Lighting Council New Zealand Quarterly News - **Winter 2023**

Lightline

FROM **THE CHAIR** **CHRIS BYRNE** - LCNZ CHAIR

It has been quite an active winter season for LCNZ and there are two milestones achieved which I would like to mention.

The first was LCNZ participation at the July ISO TC 274 'Light and Lighting' annual meeting, this year held in Tokyo. This was the first time New Zealand has actively participated in ISO lighting standards, and there is a notable lack of representation from the southern hemisphere. Our contribution to standards development was well received, and our influencing of Australia to attend as an observer was also noted.

There is now an expectation that we will continue to participate with ISO at this level and obviously this will need to be discussed with LCNZ members.

It is very evident that our participation is encouraged, and ISO are committed to developing lighting application standards that are truly international and relevant to all global members, including those from small and far away countries like New Zealand.

The second milestone was the invitation for Bryan King and me to attend the retirement function for Andrew Caseley, the departing CEO of EECA. We were part of a small, select group which Andrew chose to thank as active industry people engaging with government. It was also a focused opportunity to meet with several of the EECA Board and further develop our relationship. It was great to be included in such an exclusive event, showing that our years of hard work have been met with recognition from EECA and the government.

Whilst these events may appear to be minor things, they are both important areas in which LCNZ is leading the development of the lighting industry. Thus, ensuring technical standards are internationally aligned and that LCNZ has both a voice and an influence with government decisions about lighting application in the building code and of lighting energy efficiency in New Zealand.

If you have any feedback or industry related questions, please don't hesitate to be in touch – Enjoy the read!

LIGHTING COUNCIL NZ **WHO WE ARE AND WHAT WE DO**

Lighting Council New Zealand (LCNZ) is an industry association with around thirty member companies, representing NZ lighting industry interests to government agencies, regulators, and other industry and professional associations, spanning commercial, industrial, municipal, and residential lighting.

Our goal is to develop and promote effective and efficient lighting practices in NZ and to advance the capabilities and professionalism of members with technical and regulatory support for safety, performance, efficiency and fair trade in lighting.

Established in 2003, the impetus to form NZ's first lighting industry association came from the rapid onrush of new technology and energy regulation for compact fluorescent lamps that was fundamentally changing lighting at that time and creating much contention and confusion among suppliers, designers, contractors and users.

More information on the LCNZ website: here.

TECHNOLOGY

DALI CONTROL EXPANDS TO ASSET MANAGEMENT

DALI means Digital Addressable Lighting Interface, the internationally standardised protocol for digital communication between luminaires and lighting control devices.

The IEC 62386 series of international standards for DALI digital lighting control, have been in use for 30+ years in commercial buildings, based on hard-wired lighting control networks. In recent years the DALI-2 expansion has seen the application scope widening to include wireless control with two-way communication for remote monitoring and managing of commercial building and infrastructure assets. The use of wireless communication technology has greatly accelerated the uptake of retrofit conversions using combined LED and smart digital controls.

The complete DALI standard series IEC 62386 has been adopted in its entirety by Standards Australia and Standards New Zealand as jointed AS/NZS standards. This series includes the updated version of the standard (DALI-2) and provides the only standardised protocol for lighting control in New Zealand and Australia.

The implications are deep and multi-faceted for system designers, supplier installers and building owners.

Standardised datafile structures facilitate instantaneous and error-free data-loading and commissioning on large scale projects such as multi-thousand luminaire installations for street lighting, commercial buildings, education campuses, and industrial sites. This high setup productivity brings huge commercial and cost saving advantages. DALI control is especially applicable for monitoring and operational verification of networked emergency luminaires.

Standardised digital control opens the door to implement energy saving adaptive lighting (dimming and brightening), colour tuning control, integrative lighting (also known as human centric or circadian lighting) for human health and wellbeing, and productivity.

DALI systems are brand agnostic so can help to future-proof the asset owner regarding availability of ongoing updates, or from commercial lock-in with any single supplier.

See DALI Alliance here.

