



LED • driver • thermal management • optics • design & aesthetics

how to choose a good LED luminaire

LED has become the new synonym for a sustainable & green lighting solution and a way of life across indoor and outdoor spaces. With growing demand in the market and multiple manufacturers offering a variety of LED solutions, the market is moving at a rapid pace. In such a scenario, it becomes important to know the key promoters in technology and have an evaluation system which would help the users in choosing a right LED lighting solution.

LED advantages

colour

LEDs can emit light of an intended colour without the use of colour filters. This is more efficient and can lower initial costs.

cool light

LEDs radiate very little heat in the form of IR that can cause damage to sensitive objects or fabrics. Wasted energy is dispersed as heat through the base of the LED.

efficiency

LEDs produce more light per watt than most of the light sources.

toxicity

LEDs do not contain mercury, unlike fluorescent lamps.

shock resistant

LEDs, being solid state components, are difficult to damage with external shock.

lifetime

LEDs can have a relatively long useful life of 50000 burning hours at rated Junction temperature.

Key parameters in choosing a good LED luminaire





LED

for a reliable and quality performance

more lumens/watt

longer service life

01 country of origin and make of your LEDs

LEDs from countries known for technology and advancement in engineering are more reliable. The LED manufacturer's years of operation and patents held, signifies its contribution in transforming the LED technology.

02 quality of LED (Binning for consistent colour, lumen output & forward voltage)

Binning refers to classification of production yields. The smaller the binning tolerance the better the performance and higher the cost.

LEDs are generally binned for 3 parameters:
Lumen Output - for high consistency and reliability.
Forward Voltage - ensures better performance and long life.
Colour temperature - maintains uniform colour appearance.

03 high lumen output

LEDs with higher lumen output help in giving the right light along with significant savings in energy. An LED should have a minimum efficacy of 130 lumens/watt.

04 right colour temperature

A right color temperature choice is important so as to best suit the application area. LEDs complying to McAdam 3 or 5 (SDCM) Standard Deviation of Color Matching ensure the best quality, consistency in color and hence better reliability.

05 compliance to LM80, L70

LM80 standard is as per IESNA guidelines and is a worldwide accepted standard for qualifying the Life of LEDs.

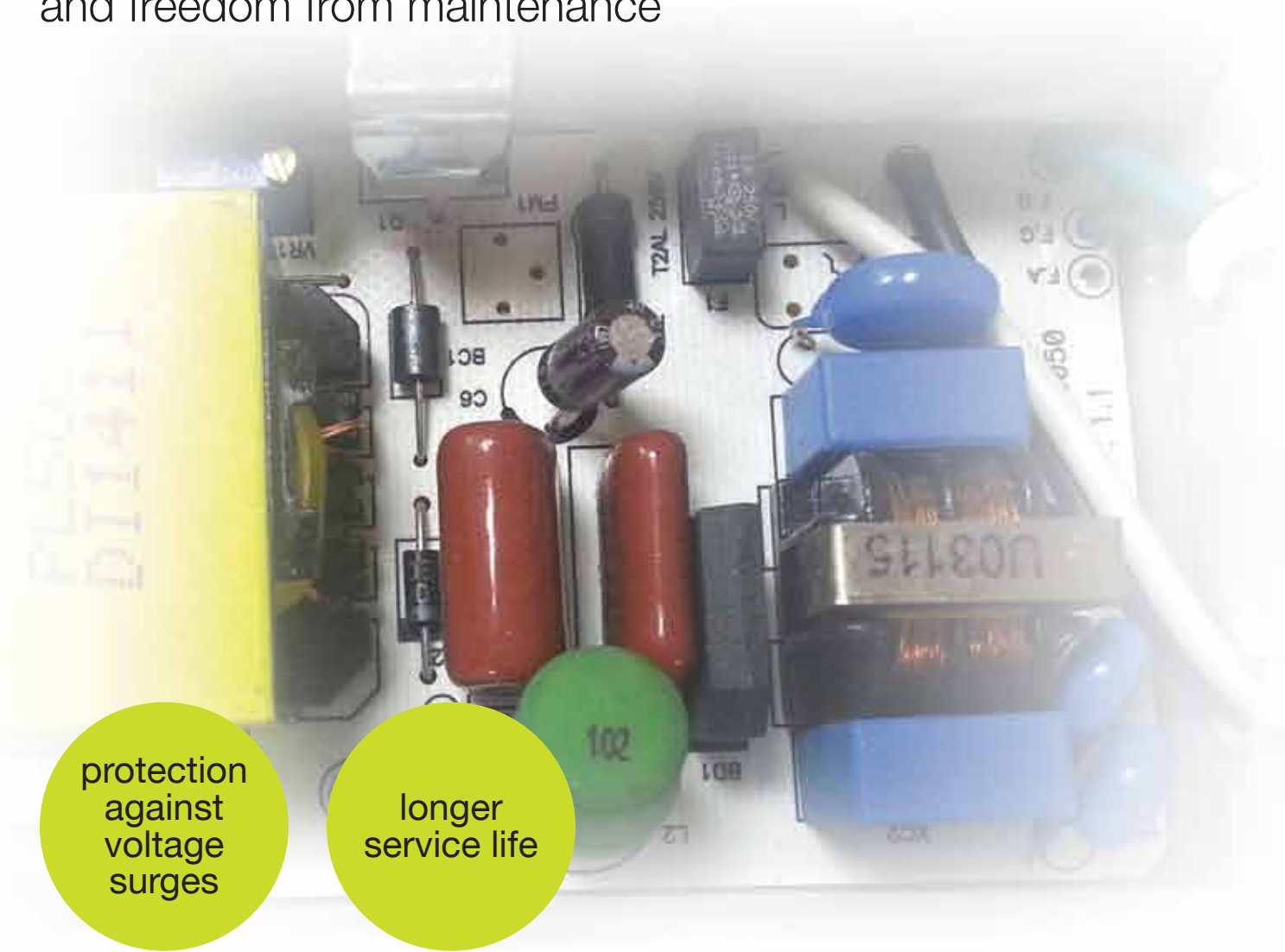
Any LM80 compliant LEDs ensure functional life and is known to increase the reliability index of the luminaire.

