Ever researching for a greener world

Enn Cee Enterprises

www.ennceesolar.com

Energy Solutions
for the Future

Enn Cee Enterprises, established in 1992, has for more than 17 years been in the Product Development and Manufacturing of Solar Powered Products.

In the early 2000, our In house R&D department aimed at developing indigenous products using Solid State Devices (L.E.D) using Renewable Energy.

Our recent green additions are the range of L.E.D products powered by Conventional sources

Our Fluorescent and L.E.D Lighting Products are broadly categorized as...

Chirag - range of Portable Lightings.

Anjora - range of Indoor Lightings.

Akashdeep - range of Outdoor Lightings.

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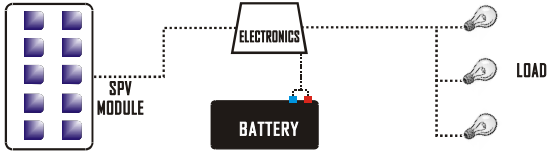
A typical SPV system consists of 4 parts.



Our research has identified crucial factors that hamper the system efficiency:

- Disproportional operating voltages - leading to less than optimal performance.
- Electronics at the mercy of the environment resulting in recurrent expenditures.
- Expensive power conversion or transmission losses, limiting load quality / quantity.

Revolutionary Solution...

- Proprietary APWM technology that converts solar voltage to optimum operational levels.
- MOSFET based Positive Rail control offers credible system control.
- Pertains to UL international standards for Lighting Protection.
- Higher State of Charge levels (SoC) allowing better system operation despite low power generation.
- Safety Crust for the electronics extends system life span.
- High Efficiency processed DC Transmission promotes flexibility in the range of load options.

Electronics happens to be the weakest link in systems…

Internal view of our electronic module

WHY IS IT SO ?

The simple answer is dust , moisture, and most importantly battery corrosive gasses that will destroy delicate electronic circuitry – the heart of a Solar power system.

We at our design house have thus protected our unique products and designs by this proprietary formation that keeps the electronics smoothly running over years of unmatched operation - as long as the solar panel life span.

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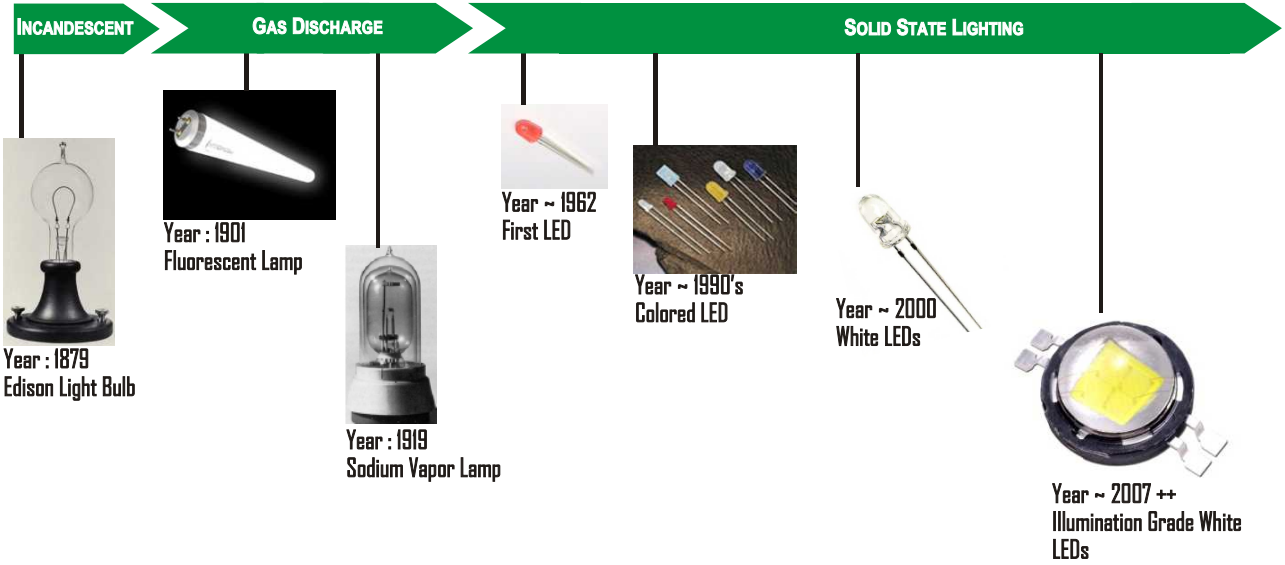
THE EVOLUTION OF ARTIFICIAL LIGHTING...