GOVERNMENT

THE EUROPEAN UNION FLUORESCENT LIGHTING BAN

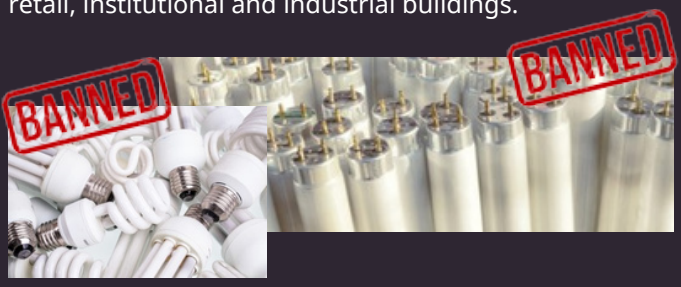
A lighting revolution has truly begun. On 24 August 2023 the European Union Ecodesign Rules have banned the sale of fluorescent lamps. The European Commission will phase-out general purpose fluorescent lighting across Europe in 2023.

The European Union Restriction of Hazardous Substances (RoHS) directive will phase-out fluorescents due to their toxicity, based on the widespread availability of cost-effective LED alternatives. The RoHS directive restricts the use of certain hazardous substances in electrical and electronic equipment, such as the use of mercury in fluorescent lamps.

The EU Single Lighting Regulation (SLR), in place since September 2021, additionally phases out products that fail to meet efficiency requirements. Together, both regulations help protect the environment and public health by enforcing sustainable lighting.

The August 2023 EU ban phases out T8 and T5 linear fluorescent lamps (LFL). Compact fluorescent lamps (CFL) with both internal and external ballasts were banned from 2021.

These laws will accelerate the switch to LED solutions, most likely with smart digital controls in commercial, retail, institutional and industrial buildings.



The many millions of buildings in Europe which currently have fluorescent lighting will need to replace this in future. The obvious alternative is LED luminaires.

Compared to fluorescent, LED solutions:

- Consume up to 85% less energy than fluorescent
- Last three to four times longer than fluorescent
- Have better colour performance than fluorescent
- Have lower total cost of ownership than fluorescent
- Do not contain harmful chemicals like fluorescent

What effect will the EU laws have for New Zealand asset owners?
The NZ commercial lighting market has substantially shifted to LED for new and refurbished installations, so there will probably be scant impact in that market sector. However, the EU laws are already promoting much heightened awareness that fluorescent lighting is thoroughly obsolete, and replacing sooner rather than later is a good investment decision that is also kinder for the environment.

GOVERNMENT

WHAT ARE BEEPER REQUIREMENTS?

BUILDING PERFORMANCE

On 11 December 2023, new regulations for building product information will commence in NZ. The regulations will apply to designated building products manufactured in, or imported into, New Zealand.

The MBIE Building Performance Building Product Information (BPIR) aka 'Beeper' regulations place responsibilities on NZ-based manufacturers and importers of building products, as well as distributors, wholesalers, and retailers. This will provide building product users with key information about their product, including its performance and compliance with the New Zealand Building Code (NZBC).

See MBIE Website: Building product information requirements here.

The new BPIR ('Beeper') requirements apply only to products that contribute to building code compliance. Information on these products will help designers, builders and consumers choose the right products, install them in the correct way, and make informed decisions about using alternative products when there are product shortages.
Additionally, Building Consent Authorities (BCA) will have the right information readily available to check that specifications meet the building code.

Electrical products are excluded from this regulation, so these provisions do not apply to the lighting sector at this point, however all building related parties should be aware that the regulations are in place, and that some of the new requirements may apply to electrical and lighting products in future.

The reason for exclusion of electrical products is that they are already covered by mandatory regulations for product safety, energy performance, and emergency applications.

The new product manufacturer and supplier obligations are:

- Product information to be kept up-to-date
- Product information to be freely available online
- Product information to be in structured data format
- Product information to include actual manufacturer ID
- Products to be provided with a unique identifiable code
- Products must meet certification requirements

There are potential future implications for the lighting product, application, and design sectors. The IEC is currently working on data structures for electrotechnical products, for standardisation of documentation in digital format. The IEC approach will use a *Common Data Dictionary (CDD)* for data exchange interoperability and will have software tools for process verification. Future IEC standards will use *Digital Product Passports (DPP)* to enable automated commercial specification and trade for complying products, and to block non-complying product from building supply chains.

LCNZ will be monitoring the evolution of MBIE BIPR regulation closely to ensure appropriate harmonisation of NZ requirements with IEC internationally standardised norms, so that misalignments or burdensome duplication of requirements is avoided.

