

# Burgeoning LED Lighting Market Needs Efficient Power Supplies

*By Doug Bailey, VP Marketing, Power Integrations, Inc., San Jose, CA*

The use of LED technology for lighting applications is accelerating. LEDs last much longer than other illumination technologies, consume significantly less power, and are much more controllable, enabling the right amount of light to be delivered where it is required. In the long run, the cost of ownership of LED lighting is likely to beat current fluorescent solutions, not only due to energy savings, but also because of significantly-reduced maintenance costs.

For indoor LED lighting applications, much of the focus has been centered on replacement bulbs. Initial LED light bulbs were cumbersome and compromised, but today there are some very attractive industrial designs available from manufacturers in the U.S. and worldwide. These are mostly characterized by a large-finned aluminum heatsink body, with the LEDs behind an optical spreader/diffuser and the power supply crammed into small space inside the traditional screw fitting connector. High-brightness white LEDs are much more efficient and rugged than incandescents, so it is important that designers drive these safe, clean, and efficient light sources with similarly effective power supplies.

Accurate constant-current performance is an important parameter for LED driver designs to ensure a consistent light output, small size, and low heat generation. Power Integra-



tions' LinkSwitch<sup>®</sup>-II AC/DC switch-mode power conversion ICs with primary-side control can be configured in a tapped-buck topology and are perfect solutions for the small space inside the screw fitting of a light bulb replacement up to about 8W. LinkSwitch technology offers a high level of integration and low external component count. It is also highly efficient, avoiding the thermal management challenge inherent in LED light bulb form factors. LinkSwitch-II also has low EMI due to frequency jitter, aiding physical design by eliminating large common-mode chokes and reducing the size of X-capacitors.

There is a growing enthusiasm in

municipalities as far afield as Qingdao (China) and Annapolis (Maryland) for the installation of LED street lighting. Following positive trials, many cities are now introducing policies to replace traditional street lights with LED products. Los Angeles will replace its 140,000 existing street light fixtures with LED units; improving LA's lighting quality while reducing electricity use and cost. LED fixtures last two to three times longer than traditional products and are more resistant to damage, delivering significant maintenance cost savings.

We can expect explosive growth in LED street lighting and widespread adoption in a very short time. It seems reasonable to predict an almost complete worldwide switch to LED street light installation this decade. The HiperPLC<sup>®</sup> power supply controller IC, Power Integrations' first high-power product, is targeted at the latest generations of high-brightness LED street lights. The device saves costs by combining the PFC and LLC controllers into a single IC. It is ideal for LED street lighting, as it combines excellent power factor correction, greater than 90% efficiency, and small size and an improvement in overall operating life.

Visit the Power Integrations LED lighting microsite at:

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