

# Advantages of Plug-in-Driver and 2-way power in DSM programs



‘Regain’ LED Tube Lights with  
Plug-in-Driver & 2-way power Input Technology.

from



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presented by

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# DSM for LED Tube Lights

## Problems-1



Executing DSM program for tube lights is more complex than bulbs, as

- Retrofitting, involves modification of existing fixtures requiring skill and labour costs.
- LED Batten models, simplifies installation , but still requires help to drill holes. Removal of old fixtures opens Paint patches requiring painting. Old fixtures needs to be disposed and is complex process in institutions & Govt.
- Most tubes end up trashed with 80% LED life in them, wasting 80% useful portion of the lamp, resulting in loss of value, reduced ROI from the intervention and creation of E-waste.

# DSM for LED Tube Lights

## Problems-2



- Warranty service is expensive due to full lamp replacement and high packing & logistics costs being fragile and odd shaped.
- Automation with Motion, Day light sensors, IoT can improve savings by 30%, but it complicates the DSM program in quantifying, procuring, distributing, servicing many models.
- Large scale procurement from few corporates excludes the vast SME sector from the program.
- Well publicised low prices makes it further difficult for SME to survive in the open market which involves publicity and distribution costs not included in DSM procurement.



## TECHNOLOGY DESCRIPTION:

**'Regain' LED Tube lights with Plug-in-Drivers and 2-way power input offers 400% more life, Saves 65% energy, 90% installation time, 60% labour cost, 80% E-waste and everlasting service with 35% lower TCO for faster payback & highest ROI.**

***No more, trashing tubes with 80% life in them.***



# Regain-LED Tube Light with Plug-in-Driver & 2-way power



## What is Plug-in-Driver & 2-way power?

- LED Tube lights are manufactured shorter in length than standard without driver or control gear.
- Driver and other electronic circuits are located in a housing that is integrated in to the lamp as press fit end cap to make the lamp complete for use in fixtures.
- 2-way power input allows power supply through G-13 pins located at either end or direct supply through the input terminals or wire (as shown in the pic. Below)



# Regain-LED Tube Light



## Feature & Benefits: 2- way power input

- Simplifies the Installation process. Lamps can be installed in the existing fixtures without modification by directly connecting to the wall power, using fixture as a lamp holder. Saves 90% installation time and 60% labour costs. Useful for customers in US & EU who use Plug&Play lamps to save power.
- Power can be given through G13 pins after fixture modification in case of recess mounted fixtures with reflectors, which is mostly in institutions that have in house electricians.
- The system is designed for safety as power does not flow in reverse direction to eliminate risk of electric shock.





# Regain-LED Tube Light



## Feature & Benefits: Plug-in-Driver (PiD)

- Allows customization with choice of end caps with features. Flexibility to meet all customer's needs before or after purchase. One lamp many choices.



- Quick, Easy & Economical self-service. Saves 80% lamp to reduce warranty, maintenance and shipping costs.
- Very less downtime with self-service using spare end caps.
- Isolates LEDs from heat generated by driver.
- Reduces inventory in production, distribution by 70%. Lamp can be upgraded with new features in future.

## Features & Benefits

### Common LED lamp



- Common LED tube without driver can be made with different specs to address different market segments and meet target price with Plastic, Glass or aluminium, CT, CRI and Efficiency can be tailored to customer needs. All lamps will be integrated with same Plug-in-Drivers.
- SPV can tender for components- LEDs, PCB, housing, plastics to maintain specifications, quality, reduce prices and impose performance warranty on suppliers too. The disparity in procurement costs of corporates & SMEs can be eliminated.
- SMEs can get a chance to procure raw material at the negotiated prices, convert to lamps through tender.
- Lamp production can be decentralized to reduce logistics and transport costs to improve green quotient.

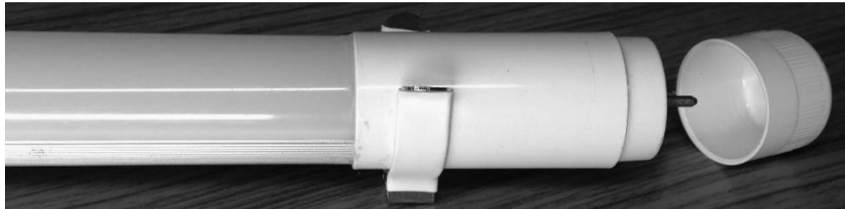


# Regain-LED Tube Light



## Features & Benefits: Installation Flexibility

- Common LED tube Lamps are delivered with protective end caps for G13 pins and mounting clamps.