TECHNICAL TIP

COMMISSIONING FOR LIGHTING SYSTEMS

One thing is certain....
Lighting has become more complicated. Lighting system performance levels are skyrocketing, and the value for money gets better and better. But there is no doubt that the expertise needed to effectively specify, design, procure, install, and optimise systems is also higher level.

A successful lighting system will deliver – *the right light, at the right place, at the right time!* The use of a well-designed, installed, and commissioned system can provide a high level of energy performance, provide flexibility of use of a space, and increase occupant satisfaction, but only if all project implementation steps are properly heeded.

Commissioning (abbreviated to 'Cx') is a project implementation and quality-assurance tool for delivering, verifying, and documenting whether the performance of a lighting system and its components meet defined criteria and objectives. A Cx plan identifies the minimum requirements, including roles and responsibilities, task activities, documentation, and system handover.

Benefits of astute commissioning include:

- Ensuring what is designed is what is installed
- Reduced energy consumption and lower operating costs
- Enhanced value and marketability of a property
- Accountability of suppliers, designers, and installers
- Verification that a lighting system performs as intended
- Improved user satisfaction

But all too many projects have the client's and designer's intentions diluted and their value compromised due to project 'dumbing down', via undisclosed substitutions, installation shortcuts, and inadequate post-installation finessing.

The 2019 ISO Technical Specification: *ISO TS 21274:2019 commissioning of lighting systems in buildings* defines international best practice. This short and concise publication describes principles and methods, project team obligations and responsibilities, and includes forms, templates, and examples. Embedding ISO TC 21274 requirements in lighting project contracts will help to practically and efficiently ensure that the client's value is indeed delivered.

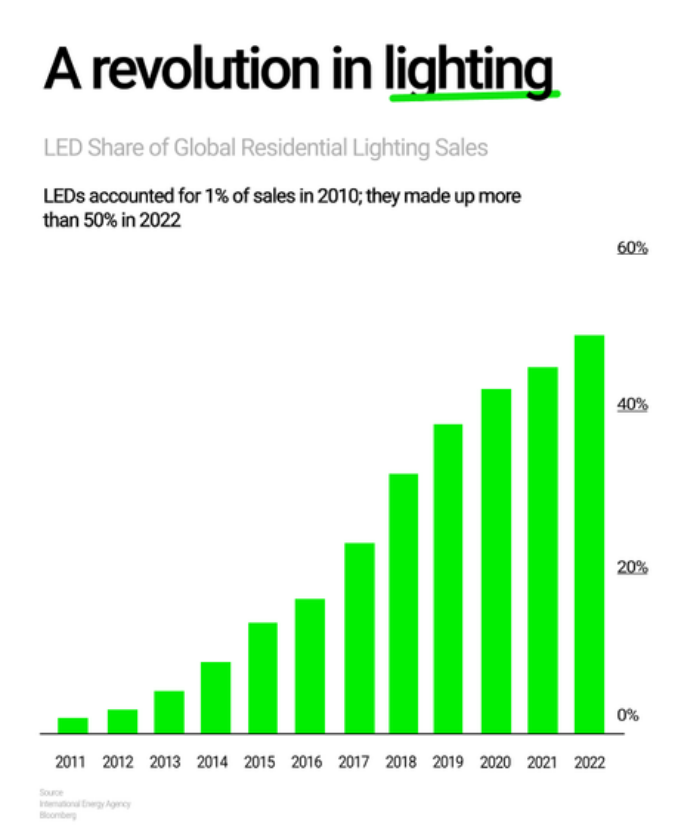
ENVIRONMENTAL

THE ASTONISHING REDUCTION IN COST OF LIGHT

Rampant cost inflation is now affecting almost everything … except lighting. Low cost, high efficiency, long-lasting LED lighting is the latest phase in the astonishing reduction in lighting costs since the Middle Ages. ***Our World in Data***, a research organisation that analyses global issues using dynamic graphs and charts, reports on the cost of lighting over the past seven centuries.

Lighting costs have fallen by 99.9% since 1700, and efficiency has increased 1,000 times

By following the history of light and the transitions, from candles, to oil lamps, to gas light, to electric light – we can observe the technical innovation and economic changes over the centuries. See the ***Our World in Data*** interactive charts here.



So, are we there yet? ….. NO! In 2022 the International Energy Agency reported that global residential lighting sales across all countries, developed and developing, accounted for around 50% market share. So there is still plenty of potential for further stretch.

