

# **IoT-Based Energy Monitoring and Trading System for Solar Paint**

## **1. Solar Paint with IoT Integration**

Solar paint generates energy through photovoltaic layers applied on surfaces like walls and rooftops. **IoT sensors** integrated into the system monitor the energy output in real-time. Data is transmitted to a **mobile app or web dashboard**, allowing users to track energy production, consumption, and savings easily.

## **2. AI-Powered Energy Forecasting**

The system uses **AI algorithms** to predict future energy output based on weather forecasts and consumption trends. This helps users plan energy use more efficiently and reduces wastage. AI also suggests ways to **optimize energy consumption** based on historical data.

## **3. Blockchain-Powered Micro-Energy Trading**

The project introduces a **peer-to-peer energy trading platform** using blockchain technology. Users generating excess energy through solar paint can **sell it to neighbors or businesses** via a secure marketplace. Blockchain ensures **transparent and tamper-proof transactions**, while AI advises on the **best times to trade energy** based on electricity prices and demand.

## **4. Environmental Impact Tracking**

The system tracks how much **CO<sub>2</sub> emissions are avoided** through the use of solar paint and provides real-time updates on environmental savings. These insights are displayed on the user dashboard, encouraging **eco-conscious behavior**.

## **5. Benefits and Scalability**

This solution promotes **energy decentralization** by turning individuals into "prosumers" (producers and consumers). The ability to monitor energy, predict output, trade excess power, and **track environmental impact** makes this project **innovative and scalable**.

By combining **IoT, AI, and blockchain**, this project transforms solar paint into a **smart energy management tool**, creating a futuristic system that encourages sustainability and offers **economic incentives** through energy trading.