- Lamps can be used to retrofit existing fixtures by removing the protective caps. Or, can be used as batten by retaining protective caps.
- Mounting clamps can be used for surface mounting, hanging or trunking. Customer can choose the type of installation after purchase.
- Built-in wire conduit at the back of lamp to conceal wire.
- Easy to manufacture and distribute one model that meets all needs and service becomes easy through spare drivers.

# Regain-LED Tube Light



## Features & Benefits: High Performance

- **125 lm/w** – More light with less power. Florescent tube can be replaced with 14W LED Tube to maximize savings, reduce payback period and increase ROI.
- High efficiency leads to **lower LED Jn. Temp.** for long term Lumen maintenance.
- **High Power factor.>.99** for 5-9% less in kVAh billing.
- **Low THD <6%** - Safe on internal & external power lines and equipment.
- **3.5kV surge protection** to with stand spikes that are most common in industrial and rural segments.
- **89% Driver efficiency.**

# BENEFITS



- Minimum annual saving of 28 kWh @3hrs\*365 days in domestic sector or 78 kWh@10hrs\*300 days in commercial sectors. 30% Lower TCO than existing LED Tube lights.
- Offers 4 times longer life and as many times ROI.
- **Most suitable for DSM projects & mass distribution:**
  - ✓ Universal design, easy to install, Long life and best ROI.
  - ✓ Easy to distribute spares even in remote locations.
  - ✓ Every million Regain tube lights will reduce: **26 MW on Demand side & 44MW on Supply side.**
  - ✓ Per MW Cost of Saved Power= **US\$ 153K** against New Capacity addition cost of **US\$ 1.2 mil** (for thermal power plants).
- Most suitable for DSM programs to meet countrywide standards, specifications and target prices. Simplifies and economises warranty and after sale service, even to remote locations.



## PROJECTS EXECUTED

- TATA Power Company Ltd.
  - APSPDCL
- GIZ-NEEP- Nepal Ministry of Energy Building.
  - HPCL Vizag
  - IIIT- Hyderabad
  - Hetero Drugs
  - Srinivasa Spintex
  - Amararaja Electronics
  - Gowthami Bio-Energies
- Delhi Public School Hyderabad

# TECHNOLOGY DEVELOPMENT CERTIFICATION & IP STATUS



- Products: 2',4'-LED Tube lights with normal driver and with 2-way power.
- 110V DC- 2' Tubes for Railway Coaches.
- LM 79 test report: CPRI Bangalore & ERDA Ahmedabad
- Indian patents (2015) pending, PCT (2016)
  - Indian Patent for 2-way power applied in 2017.
- Plug & Play models developed for US market.
- UL/CE/RoHS certifications pending.
- Products under development:
  - Driver with microwave motion sensor in testing,
  - Driver with day light sensor and PIR sensor
  - Retrofit Plug lights with Plug-in-Driver for CFL retrofit lamps
  - Colour tuneable lamps with IoT

# RECOGNITIONS



- **Second prize** among 1356 innovations at **INDIA INNOVATION GROWTH PROGRAM-2016**.
- Selected by IC2 Institute-UT Austin for global commercialization.
- **Best Green Product Manufacturer** award at Clean & Green India Awards 2016.
- Grade-2 ESCO rating from Bureau of Energy Efficiency.
- Registrations:
  - Start-up registered with DIPP-1303. Gov. of India.
  - MSME Udhdyog Aadhar registered-TS02A0001592.
- Active member of Indian Association of Energy Managers and Practitioners (IAEMP) and Indian Green Building Council.



# Can Efficiency alone address climate change? What about E-waste?

**REDUCE**

**REPAIR**

**RENEW**

**REVIVE**

**REGAIN**

***Regain LED Tube Light  
- Built to last.***





**THANK YOU!**



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