

## IESSA conference makes a welcome return

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After a pandemic enforced hiatus of three years, the Illumination Engineering Society of South Africa (IESSA), was able once again to host its popular annual conference which brings together members from across the country for two days of learning, knowledge sharing and networking. Hosted at the lavish Blueberry Hill Hotel in Randburg, the conference saw approximately 40 members joining in person to listen to a range of lighting-related presentations, while a number of members from outside of the province joined in online.



*Members from the IESSA council at the recent conference; Steffen Schroder, Development (from Reclite), Henk Rotman, Gauteng Branch Chair (Tridonic), Daniel Kasper, IESSA President (Beka Schreder), Alex Cremer, Past President (Nordland Lighting), and Pieter du Toit, CIE (NMISA).*

IESSA President, Daniel Kasper was happy with both the turnout and the course which the event took. "You only notice when you don't have it how much face-to-face interactions impact the industry," he said. "The feedback I received from the members was very good, with many complementing the quality and the diversity of the papers." Kasper admits that for the 2022 conference the association wanted a smaller scale relaunch to test the waters, but the response was positive and IESSA will aim for bigger attendance next year.

## Day 1

After a cup of coffee and a muffin, Kasper welcomed all in attendance and those attending virtually on the first day of the conference. "I am looking forward to the invaluable interactions over the next two days, something which we have missed over the past few years," he noted. Kasper then introduced the keynote speaker for the day Letitia Van der Merwe, Managing Director of Inavit iQ Learning, an industrial psychologist by profession, noting that IESSA wanted someone from outside of the industry to give the attendees something to think about.

Her discussion, entitled, 'Boost Your Psychological Immune System' aimed to help attendees become fitter from a mental perspective. She discussed psychological immunity and emotional resilience, the ability to bounce back from difficult situations. She noted that she has not seen workplace and personal life stressors this high in twenty years. Of interest, was the fact that all of us suffer from a negative bias, where we tend to register negative stimuli more readily than positive ones, and dwell on those negative events. "Scientific research has shown that repetitive negative thinking may increase the risk of Alzheimer's Disease," she explained. To combat this, people can practice reframing their thoughts, separate emotions from the facts, and regularly practice gratitude by taking time to notice and reflect upon the things they are thankful for.

Next, Henk Rotman, Business Development Manager at Tridonic and the IESSA Gauteng chairman, delivered his paper: 'From ballast to brain, The LED driver as key component for realising smart street lighting'. He noted that smart lighting is the backbone for smart cities and can be considered an anchor application for a smart city. His presentation focused on the recent developments at the lowest level (intelligent components) which greatly facilitate the implementation of smart street lighting. He looked at the relevance of temperature management; with the changeover to LED technology, 'day burning', where street lights are left to run during the day, might become a problem as LEDs and the drivers are sensitive to heat, shortening their lifetime and risking early failure. Full feature LED outdoor drivers can help in addressing this challenge, he said.

Rotman stated that the main challenge behind implementing smart street lighting is that everyone wants different things; including the choice of system and the communication protocol. Other challenges include interoperability and scalability, and finally, budgetary issues. He then discussed the Latest LED developments and the standardization of the smart LED drivers, sensors and communication devices. "To accelerate the use of this new set-up, a standard has been defined specifying how the smart LED driver, sensors and communication devices interact; the standard is called D4i (DALI for IoT). Sensors and communication devices are standardised according to Zhaga book 18," he explained. "Zhaga-D4i is defining the 'USB' equivalent of smart street lighting. For end users, it is an 'open' standard, not manufacturer specific, rather industry specific, so you can use luminaires from different manufacturers." Going forward, Rotman stated that smart cities should start specifying D4i and Zhaga compliant streetlights, while data management and how it can be beneficial will be an important topic.

After a tea break, Lasse Ehmsen, Signify Product Manager for 3D Printed Luminaires, presented virtually from Eindhoven, the Netherlands, on 'The Power of Innovation, Growth through Open Standards'. He started off with a self-explanatory slide – innovate or die. "80% of business executives think their current business models are at risk, while 84% say that innovation is important in their growth strategy," he explained. Innovation strength is not only about success, and is not about technical products, it is about the problems they solve and the value they create. He suggested that people should get inspired by different industries and different business models.

