List of Publications

Patent Granted: 13 Nos. (*Indian*)

2026:

1. Patent No: **609253**, dated 12th November 2026 granted for "A Hybrid Renewable Energy Driven Bidirectional Wireless Charging System for Dynamic and Static Electric Vehicle", Patentee: Indian Institute of Technology (ISM), Dhanbad, Inventors: Pradip Kumar Sadhu, Anik Goswami, Sonal Mishra, **Nitai Pal**, Arijit Baral, Anirban Ghoshal, and Kartick Chandra Jana.

2024:

2. Patent No: **522237**, dated 08th March 2024 granted for "Solar Induction Heating System using High Frequency Hybrid Resonant Inverter under ZSI Mode", Patentee: Indian Institute of Technology (ISM), Dhanbad, Inventors: Avijit Chakraborty, Aniruddha Bhattacharjee, Pipul Roy, Pradip Kumar Sadhu, Niladri Das, and **Nitai Pal**.

2023:

3. Patent No: **470425**, dated 20th November 2023 granted for "Solar based Hybrid Heating System and Method with Constant Load Conditions for Low-Wattage Metallic Appliances", Patentee: Indian Institute of Technology (ISM), Dhanbad, Inventors: Moumita Sadhu, Niladri Das, Meetarani Tripathy, Pradip Kumar Sadhu, **Nitai Pal**, and Utpal Goswami.
4. Patent No: **451268**, dated 13th September 2023 granted for "Solar based Hybrid Heating System and Method with Automatic Load Impedance Matching for Low-Wattage Metallic Appliances", Patentee: Indian Institute of Technology (ISM), Dhanbad, Inventors: Kundan Kumar, Anik Goswami, Pradip Kumar Sadhu, Debabrata Roy, **Nitai Pal**, and M. K. Singh.
5. Patent No: **429901**, dated 25th April 2023 granted for "An Induction Curing System and Method for Roof Treatment with Asphalt Concrete to Cure a Crack-on Roof", Patentee: Indian Institute of Technology (ISM), Dhanbad, Inventors: Pradip Kumar Sadhu, Kaushik Neogi, Atanu Banerjee, G. Panda, **N. Pal**, and K. C. Jana.

2022:

6. Patent No: **413988**, dated 08th December 2022 granted for "A High Frequency Hybrid Resonant Inverter with AC Input Source", Patentee: Indian Institute of Technology (ISM), Dhanbad, Inventors: Pradip Kumar Sadhu, Ananyo Bhattacharya, Vivekananda Mukherjee, and **Nitai Pal**.
7. Patent No: **409320**, dated 19th October 2022 granted for "Contactless Emergency Lighting and Communication System with Axial Portability for Underground Mines", Patentee: Indian Institute of Technology (ISM), Dhanbad, Inventors: S. Vamsi Krishna, **Nitai Pal**, and Pradip Kumar Sadhu.
8. Patent No: **405442**, dated 31st August 2022 granted for "A Pacemaker Battery Recharger for Enhancing the Service Life", Patentee: Indian Institute of Technology (ISM), Dhanbad, Inventors: Pradip Kumar Sadhu, Animesh Halder, **Nitai Pal**, Ankur Ganguly, Prabir Bhowmik, and Moumita Sadhu.
9. Patent No: **403045**, dated 4th August 2022 granted for "A System for Induction Heated Sterilization of Surgical Instruments and a Method for the Same", Patentee: Indian Institute

of Technology (ISM), Dhanbad, Inventors: Pradip Kumar Sadhu, **Nitai Pal**, Agamani Chakraborty, and Atanu Bandyopadhyay.

