### ***WPS Photos(1)***

## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

***Team Name :*  SMART CREATORS**

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***1. Title of proposed idea/innovation :***

Smart Factory Electrical Safety & Health Monitoring Platform for MSMEs using IOT and AI

1. ***Briefly explain newness/uniqueness of the innovation :***

This invention is a full-stack Internet of Things platform that includes both automated health management for small manufacturing facilities and monitoring of electrical safety in real time. This solution uses AI, smart sensors, and real-time communication (MQTT over TLS) to find electrical hazards like overloads, arc flashes, overheating, and leaks before they happen. This is different from traditional methods, which are reactive and depend on people to do them. It is unique because it has an automated system that includes mobile alerts, AI-powered analysis, real-time dashboards, and auto shut-off features all in one place. It was made just for MSMEs and is very cheap, easy to set up, and can grow with the business. This makes it the best solution for industries that are often.

### *3. Concept & Objective :*

The idea is to transform traditional, antiquated, and dangerous electrical systems in factories—particularly MSMEs—into self-monitoring, intelligent, and secure settings. IoT-based sensors (for current, thermal, arc flash, etc.) are integrated into electrical distribution boards and machinery to accomplish this. Through a secure IoT gateway, these sensors send real-time data to a cloud platform. The system continuously analyzes this data using AI/ML models to spot anomalies like arc flash, overload, and overheating. When a malfunction is found, the system can automatically cut off power to avoid dangers and send notifications to the dashboard, SMS, and mobile app.

***Objective :***

Improving MSME electrical systems' efficiency, dependability, and safety is the main goal. This comprises:  
  
preventing equipment malfunctions and electrical fires.  
  
lowering unscheduled downtime.  
  
facilitating automated corrective action and early fault detection.  
  
assisting with audit and regulatory compliance by recording and reporting events.  
  
utilizing web and mobile dashboards to provide real-time visibility and control over the electrical health of the factory.  
The ultimate objective is to equip small and medium-sized businesses with an Industry 4.0-compliant safety platform that is intelligent, scalable, and reasonably priced.

### ***4.Specify the potential areas of application in industry/market in brief :***

This innovation is specifically designed for Micro, Small, and Medium-Sized Enterprises (MSMEs) in a variety of industries, such as printing, fabrication, textiles, food processing, and packaging facilities. It can also be used in workshops, storage facilities, and warehouses with outdated electrical systems. This platform can also be used for increased safety in commercial buildings with frequent maintenance problems, educational institutions with high electrical load labs, and larger factories with legacy infrastructures. This can be incorporated into startup incubators and government-backed industrial parks to create a safer workplace. Wherever preventive fault detection and real-time electrical health are crucial, the solution can be used.

***5.Briefly provide the market data for the potential idea/ innovation.***

With over 6.3 crore MSMEs in India and increasing emphasis on Industry 4.0, the demand for low-cost smart factory solutions is soaring. Electrical safety is a mandatory compliance area, yet many MSMEs lag due to cost and complexity barriers. This innovation directly taps into that gap with an affordable, plug-and-play IOT solution. As fire-related factory incidents and safety audits become stricter, the market potential spans nationally and globally. The scalability of the platform allows for tiered offerings (basic to advanced), making it suitable for small workshops to mid-sized industrial units. Partnerships with government safety bodies, OEMs, and industrial tool manufacturers can further accelerate adoption.