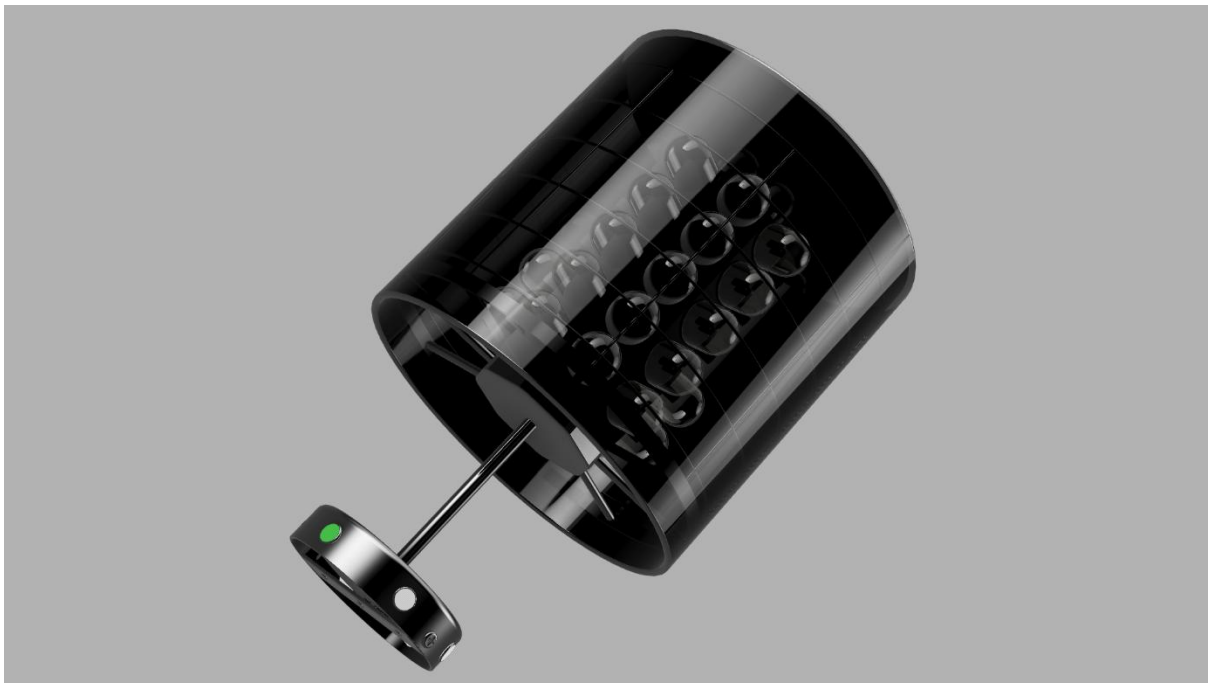
LED Tech Lighting

Introducing ROONTECH'S self-sustaining lighting solution, designed to transform how we illuminate our spaces! This innovative lamp harnesses a transparent solar cell diffuser which recycles wasted energy in the form of light, back into the system creating a super-efficient intelligent lighting experience.



Installation

To maximise efficiency, we strategically place devices in high-visibility areas, the lamp at this point can recharge its own batteries during the day ensuring reliable nighttime illumination with reduced reliance on grid electricity. Enhancing its functionality, this sleek design also acts as an emergency light when no power is available. As if that wasn't enough it is equipped with either a built-in smoke, heat, or carbon monoxide detector. These added layers of protection truly set this device apart and the fact that the same design is used for both ceiling and table applications means it is as sustainable and efficient as it gets. The combination of aesthetics, practicality and safety is presented in one stunning package making it ideal for homes, offices, or public spaces.

Low Maintenance & Installation

- No complex wiring or external solar panels.
- Designed for indoor use near windows, making it plug-and-play for retrofits or new builds.

Smart Energy Management

- The drive unit intelligently balances input from daylight and LED recycling to optimize battery storage and usage.
- Potential for future integration with IoT systems for remote monitoring and control.

Energy Savings Using Natural Daylight & LED Combination

Calculating the exact energy savings for this self-sustaining light depends on several factors, including the efficiency of the solar cells, the LED output, ambient daylight availability, and the specific usage patterns.