STANDARDS

NZ CONTRIBUTES AT ISO IN TOKYO

Starting ten years ago ISO, the Geneva-based International Organization for Standardization has hosted the lighting standards committee for lighting application. This includes indoor and outdoor lighting design, control systems, building modelling, daylighting, and energy performance. NZ is now much involved with committee ISO TC 274 'Light and Lighting' as a participating member, developing application standards to complement the product standards (safety and performance) developed by the International Electrotechnical Commission (IEC).

A major advancement for NZ lighting and energy interests was the 2021 formation of the ISO NZ National Committee for lighting. This local committee contributes, appraises, and reviews draft ISO standards for their international suitability and for application relevance to NZ.

The 2023 annual face to face meetings of ISO TC 274 were held in July 2023 in Tokyo, with three ISO NZ Kiwis attending, Chris Byrne (LCNZ), Bryan King (LCNZ), and Michael Warwick (IESANZ). Along with the plenary sessions for strategy and planning, the meetings covered working group decision making on new and updated standards.

Three projects highly relevant for adoption or adaption for NZ were signed-off in Tokyo and approved for publication.

These are:

- ***ISO/CIE 8995-1 Lighting for Workplaces – Indoor,*** an update of the 2002 ISO standard. This is being considered by the Standards Australia LG-001 committee to replace the very obsolete AS/NZS 1680.1 Interior and workplace lighting standard.
- ***ISO/CIE TR 3092 Energy Performance of lighting in buildings - Explanation and justification of ISO/CIE 20086***, a guidance Technical Report on energy performance. This is a guide with informative worked examples to augment ISO/CIE 20086, now adopted as NZS20086:2022.
- ***ISO TR 5911 Commissioning process of lighting systems in buildings - Explanation and justification of ISO TS 21274***, a guidance Technical Report on systems commissioning. This is a step-by-step non-technical project management guide to augment the technical specification ISO TS 21274 commissioning of lighting systems in buildings. It explains and gives examples of the important implementation process steps to ensure optimal operational performance.

When published by the ISO in coming months, these will have immediate NZ relevance.

International experts at a Working Group in Tokyo

LIGHTING FOR AGED CARE FACILITIES

A notable feature of the New Zealand construction industry in recent years has been the expansive growth in the building of aged care facilities. As the baby-boom demographic slides into retirement and beyond, the demand for specifically designed accommodation has greatly increased, and the lighting industry has been very much part of this construction wave.
Interior design for aged care is a challenging responsibility and includes a multifaceted list of lighting needs. Conceptual and detail aspects of lighting require the astute balancing of interior décor, occupant vision needs, environmental performance, and risk management for safety of agility-limited residents.

Lighting for Ageing Eyes - The crystalline lens of the ageing human eye yellows and decreases in light transmission with age. This issue is combined with an increased sensitivity to white light and a limited tolerance to higher colour temperature light. This mix of requirements brings a need for significantly higher light levels in targeted areas to assist activities such as reading, hobbies, and handcrafts, and a bias for 2700 or 3000 Kelvin warm white light sources, avoiding cooler 'office' light, particularly when sources are directly visible.

Fire Safety - The fire dangers inherent in high-density apartment style living and physically limited occupants are more than obvious, so this is an area of focus for building designers and developers.
A common question aged-care designers put to lighting suppliers is "... do you supply fire-rated recessed luminaires?" It is not possible to answer this question because a 'fire-rated' luminaire is not possible. The fire safety compliance criteria and the standardised fire tests apply to constructed ceiling/floor systems, using specific luminaires, thermal insulation, plasterboard, and joists. Luminaires capable of withstanding longer fire exposure times within ceiling/floor systems are not commonplace. Test reports from offshore laboratories need detailed consideration, as the NZ building code requires the tested system design and materials to be at least the equivalent of those used in NZ. As the compliance responsible party, building designers need to be confident they are working with knowledgeable lighting suppliers.

Environmentally Conscious Developers - The major clique of aged-care facility developers and operators are much focused on the energy and environmental impact of their construction and operations, and are seeking performance ratings as part of the NZ Green Building Council Green Star scheme. Astute lighting deployment has a significant role to play. A common question aged-care designers put to lighting suppliers is "... do you supply NZ Green Building Council Green Star rated luminaires?" Once again, it is not possible to answer this question because a 'Green Star rated luminaire' is not possible. The NZGBC rating schemes assess and rate the holistic outcomes of given designs and operational patterns. Well-conceived luminaires with high-efficiency electronics/optics, low embodied carbon, and design for the circular economy are drivers of high rating Green Star outcomes.