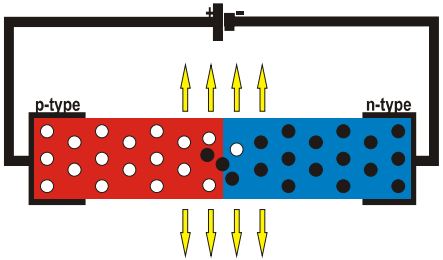


Renewable Lighting solutions from Enn Cee Enterprises use the Fluorescent lamp technology such as CFLs and T5 lamps.

Renewable / Conventional energy solutions are provided with the use of illumination grade - world's brightest L.E.Ds.

LED Technology ... how it works?

p-n junction diode that emits light when forward biased is a Light Emitting Diode(LED).



- LEDs consist of several layers of semiconducting material.
- Light is generated in the active layer when a current is applied.
- Unlike an ordinary light bulb which emits a continuous spectrum of light, the LED light is monochromatic or a single color.
- The color of light from the LED depends on the materials used.

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Fluorescent - Solar Portables

Chirag - Midi, XL100

- India's brightest and the foremost portable lighting solutions.
- Daily duration ranging from 2 to 6 hours
- Unique 'Digital Dimming' feature provides twin luminosity.
- Only solar portable to utilize a miniature T5 (tri – phosphor coating) tubes.
- Largest range of models with lamp power ranging from 5W, 7W, 9W and 18W.

L.E.D - Solar Portables

Chirag - L32m, L32s, L48s

- Low power super flux devices driven with high efficiency drivers.
- Daily duration ranging from 3 to 6 hours.
- 360° of light dispersal.
- Single L.E.D for Night Light.
- Unique Light dimming control for enabling duration control.

Dual Applications:

- Lantern with mono home light.
- Lantern with Table Lamp.

High Power L.E.D - Solar Portables

Chirag Mini

- High efficiency power L.E.D drivers.
- World's brightest L.E.Ds in designer enclosure.
- 360° of light dispersal using 2 L.E.Ds.
- Unique Light dimming control for enabling duration control - *typically from 2 to 4 hours.*

Chirag L1 / Chirag T20

- World's brightest LED in ultra slim enclosure.
- No need to recharge after partial use.
- Unique Light dimming control for enabling duration control - *typically from 3 to 8 hours.*
- Optional recharge via AC adaptor.

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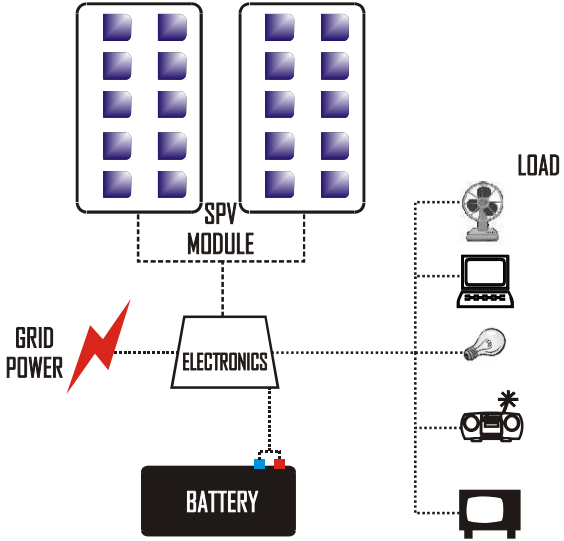
Anjora Solar Home Lighting

- Fluorescent Lamps.
- LED lamps.
- Power L.E.D lamps.

- Flexible home lighting solutions based on revolutionary charge converters that feature unlimited lamp wire transmission.
- India's first solar home lights utilizing T5 / LED lamps.
- 'Day to Day' supportive indigenously developed product.
- Totally automated system with 'Sun Sensors' and 'Digital Timers'.
- Complete system warranty up to 30 months including lamps.
- Custom build support.
- Dimming control logic for power LEDs via the standard power switch - no additional wiring / switches.
- Thermally and optically engineered units

Anjora Solar Dual Power UPS



- Revolutionary *Green* e S. C. C topology
- DSP based pure Sine Wave AC converters.
- Designed for powering critical and domestic loads (like computers, fans, TV, etc).
- Ease of installation with noise less operation.
- Modular construction allowing increase in solar power dependency
- Custom build support
- System warranty of 30 months

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Anjora

Akashdeep Solar Outdoor Lighting

- Fluorescent Lamps.
- Power L.E.D lamps.

