SLSC BRIEFING

# Using Smart Street Lighting Controls as an Asset Management Tool

April 2019

## KEY POINTS:

- Smart street lighting control systems, particularly when combined with DALI-compliant power supplies that can store information about the luminaires, have the potential to be a powerful asset management tool.
- Georgia Power, a major investor-owned utility in the United States, has been a pioneer in using smart controls and DALI-compliant power supplies as an asset management tool. Its approach has greatly improved the accuracy of its inventory by allowing the system to auto-populate as each smart control device is connected and by speeding up luminaire installation times.
- The ANSI C137 Lighting Systems standards committee in the US is expected to release an agreed data structure by mid-2019 that could be adopted in ANZ as a common approach to pre-loading asset data into all street lighting power supplies.

Smart street lighting control systems can provide energy consumption information, operational status information and usually a GPS location about each luminaire. They therefore have the potential to be a powerful asset management tool. When smart controls are combined with DALI-compliant power supplies that can store information about the luminaires, this capability can be substantially enhanced.

## DALI for Advanced Luminaire Management

DALI is the acronym for Digital Addressable Lighting Interface, a supplier-neutral series of international standards (IEC 62386) for intra-luminaire communication and control between the LED light source and the power supply. Managed by the Digital Illumination Interface Alliance (DiiA), the original DALI standard (now called DALI 1.0) has recently been updated to DALI 2.0 which offers a range of additional features many of which provide or improve asset management capabilities. DiiA has also now introduced a separate DALI 2.0 product conformity certification program.

Major global power supply manufacturers all generally offer the option of DALI-compliant power supplies. The key feature of DALI-compliant power supplies in the context of asset management is that they allow asset information to be stored in the power supply by the luminaire manufacturer. And, because the DALI protocol allows the different components in a luminaire to talk to each other, smart controls can interrogate the information stored in the DALI power supply and transmit it back to a Central Management System.

# Georgia Power Pioneers Advanced Street Lighting Asset Management

US investor-owned electricity utility Georgia Power first pioneered the approach of using smart controls and DALI power supplies as an asset management tool in one of the world's largest LED and smart controls deployments. This deployment, which commenced in 2015 and is now nearing completion, encompasses over 400,000 street lights across the state of Georgia.

Georgia Power worked with ten luminaire manufacturers to secure their agreement to pre-populate each DALI power supply with a lookup code particular to that luminaire type. The lookup code allowed Georgia Power to know ten attributes about each luminaire:

1. Manufacturer
2. Model Number
3. Model Name
4. Wattage
5. Light Source
6. Max Lumen Output
7. Correlated Colour Temperature (CCT)
8. Optical Distribution Type
9. Luminaire Body Colour
10. Operating Voltage

Georgia Power also sought the inclusion of a revenue-grade metering chip in each smart controller as well as a GPS chip so that the luminaire location could be accurately established. When a smart control is plugged into a new luminaire that Georgia Power crews are installing, the CMS automatically picks it up, downloading a lookup code that allows it to retrieve all of the above information as well as basic energy information and its location. This combined information is then used to auto-populate the street lighting asset register.

Overall, Georgia Power has cited two measurable benefits of its advanced asset management approach:

1. Georgia Power historically experienced approximately an 11% asset register data entry error rate at the time of installation. This has fallen to well below 1% by automating the collection of asset register data.
2. Georgia Power believes that their automated asset management approach dramatically improved the productivity of installation crews by eliminating most of their data entry tasks and paperwork. This has had material cost benefits on its large installation program.

Georgia Power has also cited additional benefits of DALI-compliant power supplies compared to traditional 0-10V analogue power supplies. These benefits include allowing two-way digital communication between the power supply and the CMS, and very precise and consistent dimming across different power supply and controls manufacturers' products.

# What Next?

With interest growing in the use of smart street lighting controls as an asset management tool, IPWEA understands that the ANSI C137 Lighting Systems standards committee is planning to release a draft DALI 2.0-based data management standard for road lighting in mid-2019. This would result in an agreed data structure that could be adopted in ANZ as a common approach across the industry to pre-loading asset data into all street lights.

## MORE READING:

Digital Illumination Interface Alliance
ANSI C137 Lighting Systems Committee