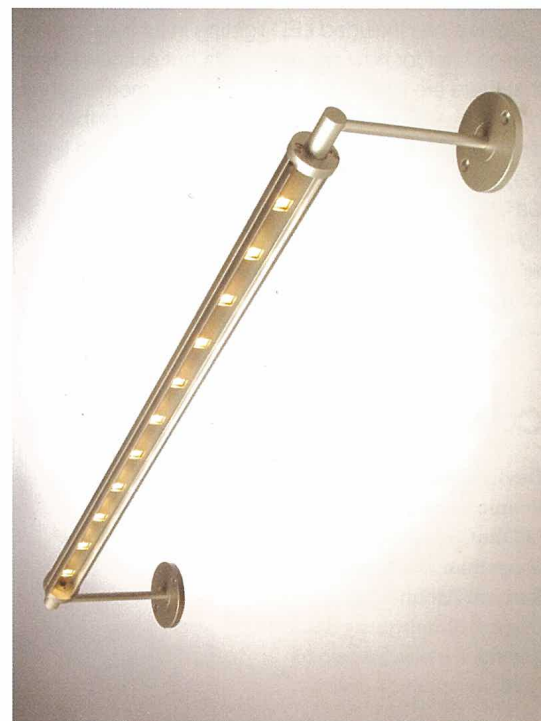


just 3,000 hours with halogen fittings, reducing the cost and need for replacement bulbs."

LEDs are more complex in electronic terms than old-style lamps. 'Spikes' in the system or poor wiring can easily cause failure, while light reduction at end of life can occur as the diodes degrade over time. Interestingly, every LED sold by tp24, a company that has been selling low-energy lighting since 2004, has a unique serial number and, if registered online, the consumer gets a full two-year, no quibble warranty whether it was purchased from a builder, electrician, wholesaler or retailer. "By doing this we collect valuable information about our lamps, if they fail we get them back and can investigate and improve the model," explains managing director, Shaun Davis.

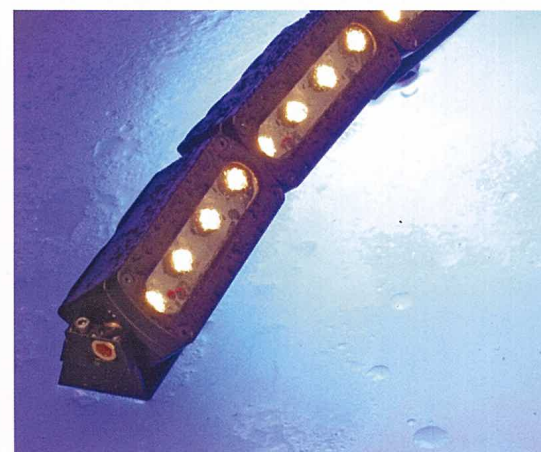
LED lamps work at a much lower temperature than standard bulbs or halogens and do not like heat. "Any LED operating at a temperature above 60°C will shorten the lifespan of the LEDs while also decreasing



ABOVE Radiant Architectural Lighting's LED Flaplight system, which has been developed for use in a wide variety of linear display and picture lighting applications

ABOVE RIGHT Sensio's LED wardrobe rail light

RIGHT Sensio's LED under-cabinet lighting
BELOW Radiant Architectural Lighting's waterproof 3D LED Flex system copes with building features that have curved profiles enabling wall wash or cove lighting without continuous lit effects even on difficult curves such as pillars



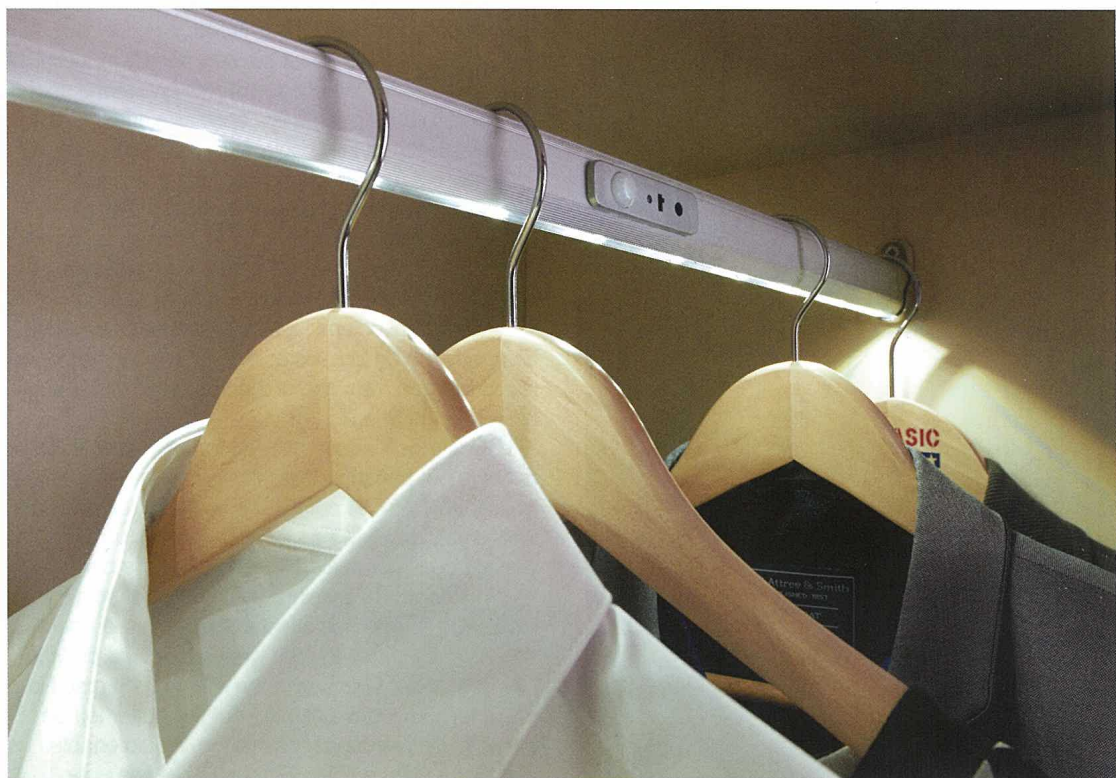
"You can, for the first time now, really say we have an equivalent light output to the incandescent lamps of old"

efficiency," says Paul Stearman, specification manager for LED lighting manufacturer Kosnic.