- Stand alone lighting solutions based on revolutionary *Green* e S. C. C
- Designs pertains to UL standards for integrated lightning protection.
- Active mechanical structure corrosion protection.
- India's first T5 solar street lighting systems.
- 'Digital Dimming' control available for fluorescent as well as power LED lamps.
- Supports 'Dusk 2 Dawn' operation as well as automated user demand operation patterns.
- Largest range using CFL's / T5 lamps and Power L.E.D lamps.
- **Centralized models** with unlimited wire transmissions built under customized setups.
- Only product of its kind offering a system warranty of 30 months.

Green Products Availaible:

- Solar ETC Water Heaters, Cookers, Driers.
- Solar Glow Boards / display signs
- Solar wireless telecommunications(wifi) and cordless phone power supply.
- Solar remote data logging - microprocessor grade power supply.
- Solar garden and pathway lighting.
- Solar beacons / strobe lights
- Custom Build Solar Powered Solutions.

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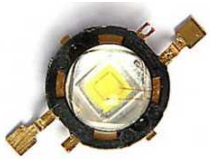
Solid State Lighting



Conventional Power - Green Device

Distinct Benefits of LED:

- Environment Friendly.
- Zero Maintenance Cost.
- Long Life. (>> 50,000 Hours)
- Quick Return Of Investment.
- High Optical Conversion Efficiency.
- Unique Dimming Control (0 to 100%)
- Reduces Power Consumption - up to 70%.
- Controlled Light In Both Direction & Color.
- Cool Light Beam - No IR or UV Radiations.

Total Systems Approach:

- The Right L.E.D. - Premium Top Tier Brands
- The Right Drive - Dedicated Indigenously Designed APWM High Efficiency Drivers.
- The Right Thermal Management - The Key To Longivity.

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Our Heat Sinks Are Made From 100% RECYCLABLE Aluminum.

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L.E.D Bulb

Model	AC Power	Lumen
AJBL-1AC-sb	< 2.5W	135 lm
AJBL-3AC-sb	< 7W	400 lm
AJSPB-1AC-sb^	< 2.5W	Spot light
AJSPB-3AC-sb^	< 7W	Spot light

Recommended to replace 5W to 14W CFL / halogen spot.

Applications: Puja room, Night lamp, Corridors, Rest Rooms, vented decorative fixtures, etc.

^ LED spot light ~ 10W to 20W Low power Halogen lamp

(Light color available in cool white or warm white.)

LED Task Lamp

Model	AC Power
AJOPT-6AC-sb	< 14W
AJOPT-12AC-sb	< 28W

Recommended to replace track lighting halogen spot lamps at extremely low running cost.

Applications: Power saving solutions for wall or roof mounted task lighting, decorative lighting.

LED spot light ~ 30 W to 60W Low power Halogen lamp

(Light color available in cool white or warm white.)

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Anjora Indoor Lighting Solutions

Economical Surface Mounted Lighting units with integrated drivers.
230V AC with active high voltage protection (up to 350Vrms).
India's only Digital Step Dimming Control - without any additional controls or switches.
Dimming controls light intensity and saves power.
Thermally engineered units for optimum heat extraction in ventilated indoor environments.

3 LED Linear Strip Light

Model	AC Power	Lumen
AJST-3AC-n	< 4.5W	300 lm
AJST-3AC-sb	< 7W	400 lm
AJST-3AC-DD*	4W / 7W	240lm/400lm

Recommended to replace 7W to 11W CFL.
Applications: Corridors, Rest Rooms, Cabinets, etc.