Interestingly, he mentioned that Signify is currently awaiting a patent update on a new, specialised outdoor lighting spectrum which will create a safer environment with less traffic accidents through better visibility, at lower comparable light levels and lower electrical power. Furthermore, he spoke about a dual channel outdoor driver, FlexTune, which creates better visibility or higher comfort through lighting which adjusts to external conditions and/or the time of day or night. This innovation allows users to control two output channels in one driver for CCT settings or special adjustments.

One further innovation mentioned by Ehmsen was dynamic cyan enhanced LED modules to support the human body to calibrate its sleep-wake cycle and circadian rhythm. The aim is to introduce light sources with a very high melanopic daylight efficacy ration (mDER) to achieve the melanopic equivalent daylight illuminance (melanopic EDI).

Later in the day, Greg Olivier, design engineer from GT Developments, an electronics engineer with over 20 years' experience, presented on 'Bluetooth Mesh Lighting Networks as an IoT backbone'. He stated that, "The lighting industry is uniquely positioned to be the backbone for network infrastructure as generally the lighting network is already there, and covers the entire site." He noted that while Bluetooth wasn't intended to be a short distance protocol, its biggest uptake was for audio/mobile. Innovations which Olivier mentioned, included MEMS microphones which can send emergency services to the scene of an accident just by the lights 'hearing' a crash. Other applications include air quality analysis, people and car counting, motion detection, noise pollution, power monitoring and power theft detection. "It is incredibly powerful what you can do by installing IoT luminaires," he concluded.

After a delicious rooftop lunch at the hotel's restaurant, attendees settled down again to listen to Simon Poo from Signify talking on how the company's Interact IoT has had a big impact on reducing energy consumptions in the hospitality industry. Poo is a lighting designer and lighting specification specialist with over 16 years' experience.

He noted that hotels are a big player in terms of energy consumption; hotel rooms consume double the energy per floor unit compared to a similar sized office. However, the IoT has the solutions to deal with this. Interact is a portfolio of tailor-made software applications specifically designed to bring together connected lighting systems and the data these systems collect. "Interact IoT helps hotels to reduce electrical consumption, by, for instance, programming lights to come on when guests walk into the room, turning the air conditioning on automatically, and if the curtains are motorised, opening them when the door to the room is opened," he said. Interact Hospitality, designed with the IoT in mind, delivers real-time, operational transparency across the entire property and offers an enhanced guest experience, guest safety and well-being.

Next up was a presentation by Technical Lighting Engineer for CLASP, Bjorn Smidt-Hart, who spoke on how to do a lighting design for street and area lighting. He explained that the purpose behind street and area lighting includes visibility, safety, security, community and well-being and that lighting standards promote good practice. However, he did ask attendees to consider SANS 10098 A Class roadways. "What should the luminance values be to the side of you or behind you? It is best to comply to the standards, but use good lighting practice and lighting designs that are fit for purpose," he said. The responsibilities of a lighting designer are to prioritise public health and safety; be competent; take responsibility and ownership of the design; and be held accountable. Finally, he took delegates through a few examples and street lighting case studies.

After a short caffeine break, Smidt-Hart returned to explore Minimum Energy Performance Standards (MEPS) for street lighting luminaires. A collaboration between SANEDI and CLASP is aiming for an energy efficient standard for street light luminaires. "As 82% of roads in SA are state-owned, within the DMRE's Energy Efficiency Demand Side Management (EEDSM) Programme, participating municipalities are able to optimise their use of energy, with expected electricity saving potential for street lighting of at least 40%," he explained. He pointed out successful examples such as the Cape Agulhas Municipality which is lit 100% by LED street light luminaires. However, there are issues, including poor products being specified, poor installations, costly exercises to replace poor quality luminaires, difficulty in maintenance, public safety being affected, and additional environmental impact and waste. He implored that MEPS should promote national standardisation and regulations of street lighting luminaires, with standardised minimum energy savings being obtained. "This will create stimulus within industry, local content, and a reduced impact on the environment, amongst others."

Closing the day out, Mark D. Williams-Wynn, R&D manager at eWaste Africa presented on 'The 21st century challenge: design for reuse, remanufacture and recycling.' He discussed the circular economy in terms of lighting, imploring companies to be restorative and regenerative by design, and new ideas and practices, as well as exploring life cycle analysis (LCA). This is a method used to evaluate the environmental impact of a product from cradle to grave – the impact of every part of the production and use of a particular product – and takes into consideration aspects such as the impacts of sourcing raw materials, inputs used in manufacturing process, number of times the product is used, and the final waste disposal method. He noted that difficulties in waste management often include the impact of designs: using glue and epoxies, welding and sealing of components, unusual screws and fasteners, and security conditions caused by maintenance.