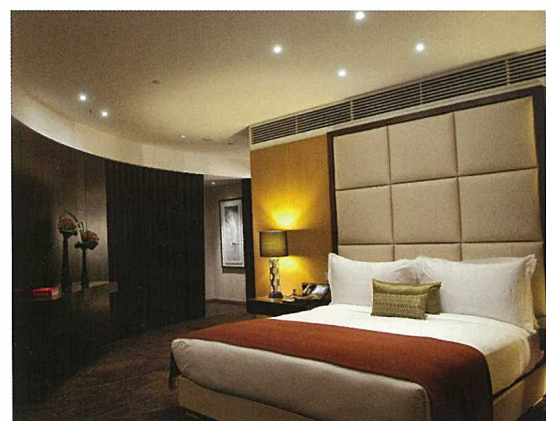
The colour temperature of LEDs has been another concern. "With the advancement of LED chips, phosphors and components, the colour of LED light can now be controlled more consistently to ensure there is no variation between the various lamps," explains Stearman.

Linsky concurs, pointing to the range offered. "Whereas they were once considered as producing a cold, blue light, LEDs are now available in different colour temperatures from cool white to warm white."

According to tp24's Davis, new EuP (Energy using Products) regulations for LED coming into force in September 2013 will stop the import of LEDs with CRI (colour rendering index) levels below 80, thus ensuring that we see the colour of items better. "Currently many LEDs have a CRI of 65 or 70 and, although this is adequate in many situations, it can▶



TOP Megaman LED lamps in show homes
MIDDLE Radiant Architectural Lighting's buried up-light system makes a sculptural feature look spectacular
BOTTOM Sensio's over-cabinet LED lighting draws attention to the kitchen cabinets while practical task lighting under the wall-hung units aids food preparation, cooking and cleaning



make everything look a bit dull and grey."

Another concern is highlighted by Megaman's Kitching. "Dimming is an issue if poor or low-cost products are used but the major manufacturers now have this under control and are actively working with dimming companies to fine-tune products together."

LEDs are now available in a full range of standard fittings and a new generation of retrofit lamps offers a direct replacement for standard bulbs. LEDs also offer a huge range of installation options due to their low power consumption and low temperature operation.

"LED lighting can be used with any typical light fitting and is available in all variants, from standard bulbs to spotlights, strip lights, and floodlights, explains Keith Scott, marketing director of lighting supplier LEDhut. "Bulbs can also be placed where other forms of lighting cannot, for example in hard-to-access areas such as the inside of cupboards and wardrobes or as hidden mood lighting. They are also a stylish and versatile option for the home, providing the choice of cool white light for bathrooms and kitchens and warmer shades to help give a natural glow in bedrooms and living areas."

Tp24's Davis says so far the new homes industry has mainly installed LED downlights and some spot bars and flush fittings. "A few specialist and top-end builders do install fully controllable complete light systems, but the volume builders are a very long way from this expensive choice. The remainder is still largely compact fluorescent (CFL) pendant sets and left to the client to install later, so we haven't seen much uptake on LED fixtures."

Radiant Architectural Lighting, a newly established company run by long-established luminaire designer David Morgan, was one of the suppliers for the show homes in the Shard.

"LED is much valued not just for its sustainability benefits but because of its design attributes too. Sustainability won't cut it if the lit end result doesn't look great," says Morgan. "LED enables us to provide cool, concealed lighting, which is perfect for new-builds where exciting, soft lighting effects form an intrinsic part of the interior design. In the Shard, for example, by using LED we were able to provide under-cupboard lighting in the kitchen: the result is that the room looks beautiful but the butter left on the shelf isn't in danger of melting. It also enables us to provide picture lights with more precise cut-off and glare control than halogen or incandescent lights and allows the light to be projected right into

the centre of the picture instead of just giving an over bright band of light at the top. Sustainability is an added bonus rather than the main reason architects are specifying our lights."

LED lighting also enables designers to offer mood lighting. "Colour-changing lights in a bathroom or entrance hall can make a real impact in a show home. Similarly, enabling the sales team to switch dynamically between a warm white light to a cool white light, depending on whether you want to show the same room as, say, a gym or an office, a bedroom or a playroom, can play a role in successful show house selling," says Morgan.

Octavia, which develops new homes for shared ownership and private sale through Octavia Living, is using LED lighting for the external lamp columns at its Greenhouses development in London as these have heavy use. "Given that they last a lot longer than standard bulbs there will be less disruption to the road and pathway at the scheme due to maintaining the lamps," says David Callachan, the development's project manager.

Octavia has included LED lighting in its most recent design brief for new developments but acknowledges that there are points to consider. "At the moment they have a very high up-front cost and it appears that in some cases we may need more LED lighting to light the same area than if we used CFL," explains Callachan. "Although we currently use low-energy lighting in all of our schemes, ultimately the decision we have to make is whether the reduced energy consumption of LED compared to CFL is worth the capital cost." ■

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