More Opportunity Awaits! – Smart control systems offering both light level and light colour adjustability are 'the next big thing' for aged-care living. Fully adjustable and programmable lighting in harmony with daily biological rhythms offers improvements in the stability of sleep cycles and consequent human mood enhancements. Known as 'circadian lighting', this is tuning and optimisation of interior light and colour in accord with dawn/dusk daytime light changes, and early/late evening mood changes. This innovation can bring uplift and important wellbeing benefits, in particular for predominantly house-bound residents.

IEASANZ NZ LIGHTING DESIGN AWARDS
FRIDAY 24TH NOVEMBER

VIADUCT EVENTS CENTRE
171 HALSEY STREET
AUCKLAND CBD

DOORS OPEN 6:00PM
CEREMONY KICK-OFF 7PM

DRESS CODE: BLACK TIE

FOR ANY ENQUIRIES REGARDING THIS EVENT, PLEASE CONTACT
DEEPAK CHANDRA AT DEEPAK.CHANDRA@CORYS.CO.NZ

MEMBER PROFILES

Chris Morris

Signify

Signify New Zealand (formerly known as Philips Lighting New Zealand) is a a global player driving the transformation from traditional lighting to LED, and further on to connected smart lighting systems and services.

In NZ, Signify provides lighting beyond illumination for commercial, industrial and general lighting.

Most recently our world-leading LED sports lighting solutions raised the bar for TV broadcasts across stadiums in New Zealand & Australia when rolled out for international coverage of the recent FIFA Women's World Cup.

Complementing general stadium lighting, Signify have also upped the experience by offering the immersive Colour Kinetics crowd experience.

For most general consumers our well-known 'Hue' colour changing wireless controls system for residential and hospitality application is the market defining leader in wireless effect lighting, control and soon to be security systems.

Upgrading to connected LED lighting and smart controls is undoubtedly the simplest and most effective method of slashing environmental impacts and reducing operational costs. Signify NZ is further pushing the boundaries of resource conservation and circular economics by using 3D additive manufacturing of lighting optics in collaboration with NZ retail chain customers.

Attitudes about the office workplace and working conditions have changed substantially, with employers expecting much more from their office space, and are migrating from ordinary office spaces to better performing and human-attuned facilities.

Industrially, Signify Interact platform provides lighting systems with IoT connected environmental sensors distributed throughout an office, factory or warehouse to monitor the surroundings, including temperature, humidity, carbon dioxide, and volatile organic compounds. This rich data is provided via easy to use APIs for use in BMS systems, SAP or almost any other system of the customers choosing.

The team at Signify NZ provide global best-practice wireless connectivity for lighting, that has now become an essential element for high performing homes, offices and city infrastructure.

MEMBER PROFILES

Greg Johnson

Clevertronics

Clevertronics NZ is an emergency lighting specialist with bases in Auckland and Christchurch. Head office is located in Melbourne, with operations across NZ, AU, and UK.

What challenges are Clevertronics helping to solve in the emergency lighting market?

We work with many stakeholders across the emergency lighting landscape, from architects, electrical engineers, contractors, facility managers, and building owners, making our challenges diverse. We may be helping an architect with an emergency lighting solution or reducing maintenance and energy costs on an upgrade project with a contractor. Most building owners and facility managers' main challenge is ensuring their emergency lighting is compliant and operational if needed. Our role here is to ensure we are working with the market to develop market-leading products and systems to reduce the cost burden by increasing luminaire reliability and lifetimes, and simplifying the testing systems.

How are you positioned to help the market achieve this?

Clevertronics were pioneers of lithium battery technology and the L10 Nanophosphate range has increased the expected lifetime of luminaires from 3-5 years to 12+ years. This now means less maintenance, fewer replacements and less periods of time where a building is non compliant. Emergency lighting testing and monitoring systems is another area where we are helping improve the outcomes for our customers. Introducing our recent Zoneworks XT HIVE system has simplified how emergency lighting is specified, installed and managed by reducing the backbone requirements to one single controller to mesh with up to 1,000 fittings. Clevertronics can assist in all areas of emergency lighting to help customers achieve the best outcomes for their buildings. We believe no building deserves to have non-compliant emergency lighting.