06 total system lumen package

While choosing the right LED Luminaire focus should be on total lumen package delivered by luminaire and not on wattage of the luminaire. Appropriate lighting levels are achieved by choosing LED luminaire delivering required system lumens at optimum system wattage and users may not have to compromise on key parameters like LPD (Light Power Density), uniformity etc.

driver

for longer service life
and freedom from maintenance



protection
against
voltage
surges

longer
service life

01 compatibility with
electrical environment

The driver should be able to operate in fluctuating supply conditions and provide adequate immunity to line transients like spikes and surges.

02 constant current &
constant voltage
multistage isolated driver
with low harmonics

The multistage isolated driver avoids interference between the input and output, thereby protecting the LEDs. Precision CCCV operation of LEDs improves reliability and low harmonics ensure lower impact and ill effects on the electrical system.

03 useful system life

Use of high quality components ensure efficient operations and long life of the driver (atleast 40000 burning hours).

04 short circuit, open circuit,
output over voltage
protection & surge
protection

A driver needs to have protection against over voltage, surge, short circuit etc as the input power supply quality is not very stable and good.

05 compliance with safety
and performance
standards

Driver should be designed to comply with safety and performance standards for reliable operation and long service life.



thermal management

for efficient system
and good component life

01 thoughtful design for ambient conditions

Light output from the LED luminaire depends on overall working of luminaire temperature. At higher ambient temperature a well designed thermal management system ensures, the working temperature in the luminaire does not go beyond specified levels to ensure a consistent light output.

02 effective heat dissipation mechanism

The heat generated at the LED junction needs to be vented out by an appropriate heat dissipation mechanism. Non dissipation of the heat would result in a lower light output and reduced LED life.

03 maintained junction temperature

Luminaire design should ensure that the junction temperature in LEDs is always below specified temperature by the LED manufacturer to maximise LED life and luminaire performance.

reliable
system
efficiency

maintenance
free
operations

optics

for uniform and pleasant
lighting experience

01 high optical efficiency

LEDs are point devices and hence there is a certain amount of glare they can create. Well designed optics used in the LED luminaires not only control the glare but also act as a right channel for a better distribution of light resulting in high optical efficiency.