10. Patent No: **400850**, dated 5th July 2022 granted for "A Hybrid Particulate Matter (PM) Emission Control Device having Electrostatic Precipitator and High Frequency Induction Heating Coil for Diesel Engine and Method for the Same", Patentee: Indian Institute of Technology (ISM), Dhanbad, Inventors: Kaushik Sit, Pradip Kumar Sadhu, Arijit Baral, Kallol Bhaumik, Moumita Chakraborty, Sudipta Chakraborty, and **Nitai Pal**.
11. Patent No: **393014**, dated 25th March 2022 granted for "A High Frequency Full Bridge Series Resonant Inverter with AC Input Source", Patentee: Indian Institute of Technology (ISM), Dhanbad, Inventors: Pradip K. Sadhu, Debabrata Roy, **Nitai Pal**, and Arijit Baral.

2021:

12. Patent No: **359838**, dated 26th February 2021 granted for "Emission Control Device for Diesel Engine to Reduce the Particulate Matters in Exhaust Gases and the Method for the Same", Patentee: Indian Institute of Technology (ISM), Dhanbad, Inventors: Pradip K. Sadhu, **Nitai Pal**, and Atanu Bandyopadhyay.

2020:

13. Patent No: **341969**, dated 20th July 2020 granted for "A High Frequency Modified Half Bridge Resonant Inverter with AC Input Source", Patentee: Indian Institute of Technology (ISM), Dhanbad, Inventors: Pradip Kumar Sadhu, Palash Pal, **Nitai Pal**, and Arijit Baral.

Patent Published / Applied: 08 Nos. (*Indian*)

1. Prof. Anik Goswami, Prof. Pradip Kumar Sadhu, Prof. Prabhat Chandra Ghosh, Ms. Phularenu Das, Prof. Anirban Ghoshal, Prof. Arijit Baral, Prof. Nitai Pal, Mrs. Paromita Sadhu, Ms. Chitrangee Singh, Mr. Sagar Bhushan, Mr. Amit Kumar Singh, Sonal Mishra, and Dr. Koushik Mondal, "A hybrid renewable energy driven bidirectional dynamic and static wireless fast charging system for variable ground clearance and misalignment protected electric vehicles", submitted to the Patent Office, Government of India, Application No. **202631039815**, dated 30/03/**2026**.
2. Dr. Sukanta Halder, Nilanjan Das, Sampad Barik, Uppalapati Sudheer Kumar, Krunal Bhuvir, Shubham Ramesh Bhosale, Sk Bittu, Prof. Pradip Kumar Sadhu, Sonal Mishra, and Prof. Nitai Pal, "High-Frequency Isolated Dual-Channel Gate Driver for Wide Bandgap Inverters with Programmable Dead-Band and Parasitic-On Protection", submitted to the Patent Office, Government of India, Application No. **202631039825**, dated 30/03/**2026.**
3. Prof. Pradip Kumar Sadhu, Prof. Shyam A B, Phularenu Das, Prof. Nitai Pal, Chitrangee Singh, Prof. Anik Goswami, Mrs. Paromita Sadhu, and Sonal Mishra, "Hybrid Green Energy based DC Power Propelled Smart Sailing Boat / Cruise Utilizing BIPV, FSPV & CPV for Freshwater of Polar Countries", submitted to the Patent Office, Government of India, Application No. **202631033350**, dated 19/03/**2026**.
4. Prof. Pradip Kumar Sadhu, Prof. Anik Goswami, Mrs. Paromita Sadhu, Prof. Nitai Pal, Prof. Anirban Ghoshal, Sagar Bhushan, Phularenu Das, Amit Kumar Singh, and Sonal Mishra, "Hybrid Green Energy based AC Power Propelled Smart Sailing Boat / Cruise Utilizing BIPV & FSPV for Saline Water of Tropical Countries", submitted to the Patent Office, Government of India, Application No. **202631032473**, dated 18/03/**2026**.
5. Prof. Pradip Kumar Sadhu, Prof. Nitai Pal, Prof. Anik Goswami, Mrs. Paromita Sadhu, Prof. Anirban Ghoshal, Sagar Bhushan, Phularenu Das, Prof. Anindya Sinha, Dr. Koushik

Mondal, and Sonal Mishra, "An IOT Based Non-contact Solid State Lighting, Portable Battery Charging of Cap Lamps and Generating Alert System in Multi-seam and Sectoral Underground Mines", submitted to the Patent Office, Government of India, Application No. **202531130467**, dated 23/12/**2025**.