6 LED Linear Strip Light

Model	AC Power	Lumen
AJST-6AC-n	< 9W	600 lm
AJST-6AC-sb	< 14W	800 lm
AJST-6AC-DD*	8W / 14W	480lm/800lm

Recommended to replace 11W to 25W CFL.
Applications: Corridors, Rooms, Cove lighting, etc

9 LED Linear Strip Light

Model	AC Power	Lumen
AJST-9AC-n	< 14W	900 lm
AJST-9AC-sb	< 21W	1200 lm
AJST-9AC-DD*	12W / 21W	750lm/1200lm

Recommended to replace 20W to 36W CFL.
Applications: Corridors, residential & commercial Lighting, parking bays etc

12 LED Linear Strip Light

Model	AC Power	Lumen
AJST-12AC-n	< 18W	1200 lm
AJST-12AC-sb	< 28W	1600 lm
AJST-12AC-DD*	16W / 28W	950lm/1600lm

Recommended to replace 36W to 45W CFL.
Applications: Large Corridors, home & office, parking Bays, porticos, industrial sheds etc

*Digital step dimming control

Anjora Indoor Lighting Solutions

LED Recessed Down Lighter

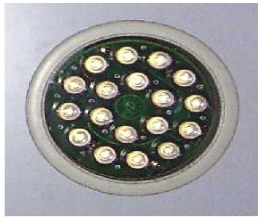
Model	AC Power	Lumen`
AJDL-W-6AC-sb	< 13W	0 to 800 lm
AJDL-W-12AC-sb	< 26W	0 to 1600 lm
AJDL-W-18AC-sb	< 40W	0 to 2400 lm

Recommended to replace 18W to 52W CFL lamps
Applications: showrooms, workstations, hotels etc.
Light color available in cool white` or warm white.

U-Optic LED High Bay Light

Model	AC Power	Illumination`
AJUOP-32AC-sb	< 66W	70 to 100 lux

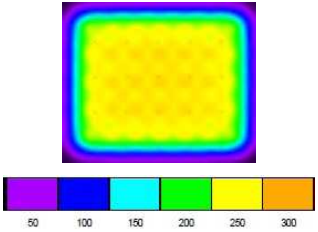
Direct replacement for 100W to 150W MH lamps
Applications: Shopping malls, warehouses, factory shops, etc.
Illumination data with lamp height of 7 meters from ground



LED Recessed Spot Lighter

Model	AC Power	Illumination`
AJSP-W-6AC-sb	< 13W	~50W halogen
AJSP-W-12AC-sb	< 26W	~100W PAR
AJSP-W-18AC-sb	< 40W	~ 150W MH

Applications: showrooms, hotels etc.
Light color available in cool white` or warm white.



Illumination data of 35 numbers of Anjora U-Optic LED high bay lamps illuminating an electronics company ware house and is directly replacing 16 numbers of 250W MH lamp.

Akashdeep Outdoor Lighting Solutions

Futuristic outdoor slim lighting units with integrated drivers.

230V AC with active high voltage protection (up to 350Vrms).

Energy savings as much as 70% with even light distribution for uniform street lighting.

Thermally engineered units for optimum heat extraction in outdoor environments.

- Low / Medium Perimeter General lighting

Model	AC Power	Lumen
AKSL-6AC-n	< 8.5W	600 lm
AKSL-6AC-sb	< 14W	800 lm
AKSL-12AC-n	< 17W	1200 lm
AKSL-12AC-sb	< 28W	1600 lm
AKSL-18AC-n	< 26W	1800 lm
AKSL-18AC-sb	< 42W	2350 lm

Recommended to replace 18W to 40W Fluorescent lamps

Applications: street lighting, yard lighting, security lighting etc.

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- Medium / Large Perimeter General lighting

Model	AC Power	Lumen
AKSL-24AC-n	< 35W	2400 lm
AKSL-24AC-sb	< 56W	3100 lm
AKSL-36AC-n	< 53W	3600 lm
AKSL-36AC-sb	< 84W	4600 lm
AKSL-48AC-n	< 70W	4800 lm
AKSL-48AC-sb	< 115W	6200 lm

Recommended to replace 50W to 250W MH lamps

Applications: High mast street lighting, yard , security lighting etc.

Akashdeep Optic Series - Controlled Lighting

Power L.E.D's in the Akashdeep Optic range of Street lighting are placed in rows and installed at varying angles to achieve the desired light coverage. Each LED array is driven individually and uses specialized secondary collimating optic for maximum efficiency and uniformity.

The configuration of LED arrangement is designed to comply with the typical average illumination levels of the HID lamps.