After a final Q&A session, the formalities of the day were wrapped up and the delegates congregated at the rooftop bar for cocktails and a networking event.



## Day 2

A cold Johannesburg morning greeted the attendees on the second day which kicked off with a presentation by Patricia Schröder from Light Cycle SA. Light Cycle's mandate is to ensure that suppliers are compliant – new leadership has been effected from 1 August 2022, and the NPC has been assisted by experts to set up governance structures and systems to ensure balance of power and independent thinking.

This was followed by an impassioned Q&A session where Schröder allayed fears about the role of Light Cycle SA going forward, wanting to work together with producers and recyclers for the betterment of the industry. "Be part of the solution," she said, "Help us build the system going forward, come and engage and work with the PRO." Numerous manufacturers joined in the discussion.

Next, Pieter du Toit from NMISA presented a paper titled 'Measurement of efficacy and safety of UVGI devices available on the market'. "Covid raised the awareness of UV for disinfection," he noted, "So much so that you can even buy devices on Takealot. With all these products on the market, people may be unaware of the dangers, and the products could be ineffective and unsafe." NMISA purchased three readily available devices online to test their efficacy. "There is no international consensus for a standard UV germicidal action spectrum, as every micro-organism may have its own. It also depends on the medium, and the radiant exposure does differ between micro-organism," he explained.

NMISA determined spectral distribution of the three devices, then used a UV radiometer to determine the effective dose for specific exposure times. Results were concerning, especially where devices emitted UVA, effectively cancelling things out as some micro-organisms can repair themselves under UVA. Elsewhere, filters were not always blocking what they were supposed to. He concluded that it is important that standards be set going forward to ensure that products available to both industry and the general public, actually do what they claim. "If you can, get the product measured first," he advised.

Peter Blattner, President of International Commission on Illumination (CIE), then joined the conference online from Switzerland where he presented the highlights of the current activities of the CIE. Activities the commission are involved in currently include LED photometry, Temporal Light Modulation, Appearance and 3D printing, Glare and Dynamic Lighting, amongst others. Blattner also presented on the role of light and lighting conditions in the prevention, development and mitigation of myopia (short-sightedness), a condition which is showing increased prevalence across the world. Evidence shows a light-stimulated increase in dopamine release from the retina, and he believes that as a global organisation, CIE can assist in the research on this condition. He concluded by saying that light and lighting has undergone fundamental changes in recent years, and as such CIE have decided to create the position of CIE Vice President Education.

For the last presentation of the conference, Jo Anderson and Michelle Ludwig from the GBCSA joined virtually from Cape Town and discussed GBCSA's green building certification scheme, providing an overview of GBCSA's approach to lighting in Green Star rated buildings.

"What new challenges must we respond to, how should Green Star respond to these challenges, and what will define world leadership in the next decade?" they asked. Sustainability megatrends over the past 10 years have included climate action, resource efficiency and health and wellbeing, and these form the basis of the New Build tool. For lighting, the predecessor had prescriptive efficiency pointers for lighting, looking at power density and lighting zoning and efficiency. For the new tool, performance will fall under an energy use and commissioning category. The second point looks at the health and wellbeing of the occupant, including lighting comfort, daylight and glare control, and finally, it looks at protecting ecology, in the form of light pollution.

At the conclusion of the presentations, IESSA president Kasper hosted a final Q&A session to wrap up the conference. "Thank you to all of the presenters and those who put the whole event together. It was good to have these engagements again, some of which have been quite in-depth and passionate." He noted that one of the biggest pillars for IESSA is education, and he wants to interact with other associations and share knowledge. "As the only independent body representing lighting in South Africa, we are the right organisation to work with public entities," he explained. "Furthermore, when government wants to implement legislation, we are the people they come to. We can take the proposals to our members and report back to government, thereby playing a vital role in implementing change." He notes that it is essential for the industry not to sit back and wait, but to actively manage changes.

While the pandemic was not easy for the council, the response to the conference has been overwhelmingly positive, and Kasper wants to seize the initiative and attract more attendees next year.