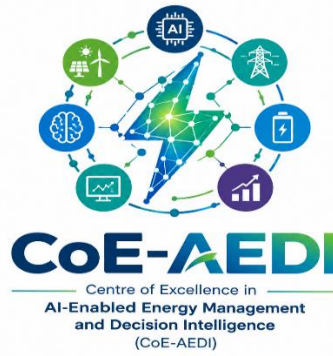




**Budget: ₹2,50,00,000/-**

**Project Duration:** October 2026 – September 2028

**Principal Investigator:** Dr. Manish Kumar Pandey

**Co-Principal Investigator:** Prof. Raju Poddar, Dr. Ritesh Kumar Singh, Dr. Sitanshu Sekhar Sahu, Dr. Tina Dutta, Dr. Pushkal Kumar, Dr. Akriti Nigam, Dr. Shrimoyee Ganguly, Dr. Dilip Kumar Singh, Dr. Sunny Bhushan, Dr. Sushanta Ghuku, Dr. Arkadeb Mukhopadhyay, Dr. Binay Kuma, Dr. Mrinal Jana, Dr. Ashkamini, Dr. Arun Kumar Kadian, Dr. Aftab Alam, Dr. S. Shiva Kumar, Dr. Pankaj Mishra, Dr. Jit Mukherjee, Dr. Mrinal Pathak.

**Abstract:** The Centre of Excellence in AI-Enabled Energy Management and Decision Intelligence (CoE-AEDI) is motivated by the growing need to transform heterogeneous industrial data into actionable intelligence, optimized operations and deployable engineering solutions. Modern manufacturing, energy and industrial assets generate large volumes of data from SCADA systems, IoT sensors, weather systems, meters, machines, BESS/BMS and engineering processes; however, much of this data remains fragmented and underutilized.

The Centre will bridge this gap by integrating Data Science, AI/ML, Industrial IoT, Digital Twins, Optimization, Statistical Intelligence and Engineering Modelling into a common applied research and technology-development ecosystem.

The Centre will particularly focus on:

- **Predictive intelligence** for industrial assets, energy systems and manufacturing processes.
- **Hybrid AI and forecasting** that combines data-driven models with physical and engineering knowledge.
- **Intelligent optimization** of energy storage, production, resources, demand and industrial operations.
- **Digital Twins and simulation** for real-time monitoring, prediction, what-if analysis and control.
- **Asset health and predictive maintenance**, including degradation modelling, anomaly detection and fault isolation.
- **Sustainable intelligence** through energy optimization, carbon tracking and auditable ESG analytics.
- **Trustworthy and explainable AI** incorporating uncertainty quantification, validation and responsible deployment.
- **Technology translation** by converting research outcomes into reusable datasets, AI models, software accelerators, APIs/SDKs, prototypes, patents and industry-ready products.