Model	Average Flux	Max. Flux
AKOP-39AC-sb	7.5 to 10 Lux	15 Lux
AKOP-63AC-sb	8 to 12 Lux	30 Lux

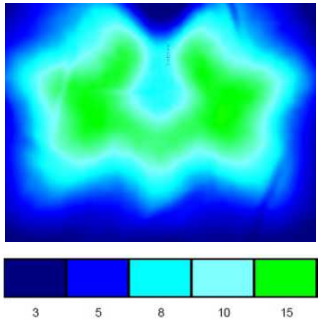
Direct replacement for 150W Metal Halide to 250W Sodium vapor lamps.

Applications: high mast street lighting, wide road lighting, high bay lighting etc.

Pole height of minimum 10 meters.

Average Flux value in 22m X 18m area.

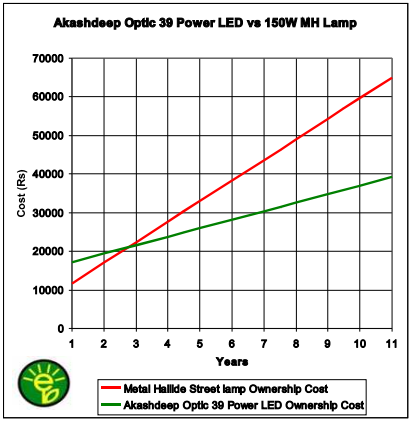
Other illumination levels can be offered on request.

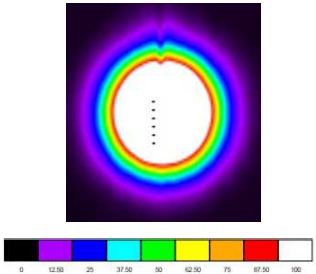


Akashdeep Optic 39 LUX data

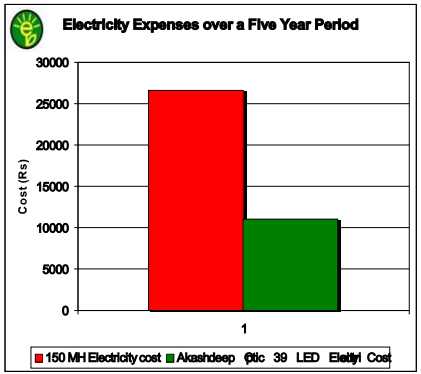
Akashdeep

Economics and Data





Anjora Optic 12 LUX Data



Range of products - lighting data / illumination patterns and economic data upon request.

Example calculations : Akashdeep AKOP-39AC-sb vs 150W MH	150W MH	Akashdeep Optic LED	Savings (Rs)
ENERGY COST CALCULATION			
Electricity rate per unit (excluding fixed charges and taxes)	Rs. 6.00 per unit		
Number of Luminaries Considered inc operating hours	1no. / 12hrs	1no. / 12hrs	
Power Consumed:			
Wattage of Lamp / light source (W)	150	64.35	
Wattage of ballast (W)	52.5	19.3	
Total Wattage Of the System	202.5	83.6	
Units Consumed per day (KwH)	2.43	1.00	
Cost of electricity used per day (Rs.)	14.6	6.0	
Saving per day			8.6
Saving per year in energy cost			3123.25
MAINTAINANCE COST CALCULATION			
Practical Life (in hours) of Metal Halide lamp	15000	50000	
Years required to complete life	3.42	11.42	
Cost of replacing MH lamp every 3.42 years (lamp cost+labour+overhead)	1350	0	
Net Cost of replacing lamp per year	394.20	0	
Saving Per Year in maintenance			394.20
TOTAL SAVING per YEAR			3517.45
Capital Cost Calculations (Indicative cost)	6000	15000	
Net Capital Cost of the AKASHDEEP Optic LED Street light Luminare			9000
PAYBACK PERIOD (ROI) =Net Capital Cost/Total Saving Per Year			2.56 Yrs

We create the future in LED lighting...

Using Solar Power and Conventional AC power.

Anjora

Akashdeep

Typical Products:

- Down Lighters.
- Bulbs.
- Table Lamps.
- Linear Strip Lights.
- Street Lights.
- Portable Lights.
- Spot Lights.
- Wall Washers.
- Landscape Lights.
- Decor Lights.
- High Bay / Mast Lights.

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