

Case Study

Philips Lighting case study: Watercare House

Background

In the context of demonstrating good corporate responsibility, Green Star ratings have become increasingly popular with larger tenants, both public and private. To attract tenants in Newmarket, already one of the largest and most established commercial office precincts in Auckland, Watercare House had to be built to the high standard expected by big corporate tenants and reflect the growing trend for sustainable work environments.

As part of achieving the voluntary environmental Green Star certification, it was crucial that the property's lighting solutions met the NZ Green Building Council's criteria, which specify that the lighting energy load should be less than 1.5 watts per 100 lux per square metre, and controlled lighting must be applied to areas within 100 square metres. There should also be no upward light pollution outside.

There were particular challenges for both the exterior and interior of this property. The interior required a customised lighting design solution to realise the architect's vision, while the exterior required a powerful lighting solution that could illuminate the architectural facades to transform Watercare House into an eye-catching landmark at night, but without any light pollution that would compromise the property's Green Star rating or upset local residents. Exterior light fittings also needed to be invisible, as per developers Mansons TCLM's specific request.

Previous attempts to illuminate the exterior with strip lighting had not worked. Although the strip lighting was narrow enough to be concealed along the lower edges of the extruding cassette elements framing the window, the light output was ineffectual when tilting upwards and spilled too much light when the strips were tilting downwards.

The Solution

"Used to illuminate iconic buildings around the world, we thought the Philips' Color Kinetics ColorGraze LED system would be perfect to bring definition to Watercare House's architectural features without causing any light spillage that might compromise its Green Star rating," says Philips Lighting Project Manager Geoff Lewthwaite.

14 Philips ColorGraze Powercore LED lighting fixtures were installed along the lower edges of the extruding cassette elements, integrated into the architecture. The nature of the ColorGraze Powercore's long source life (up to 80,000 hours) made them a perfect solution to install in the difficult-to-access location, without the ongoing maintenance concerns associated with traditional lighting sources. The use of cables and plugs that integrate both power and data also dramatically simplified installation and helped lower the total system cost.

Each ColorGraze unit projects a thin blade of colour upwards from the window frame, accentuating the building's form with a powerful stream of light. Although the ColorGraze is positioned to shine upwards for aesthetic effect, the architect was able to meet the Green Council's criteria as the precision and control of the LEDs contained the light within the window frame and did not overspill. With a DMX or Ethernet-based lighting controller, users also have the choice to tailor the exterior lighting colour.

"For the interior of the building, we customised the lighting solution to not only provide the energy efficiency gains sought, but to also boost tenants' comfort and productivity levels," says Geoff Lewthwaite.

Philips' slim line Celino LED luminaires were fitted in the café and main foyer area to discreetly complement the architect's minimalist ceiling design. For the office spaces, Philips CoreLine LED luminaires distribute a natural light conducive to worker comfort. By using the Philips CoreLine LED, the energy consumption for each luminaire was reduced to 41w, compared to the 62w of a comparative fluorescent system. Elsewhere, Philips LuxSpace and GreenSpace LED downlights were used bringing further, substantial energy savings.

To address the NZ Green Building Council's specified need for a controlled lighting system, the Philips Actilume Wireless system was installed in Watercare House's interior. The smart technology of the ActiLume system means that state-of-the-art miniature sensors can assess the amount of natural light coming into a room, and can then dim or turn off lights accordingly. As well as sensing natural daylight, the sensors can also detect human presence, thus turning lights off when no presence is detected and turning them on again only when someone enters the room. This smart lighting solution alone reduces energy consumption by up to 35%. The Actilume sensors are built into the "Master" luminaires with 4 to 6 other "Slave" luminaires receiving the data and responding accordingly.

The Results

Watercare House received a prestigious 5 Star Green Star rating by the NZ Green Building Council which signifies 'New Zealand Excellence.'

The reduction in CO² emissions and lower operating costs combined with the potential for increased employee productivity and the property's striking aesthetics are now a selling point for the property. Watercare Services, who wanted to implement an organisational culture of sustainability from the bottom up¹, signed on as the lead tenant, while The New Zealand Lotteries Commission and Avanti Finance have signed long-term leases.

Project architect Jason Gerrand of JCY Architects says that the Color Kinetics ColorGraze are "The best night time lighting solution we've ever had on a building.

"After reading overseas studies proving the effectiveness of Philips Color Kinetics lighting and seeing for ourselves the precise, controlled lighting in action at a demonstration, we realised Philips were the ones to work with for Watercare House to achieve the Green Star."

An added bonus of the ColorGraze is its customised colour capability, which enables Watercare Services to choose from an infinite number of colour options that reflect their brand and enables tenants to schedule light shows for a day of the week, date or recurring time – for example, turning the lights green for St. Patrick's Day. Currently there is an automated colour change every 15 minutes.

The projected LED lighting enabled the architects to take advantage of the building's prominent location to enhance the building's aesthetics. With LED lighting technology's longer luminaire lifetime, the Philips LED lighting solutions installed throughout the building means reduced maintenance and fewer replacement parts, plus energy savings of up to 75% compared with traditional lighting fixtures².

"Philips Lighting has certainly delivered by ensuring that Watercare House tenants can now be guaranteed lower operating costs, higher energy efficiency and the improved comfort that comes from a 5 Green Star certification," says Gerrand.

¹<http://www.watercare.co.nz/SiteCollectionDocuments/AllPDFs/Publications/Annual%20Report%202013.pdf>

² <http://www.lighting.philips.com/main/lightcommunity/trends/coreline.wpd>

