TECH OFFER

Digital Voltage Optimisation System for Electrical Energy Saving & Cost Reduction

KEY INFORMATION

TECHNOLOGY CATEGORY:
Energy - Sensor, Network, Power Conversion, Power Quality & Energy Management
Electronics - Power Management
Sustainability - Low Carbon Economy

TECHNOLOGY READINESS LEVEL (TRL): **TRL9**
COUNTRY: **SINGAPORE**
ID NUMBER: **TO175412**

OVERVIEW

Rising energy consumption and electricity costs pose significant challenges for businesses across all sectors, from light commercial operations to heavy industries. Moreover, sustainability has become a crucial component of corporate strategy. Electrical energy optimisation is not only about cost savings but also about resource conservation, power stability, equipment protection, and long-term sustainable development, making electrical energy saving a strategic priority for modern enterprises.

The technology owner has developed a transformer-based voltage optimisation solution to reduce energy consumption and billing costs, optimise electrical power supply, extend equipment lifespan, and lower carbon emissions. This technology allows electrical equipment to run at an optimal voltage level while keeping the current within the optimum range for best efficiency, providing an immediate and practical way to reduce consumption and deliver electrical energy saving results. Industrial Internet of Things (IIoT) is integrated within the equipment to capture data and users have 24/7 access to a cloud-based platform to

monitor, evaluate and make informed decisions on their power and energy usage as well as perform carbon reporting.

The technology owner is keen to collaborate with industrial partners such as building management, property owners, industrial facility management in manufacturing sectors, equipment builders, energy consultants etc. The technology is also available for licensing to OEM partners to further co-develop by integrating into building management systems (BMS) and other solutions.

TECHNOLOGY FEATURES & SPECIFICATIONS

Key features of this solution include:

- High efficiency of over 99% with minimal inherent consumption and losses
- 6–12% reduction in power consumption and electricity bill
- Improve the quality of overall electrical power supply
- IIoT-enabled, with integrated smart sensors and cloud-based data communication
- Real-time remote energy monitoring, analysis, and evaluation via a 24/7 on-demand platform
- Compact design with a less than 0.72m^2 footprint (space-saving)
- Easy to install
- Customisable capacity
- Low maintenance requirements

POTENTIAL APPLICATIONS

The digital voltage optimisation system is applicable for both commercial and industrial applications, especially industrial sectors with energy intensive equipment like motors, heating and cooling apparatus. The potential applications include but are not limited to:

- Commercial buildings (hotels, shopping malls, supermarkets, office buildings, restaurants, etc)
- Industrial facilities (factories, warehouses, chemical plants, fabrication plants, cleanrooms, etc.)
- Other infrastructure (airports, hospitals, MRT train stations, sports complexes, institutes, etc.)

UNIQUE VALUE PROPOSITION

The patented technology offers the following unique features:

- Delivers power metrics to a dedicated platform for monitoring and reporting
- Short ROI period of 18–24 months
- Improves overall electrical system efficiency
- Increases electrical equipment lifespan
- Reduces electrical bills without affecting operations
- Lowers carbon footprint towards Net-Zero target