TECH OFFER

Smart Energy Management Platform (SEMP)

KEY INFORMATION

TECHNOLOGY CATEGORY:
Sustainability - Sustainable Living
Energy - Sensor, Network, Power Conversion, Power Quality & Energy Management
Infocomm - Artificial Intelligence
Infocomm - Green ICT
Infocomm - Smart Cities

TECHNOLOGY READINESS LEVEL (TRL): TRL8
COUNTRY: SINGAPORE
ID NUMBER: TO175193

OVERVIEW

The Smart Energy Management Platform (SEMP) is designed for homeowners and building owners/operators facing rising energy costs due to fluctuating energy prices and the impact of climate change. As an all-in-one solution, SEMP integrates distributed energy resources such as solar photovoltaic (PV) systems, electric vehicle (EV) chargers, and battery energy storage systems (BESS) into a single, user-friendly platform. Unlike standalone systems that offer limited monitoring, SEMP employs advanced AI algorithms to optimize energy use, reduce electricity bills, and maximize savings. Additionally, the platform enables Peer-to-Peer (P2P) energy trading, allowing users to trade excess renewable energy within a decentralized network. SEMP also tracks and aggregates carbon credits, helping users contribute to sustainability goals. With its holistic approach, SEMP not only simplifies

energy management but also provides users with a seamless way to participate in the renewable energy market, improving efficiency and lowering overall energy costs.

The technology owner is seeking partnerships with renewable energy companies, EV manufacturers, utilities, real estate developers, facility managers, government agencies, automation firms, and carbon credit agencies.

TECHNOLOGY FEATURES & SPECIFICATIONS

The SEMP designed to simplify and enhance energy management. Key features include:

- An all-in-one platform with centralized, multi-scale monitoring of energy generation, consumption, savings, and aggregated carbon credits.
- Advanced AI-driven time-series prediction and optimization to maximize energy savings and reduce electricity bills.
- User-friendly mobile app enabling real-time monitoring and control of energy resources.
- Support for key renewable energy sources such as Solar PV panels, Battery Energy Storage Systems (BESS), and Electric Vehicle Supply Equipment (EVSE) for each residential prosumer site.
- Aggregation of energy data from multiple prosumers under the same corporate entity, allowing seamless integration.
- Compliance with Renewable Energy Certificate (REC) standards, with issuance available when aggregated renewable energy exceeds 1 MWh.
- Automatic inclusion of residential sites in Peer-to-Peer (P2P) energy trading or grid exporting, ensuring minimum effort participation in energy markets.
- Detailed insights into energy flow and personalized energy-saving advice, empowering prosumers to optimize their renewable energy use.

POTENTIAL APPLICATIONS

- For homeowners, it provides a user-friendly solution to manage renewable energy, optimize electricity savings, and enable seamless EV charging. Homeowners can also trade excess energy with neighbors through Peer-to-Peer (P2P) energy trading.
- For commercial buildings and factories, SEMP serves as a comprehensive platform that integrates solar PV, EV chargers, and BESS, allowing centralized monitoring, AI-driven energy optimization, and carbon credit calculation. Its multi-site dashboard simplifies energy management across multiple locations, while enabling energy trading and improving overall efficiency.

MARKET TRENDS & OPPORTUNITIES

In response to global warming, there is a growing shift toward eco-conscious living, with individuals and businesses embracing green initiatives to protect the planet from the effects of climate change. Governments worldwide are implementing policies to reduce carbon emissions, encouraging sustainable practices in daily life and work. As a result, energy sectors in many countries are moving away from coal-based power and adopting greener alternatives, such as hydrogen. The widespread adoption of electric vehicles (EVs) and hydrogen fuel cell vehicles (HFCVs) is expected to phase out internal combustion engine (ICE) vehicles.

Innovative technologies like Solar Photovoltaics (PV) panels, Battery Energy Storage Systems (BESS), and Electric Vehicle Supply Equipment (EVSE) are transforming residential and commercial sectors into virtual power plants (VPPs). These systems enable energy self-sufficiency while significantly reducing carbon footprints.

To accelerate this green transition, developers and property owners require systems that streamline access to Renewable Energy Certificates (RECs) and facilitate carbon credit trading. Additionally, enabling Peer-to-Peer (P2P) energy trading will empower users. An AI-powered platform that predicts energy usage, offers traceability, and personalizes energy insights is essential to meet these evolving demands. (183 words)

UNIQUE VALUE PROPOSITION

- **Lower Electricity Bills and Reduced Carbon Emissions:** Optimize energy use with advanced AI to significantly cut electricity costs and lower your carbon footprint.
- **Additional Revenue Streams:** Generate extra income by trading excess energy and participating in carbon credit trading, capitalizing on your renewable energy assets.
- **Comprehensive and User-Friendly Platform:** Enjoy an easy-to-use platform for monitoring and managing distributed energy resources (Solar PV, EV chargers, BESS), unlike standalone Solar PV or EV charger systems that only offer energy monitoring.