6. Ashiwani Yadav, Ramesh Singh Parihar, Poorva Sharma, Dewashri Pansari, **Nitai Pal**, Faizan Arif Khan, and Rohit Kumar Verma, "A Process for a Hybrid Renewable Energy System", Journal of Patent, Patent Office, Government of India, Journal No. 16/2024, publication date 19/04/**2024**, Application No. **202221059628**.
7. Dr. Debarati Dey Roy, Prof. Dr. Arijit Saha, Susmita Dhar Mukherjee, Promit Kumar Saha, Dr. Rituparna Mukherjee, Dr. Saikat Majumdar, Anirban Ghosal, and **Dr. Nitai Pal**, "Electrically Doped DNA and Iron Quantum Dot Spintronic Model" Journal of Patent, Patent Office, Government of India, Journal No. 10/2023, publication date 10/03/**2023**, Application No. **202331004023**.
8. Abhishek Dhar, Promit Kumar Saha, Saurabh Adhikari, Rituparna Mukherjee, Saikat Majumdar, Aritras Chakraborty, and **Nitai Pal**, "Implementing a Smartphone-Controlled Low-Cost Drone" Journal of Patent, Patent Office, Government of India, Journal No. 06/2023, publication date 10/02/**2023**, Application No. **202331007043**.

International Journal: 67 Nos. (*Q=47: Q1=16, Q2=10, Q3=12, Q4=09*)

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1. Subhabrata Boral, **Nitai Pal**, and Pankaj Kumar, "Advances in DER-integrated compressed air energy storage: A comprehensive review and future perspectives", – **Renewable and Sustainable Energy Reviews** ***–Elsevier***, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2026.117624, Vol. 245, 117624 (2026). ***(SCIE; I.F: 19.2 – Q1)***.

2025:

2. Swati Lipsa, Ranjan Kumar Dash, Subhra Debdas, Korhan Cengiz, Pankaj Kumar and **Nitai Pal**, "Enhancing cardiac disease prediction with explainable bidirectional LSTM", – ***Scientific Reports***, ***Nature Portfolio,*** ISSN: 2045-2322, https://doi.org/10.1038/s41598-025-25071-8, Vol. 15, 41241 (2025) ***(SCIE; I.F: 4.3 – Q1)***.
3. Jagannath Patra, Ashiwani Yadav, Rohit Kumar Verma, **Nitai Pal**, Scion Samantray, Kunja Bihari Sahoo, Pragya Singh, Ramesh Singh Parihar, and Anil Kumar Panda, "Efficient Multi-Objective Approach using ABC Algorithm for Minimizing Generation Fuel Cost and Transmission Loss through FACTS Controllers Placement and Sizing", – ***Iranian Journal of Science and Technology, Transactions of Electrical Engineering– Springer Nature,*** ISSN: 2228-6179, https://doi.org/10.1007/s40998-025-00805-6, pp. 1-23, May 2025 ***(SCIE; I.F: 1.7 – Q3)***.

2024:

4. Abhay Chhetri, Devender Kumar Saini, Monika Yadav and **Nitai Pal**, "Performance Analysis of Machine Learning Algorithms for Estimation of EV Penetration", – ***Microsystem Technologies, Springer-Nature***, ISSN: 1432-1858, https://doi.org/10.1007/s00542-024-05804-x, pp. 1817–1831, October 2024 ***(SCIE; I.F: 1.6 – Q3).***
5. Promit Kumar Saha, **Nitai Pal**, Faizan A. Khan and Aftab Alam, "Modelling of small signals in MISO DC-DC converters for hybrid energy sources", –***Microsystem***

