### AT A GLANCE

#### CHALLENGES

Poor visibility at intersections leading to nighttime accidents.

Severe traffic accident problems in certain areas with fewer residents and higher vehicle speeds.

Ineffective conventional road lighting systems in attracting drivers' attention and alerting them to potential hazards.

#### SOLUTIONS

Introduction of "dual-color temperature road lighting" using human-centric LED lighting systems.

Replacement of existing yellow lights with white lights at intersections.

Utilization of color deviation to increase drivers' attention and enhance visibility.

The first implementation took place in 2019 as a pilot project at three intersections in the Daxi District of Taoyuan. This pilot project proved successful in reducing nighttime accidents. Building upon this success, the Taoyuan City Public Works Department expanded the implementation of LEOTEK's human-centric LED road lighting systems to seven other administrative districts, including Zhongli, Luzhu, Guanyin, Taoyuan, Bade, and Longtan.

## RESULTS & CONCLUSION

The implementation of LEOTEK's human-centric LED road lighting systems has had a significant impact on road safety in Taoyuan City. The introduction of white lights at intersections resulted in a remarkable 30% reduction in nighttime accidents. The accident rate decreased by 18% from 2020 to 2021, and further dropped by an additional 30% in the following year. These impressive results prompted the Taoyuan City government to continue the installation of the lighting systems.

LEOTEK's human-centric lighting solution not only effectively addressed the challenge of limited visibility at intersections but also made a significant contribution to the overall improvement of road safety in Taoyuan City. It is noteworthy that Taoyuan City is the first city in Taiwan to adopt this innovative system, setting a new benchmark for road safety measures. The system's success was recognized by winning the top prize in the transportation engineering category at the 13th Road Safety Innovation Contributions Awards held by the Ministry of Transportation.

## ABOUT LEOTEK HUMAN-CENTRIC LIGHTING SYSTEM

LEOTEK is a well-known company providing optoelectronic components and lighting solutions. The innovative human-centric LED street lighting system is a winner of 2022 Edison Award, it is smart enough to adjust its intensity and distribution based on weather conditions and road surface brightness. It follows the CIE-140 standard and uses an image recognition system to detect the brightness of up to 20 road surface points. Besides, it provides energy-efficient and comfortable roadway lighting while also enhancing driver safety.



To improve the negative connotation of "pedestrian hell," the central and local governments are actively improving the traffic environment by introducing innovative "dual-colored streetlights."

Taoyuan City Councilor