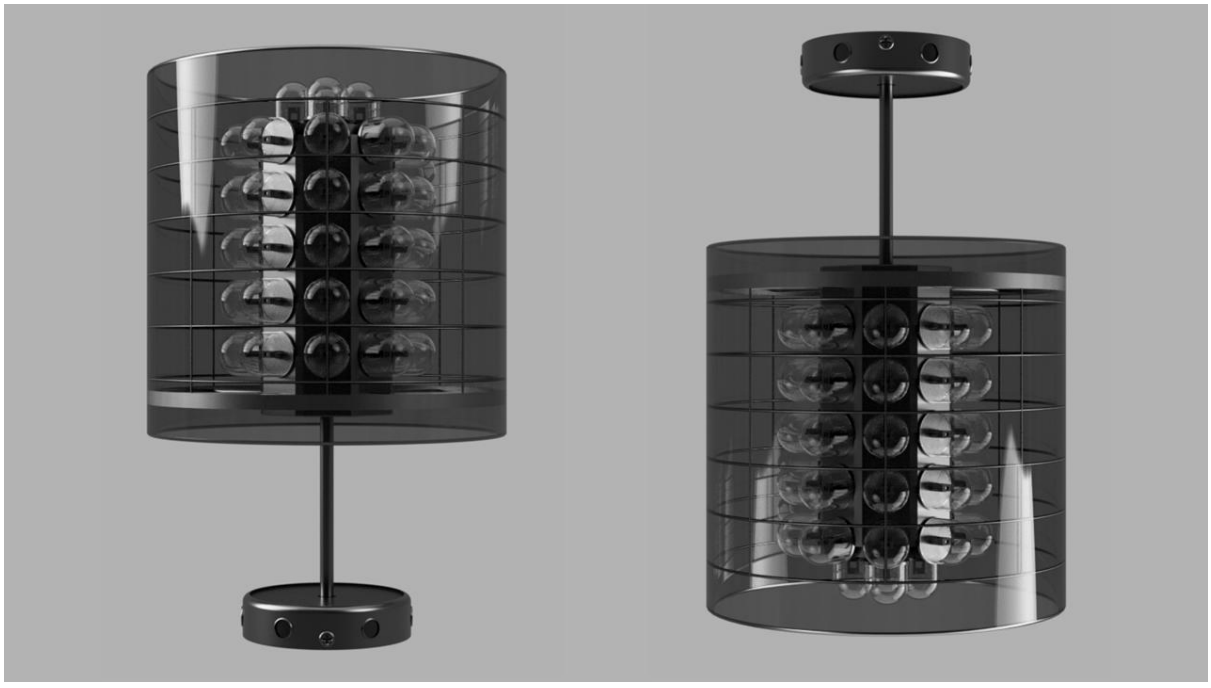
Example of Savings

Using 10 LEDs per light at 200lm per watt over 12 hours we use 120 Wh per night but recovering **over 30%** of that energy through smart design. Multiply that across a building or campus, and the savings both financial and environmental become substantial.

Component	**Value**
LED Power Consumption	10 LEDs × 1 W = 10 W
Nighttime Operation	12 hours
Total Energy Needed	10 W × 12 h = 120 Wh
LED Recycling	12 Wh (fixed)
Daylight Charging	25 Wh (average estimate)
Total Energy Recovered	12 Wh + 25 Wh = 37 Wh
Net Energy Required	120 Wh - 37 Wh = 83 Wh

Recovering **over 30%** of that energy through smart design.

Ceiling & Table Benefits



Modular Versatility

- One design, multiple placements: Whether suspended from a ceiling or placed on a desk, the same unit adapts without compromising performance.
- Simplified inventory: Reduces the need for separate SKUs, making manufacturing, stocking, and distribution more efficient.

Cost Efficiency

- Lower production costs: Shared components and tooling reduce overhead.
- Consumer savings: Buyers get dual functionality in one product no need to purchase separate lights for different locations.

Streamlined Installation

- Plug-and-play adaptability: Whether mounted or freestanding, the light can be installed with minimal effort.
- Ideal for retrofits: Perfect for spaces where ceiling wiring is limited or where flexibility is key (e.g., rentals, pop-up installations).

Design Cohesion

- Unified aesthetic: Maintains a consistent visual language across a room or building, enhancing interior design.
- Architectural harmony: Especially valuable in open-plan spaces where ceiling and table lights are visible together.

Sustainability Benefits

- Fewer materials used: One design means fewer moulds, less packaging, and reduced waste.
- Extended lifecycle: If a user moves or redesigns a space, the light can shift roles no need to discard or replace it.

User Flexibility

- Repositionable: Move it from desk to ceiling or vice versa as needs change ideal for dynamic environments like co-working spaces or exhibitions.
- Multi-purpose utility: Can serve as ambient lighting, task lighting, or safety lighting depending on placement.