Technologies, Springer-Nature, ISSN: 1432-1858, https://doi.org/10.1007/s00542-024-05777-x, pp. 1753–1761, October 2024 ***(SCIE; I.F: 1.6 – Q3).***

6. Ashiwani Yadav, **Nitai Pal**, Faizan A. Khan, R S Parihar, Arsh Khan, Shekhar Solanki, Dewashri Pansari, Poorva Sharma, Karuna Yadav, "Comparative Assessment of Various MPPT Algorithms for Solar Photovoltaic Systems under Dynamic Shading Conditions", –***Microsystem Technologies, Springer-Nature***, ISSN: 1432-1858, https://doi.org/10.1007/s00542-024-05746-4, pp. 1649–1659, August 2024 ***(SCIE; I.F: 1.6 – Q3).***
7. Isarar Ahamad, Faizan A Khan, Arun K Yadav and **Nitai Pal**, Vishal S Chandel, Aftab Yaseen, Ijtaba S Khan, Mahfooz Ahmad, "Performance Assessment of Solar Energy Driven Cascaded H-Bridge Multilevel Inverters", –***Microsystem Technologies, Springer-Nature***, ISSN: 1432-1858, https://doi.org/10.1007/s00542-024-05748-2, pp. 1663–1671, August 2024 ***(SCIE; I.F: 1.6 – Q3).***
8. Devender Kumar Saini, Monika Yadav and **Nitai Pal**, "Optimal Allocation of Distributed Energy Resources to Cater the Stochastic E-vehicle Loading and Natural Disruption in Low Voltage Distribution Grid", –***Scientific Reports***, ***Springer-Nature,*** ISSN: 2045-2322, https://doi.org/10.1038/s41598-024-67927-5 pp. 1-33, July 2024 ***(SCIE; I.F: 4.3 – Q1).***
9. Faizan A. Khan, Saad Mekhilef, Vigna K. Ramachandaramurthy, Nur Fadilah Abd Aziz, **Nitai Pal**, Aftab Yaseen, Ashiwani Yadav, M. Asim and Obaid Alshammari, "Design and Development of Grid Independent Integrated Energy System for Electric Vehicle Charging Stations at Different Locations in Malaysia", –***Energy***, ***Elsevier***, ISSN: 0360-5442, https://doi.org/10.1016/j.energy.2024.131686, pp. 1-23, May 2024 ***(SCI; I.F: 9.0 – Q1)***.
10. Asim Halder, **Nitai Pal** and Debasish Mondal, "Design of Optimal Controller for Static Compensator via Hamiltonian Formalism for the Multimachine System", –***Sadhana-Indian Academy of Sciences, Springer Link,*** ISSN: 0256-2499, https://doi.org/10.1007/s12046-024-02462-7, Vol. 49, No. 182, pp. 1-14, May 2024 ***(SCIE; I.F: 2.012 – Q3)***.
11. Jagannath Patra and Nitai Pal, "Voltage Sag Assessment and Classification Model via H-Huang Transform, The Remora Optimization Approach, and the Persistent Hope Field Neural Network", –***Journal of Intelligent & Fuzzy Systems,*** ISSN: 1064-1246, 1875-8967**,** accepted on January 2024 ***(SCIE; I.F: 2.00 – Q4)***.

2023:

12. Arunima Mahapatra and **Nitai Pal**, "Comprehensive Study on Sizing of Hybrid Renewable Energy System using Commercial Software", –***Journal of Mines, Metals and Fuels,*** ISSN: 0022-2755, https://doi.org/10.18311/jmmf/2023/43192 Vol. 71, Issue. 12A, pp. 47-53, December 2023 (***SCOPUS Indexed***).
13. Deepti Singh, **Nitai Pal** and S. K. Sinha, "Technical Investigation on Operational Challenges of Large-scale PV Integration and Opportunities with Market Restructuring, Storages, Green Corridors, and AI", –***Microsystem Technologies, Springer-Nature***, ISSN: 1432-1858, https://doi.org/10.1007/s00542-023-05556-0, pp. 1-14, November 2023 ***(SCIE; I.F: 2.012 – Q3)***.
14. Jagannath Patra, **Nitai Pal**, Harish Chandra Mohanta, Reynah Akwafo and Heba G. Mohamed, "A Novel Approach of Voltage Sag Data Analysis Stochastically: Study, Representation, and Detection of Region of Vulnerability", –***Sustainability, MDPI***, ISSN: 2071-1050**,** https://doi.org/10.3390/su15054345, Vol. 15, No. 5, pp. 1-29, February 2023 ***(SCIE; I.F: 4.089 – Q2)***.

15. Manish Kumar and **Nitai Pal**, "Machine Learning-Based Electric Load Forecasting for Peak Demand Control in Smart Grid", –***Computers, Materials & Continua***, ISSN: 1546-2218, 1546-2226 https://doi.org/10.32604/cmc.2023.032971, Vol. 74, No. 3, pp. 4785-4799, 2023 (***SCIE; I.F: 3.860 – Q2***).

2022:

16. Monika Yadav, **Nitai Pal** and Devender Kumar Saini, "Low Voltage Ride Through Capability for Resilient Electrical Distribution System Integrated with Renewable Energy Resources", –***Energy Reports, Elsevier***, ISSN: 2352-4847, https://doi.org/10.1016/j.egyr.2022.12.023, Vol. 9, pp. 833-858, December 2022 *(**SCIE; I.F: 5.258 – Q2**)*.
17. Jagannath Patra and **Nitai Pal**, "A Mathematical Approach of Voltage Sag Analysis Incorporating Bivariate Probability Distribution in a Meshed System", – ***Energies, MDPI***, ISSN: 1996-1073, https://doi.org/10.3390/en15207592, Vol. 15, No. 20, pp. 1-19, October 2022 *(**SCIE; I.F: 3.252 – Q3**)*.
18. Faizan A. Khan, **Nitai Pal**, Syed. H. Saeed and Ashiwani Yadav "Modelling and Techno-Economic analysis of standalone SPV/Wind hybrid renewable energy system with lead-acid battery technology for rural applications", –***Journal of Energy Storage, Elsevier***, ISSN: 2352-152X, https://doi.org/10.1016/j.est.2022.105742, Vol. 55, pp. 1-23, September 2022 *(**SCIE; I.F: 9.0 – Q1**)*.
19. Faizan A. Khan, **Nitai Pal**, Syed. H. Saeed and Ashiwani Yadav "Techno-economic analysis and feasibility valuation of standalone solar Photovoltaic/Wind Turbine hybrid energy system with various storage techniques and different locations in India", –***Energy Conversion and Management, Elsevier***, ISSN: 0196-8904, https://doi.org/10.1016/j.enconman.2022.116217, Vol. 270, pp. 1-22, September 2022 *(**SCIE; I.F: 11.533 – Q1**)*.
20. Deepti Singh, **Nitai Pal**, S. K. Sinha and B. Singh, "Allocation of Reserved Green Energy Transmission Corridors to Secure Power Purchase Agreements in Smart Power Networks during Congestion Management", –***Electric Power Systems Research, Elsevier***, ISSN: 0378-7796, https://doi.org/10.1016/j.epsr.2022.108006, Vol. 209, pp. 1-15, April 2022 *(**SCIE; I.F: 3.499 – Q2**)*.
21. Nimish Kumar and **Nitai Pal**, "Location and Orientation based Performance Analysis of 4.98 kWp Solar Photovoltaic System for Isolated Indian Islands", –***Sustainable Energy Technologies and Assessments, Elsevier***, ISSN: 2213-1388, https://doi.org/10.1016/j.seta.2022.102138, Vol. 52, pp. 1-14, March 2022 *(**SCIE; I.F: 5.353 – Q2**)*.
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