02 good volumetric lighting

High efficiency diffusers with good transmissivity ensure uniform and soft distribution of light that help create well lit and pleasant ambiances.

high optical
efficiency

glare free
volumetric
lighting



design & aesthetics

for innovative and urban spaces
with excellent functionality

01 innovative design

Innovation and design form the core of any product development process. Thoughtfully designed luminaires enhance the ambience of any indoor or outdoor space. Good and minimalistic design turn the environment even more contemporary and meets the ever evolving market needs and requirements.

02 trusted brand

Products from a company with a significant experience are time tested and reliable. An experienced company has a proven product development process, which helps in rolling out efficient products coupled with latest technology.

03 technologically advanced

The relevance of a technology is measured by its scale of adaption. Companies which innovate with new technologies are more likely to provide better solutions.

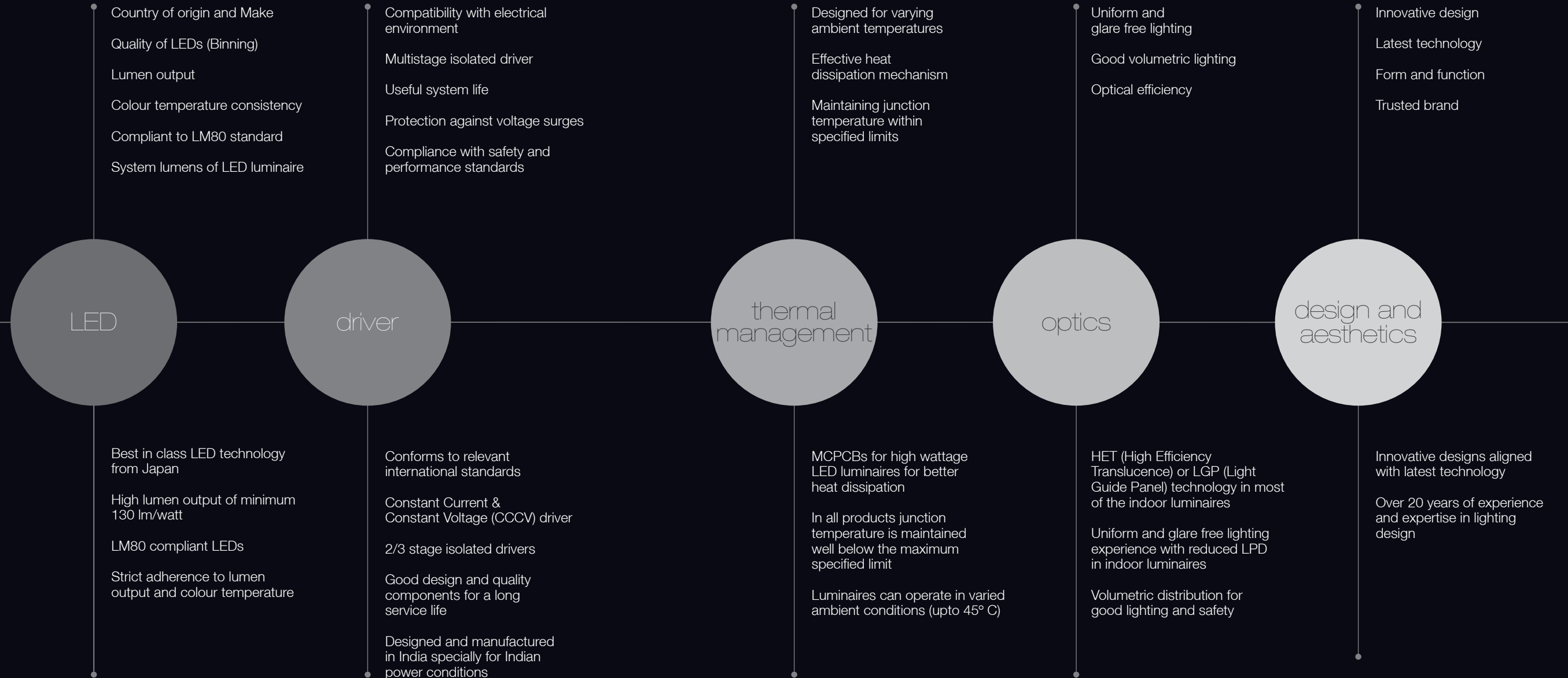
contemporary
spaces

form and
function

key parameters' check list



what Wipro Offers



A WIPRO LIGHTING GUIDE



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