Hoshang Patel
TECH CENTRE

MONTHLY REPORT

DECEMBER

Prepared by

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2025

https://hoshang-tech.in/

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Monthly Summary

December focused on deep technical exploration, rural solar innovation, academic support, and long-term vision building across renewable energy, agriculture, education, and social impact, with a strong emphasis on low-cost, scalable, and ethical engineering solutions.

Monthly Objectives:

- Donation of a 1 kVA Solar UPS and Desktop Computer to a Self-funded local village library.
- Completion of an industrial solar training program for ITI students
- A Generous talk with Mr. Ranjeet Sir from Vigyan Ashram to explore collaboration opportunities
- Continued R&D on innovative, cost-effective solar streetlight systems and accessories
- These activities further strengthen HPTC's commitment to renewable energy education, rural empowerment, and technology innovation.

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Community Support Initiative – Solar UPS Donation

Completed Work:

- Location: Self-Funded Local Village Library, Khed Region
- HPTC donated a 1 kVA Solar UPS system along with a Desktop Computer to a self-funded local village library. The library is actively used by students preparing for government examinations and engineering studies.
- System Configuration:

  200 Ah Exide Battery

  Exide Inverter

  150 Watt Solar Panel
- Impact:

  Supports 35 regular students using the library

  Ensures uninterrupted lighting and power during outages

  Creates a reliable study environment for competitive exam and engineering aspirants
- This self-funded contribution reflects HPTC's commitment to strengthening rural education infrastructure through sustainable energy solutions.

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Student Training Program

Completed Work:

- HPTC conducted an intensive solar training program for a batch of 19 ITI students, focusing on practical exposure and skill development in renewable energy technologies.
- Training Coverage:
- Fundamentals of electrical and solar energy systems
- Solar streetlight components and assembly
- Battery integration and system wiring
- Installation, testing, and maintenance procedures
- Safety practices and troubleshooting
- The program was designed to build industry-relevant skills and encourage students to pursue careers in renewable energy.

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School Exposure Visit - Solar & Electronics Awareness

Hindavi Garjana Primary school

- A school from a nearby village approached Hoshang Patel Technical Centre (HPTC) for a brief educational visit to gain exposure to the production of solar panels and basic electronics.
- A group of 60 students visited the centre and received an introductory understanding of solar energy systems, electronics, and the practical applications of renewable energy. The visit helped students experience the power of the sun and understand how solar technology contributes to sustainable development.
- Such school visits provide HPTC with an opportunity to expand outreach, create early awareness about renewable energy, and inspire students to explore science, technology, and engineering pathways. These interactions also strengthen HPTC's role as a local knowledge and learning hub for clean energy education.

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Research & Development Activities

- December saw significant progress in research and development across multiple product lines at HPTC.
- R&D Focus Areas:
- Development of cost-effective and innovative streetlight pole designs
- Improvement of pole folding mechanisms for ease of maintenance
- Design of a new solar streetlight model featuring:
- Low wattage with high brightness output
- Innovative casing and smart structural design
- Mobile application development for solar streetlight registration and monitoring
- Pest trap upgradation – next phase of mould development
- Aluminium housing design improvements for better durability and thermal performance
- These efforts aim to enhance product efficiency, reduce costs, and improve long-term sustainability.

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Solar UV Pest Trap - Research & Outreach

About

- Solar UV pest traps support NPM by reducing dependence on chemical pesticides.
- This approach improves soil health, biodiversity, and farmer safety.
- The initiative shows strong potential for CSR and sustainability funding.
- Carbon impact concepts explore reduced emissions from avoided pesticide usage.
- Future research includes light, sound, and frequency-based pest control methods.

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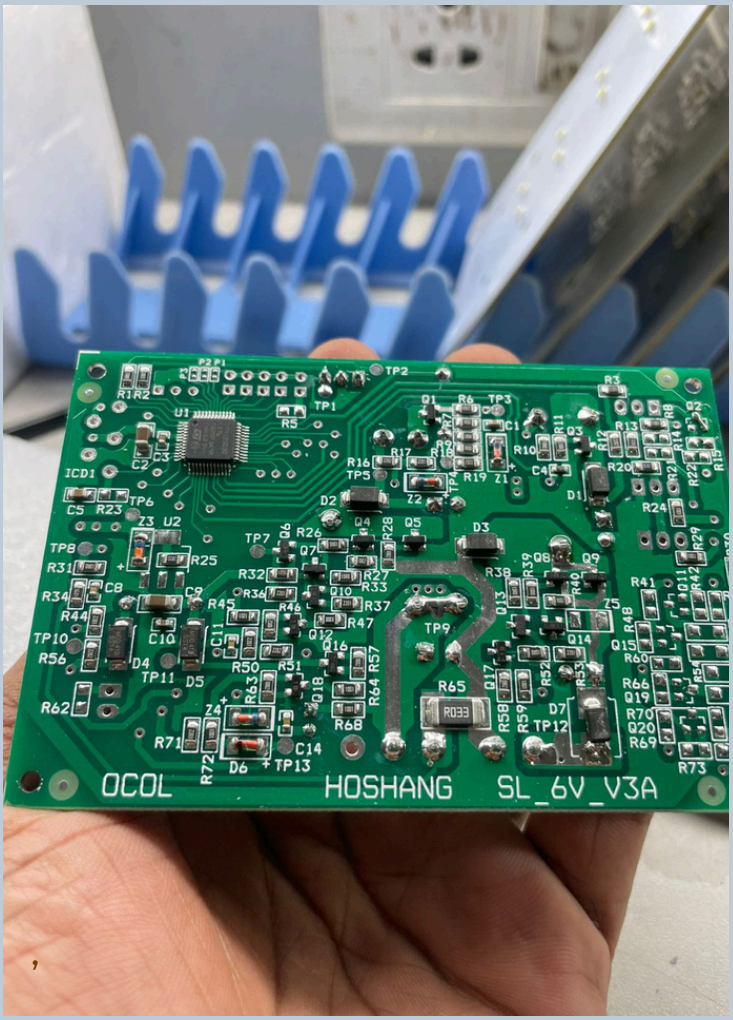
Electronics, LEDs & Optics Research



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- Studied grow LEDs for indoor herbal plants
- Analyzed spectrum tuning for crop-specific lighting
- Evaluated passive thermal management for LED longevity
- Designed convex lens optics for LEDs
- Focused high-power LED beam shaping
- Compared multi-lens, TIR, and laser optics
- Assessed cost, availability, and compact design constraints

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Conclusion

- December 2025 marked a balanced combination of social responsibility, capacity building, strategic engagement, and technical innovation at HPTC. The centre continues to focus on developing scalable renewable energy solutions while empowering students and rural communities through practical education and sustainable infrastructure.