Bonus: Smart Integration

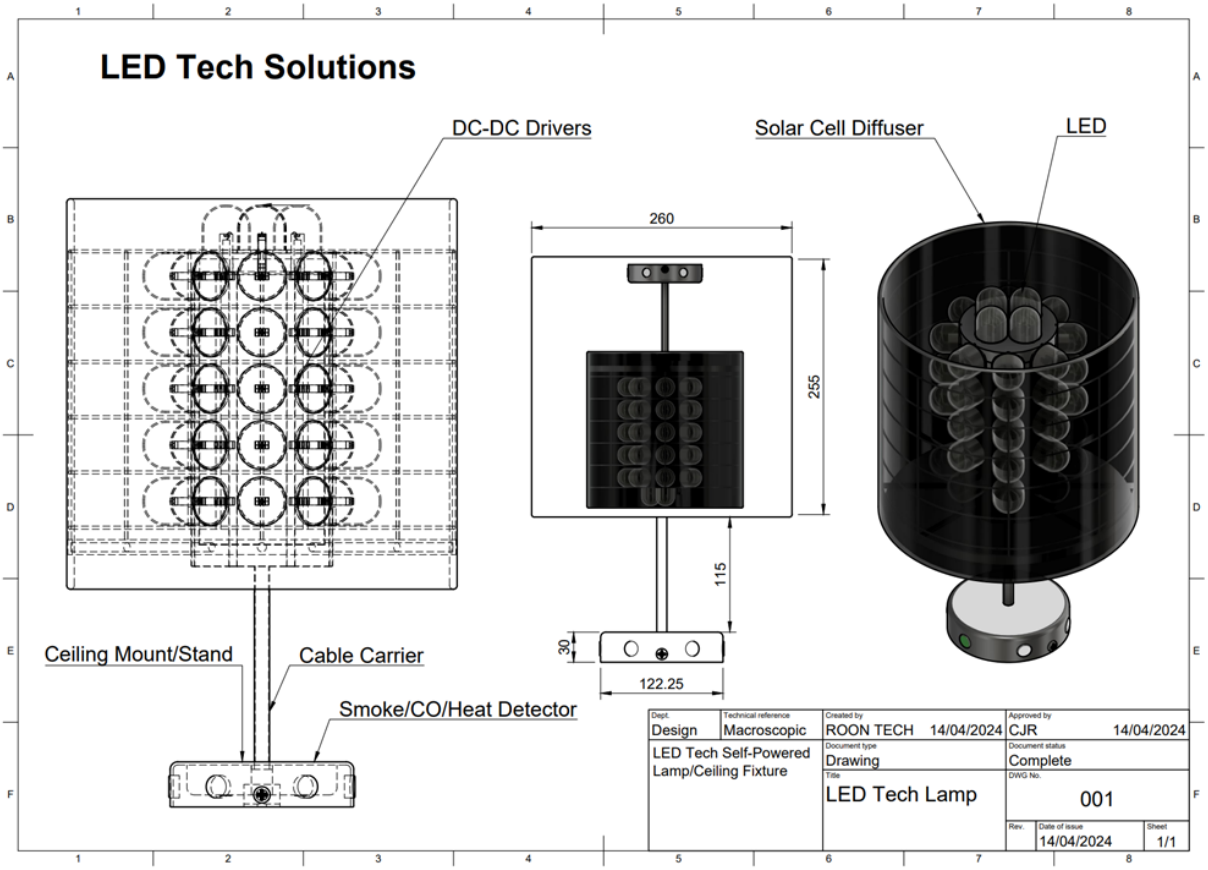
- With built-in detectors (smoke, heat, CO), having the same unit in both ceiling and table positions ensures consistent safety coverage across vertical zones of a room.

Design Style

Museum

Office

CAD Design



Conclusion

The self-sustaining light represents a breakthrough in intelligent, energy-conscious design merging cutting-edge technology with practical versatility. By integrating a transparent solar cell diffuser, it recycles LED photons into usable energy, contributing 12 Wh daily to battery recharging. Combined with 25 Wh from ambient daylight charging, each unit offsets over 30% of its nightly energy demand, saving 37 Wh per day and reducing reliance on grid electricity.

This translates to 13.5 kWh saved annually per light, or 1,350.5 kWh across 100 units, resulting in £378 in cost savings and a 314.67 kg CO_2 reduction a meaningful impact for homes, offices, and public spaces striving for sustainability.

Beyond energy efficiency, the light's dual-purpose design suitable for both ceiling and table use offers unmatched flexibility, aesthetic cohesion, and cost-effectiveness. Its modular form simplifies installation and inventory, while maintaining a sleek, modern appearance that complements any environment.

Crucially, the inclusion of built-in smoke, heat, and carbon monoxide detectors transforms this fixture into a multifunctional safety device, enhancing occupant protection without adding clutter or complexity.

In essence, this light isn't just a fixture it's a smart, sustainable, and safety-enhancing solution that redefines what indoor lighting can achieve. It's a bold step toward greener living, smarter spaces, and a more resilient future.