

TECH OFFER

Digital Operation and Maintenance Management Solution for Smart Buildings



KEY INFORMATION

TECHNOLOGY CATEGORY:

Green Building - Sensor, Network, Building Control & Optimisation

Energy - Sensor, Network, Power Conversion, Power Quality & Energy Management

TECHNOLOGY READINESS LEVEL (TRL): **TRL9**

COUNTRY: **CHINA**

ID NUMBER: **TO175140**

OVERVIEW

The rapid development of digitalization is transforming the construction industry, addressing critical challenges such as high energy consumption, elevated management costs, and low operational efficiency. Traditionally, the industry has focused on construction while neglecting operations and maintenance (O&M), relying heavily on manual operations and human experience. These outdated methods are increasingly inadequate for meeting the current demand for smart buildings. Intense competition and high costs have rendered traditional models uncompetitive. Consequently, smart O&M has become essential for improving efficiency, reducing costs, and enhancing service quality in the building and construction industries.

The technology owner has developed a full-chain solution that integrates software and hardware, based on their Artificial Intelligence of Things (AIoT) core technology. This solution covers all aspects of building O&M, from underlying hardware devices to upper-level software, intelligent algorithms, and platform services, offering a one-stop solution for various application

scenarios. Covering the entire lifecycle of building electromechanical design, construction, operation, and maintenance, it facilitates the digital and intelligent transformation of both new and existing buildings. Additionally, comprehensive low-carbon and energy-saving solutions are provided to maximize the value of energy assets. Supported by digital twins and AI intelligent algorithms, and leveraging a digital platform, the technology owner delivers smart and green solutions to achieve efficient, low-cost, and low-carbon building operation and management.

The technology owner seeks collaboration opportunities and partnerships with building portfolio owners and solution providers interested in digital upgrading, energy management, and O&M automation.

TECHNOLOGY FEATURES & SPECIFICATIONS

The digital O&M management platform comprises five main modules: cockpit management system, equipment management system, energy management system, O&M management system, and data asset management system. Each module includes multiple sub-modules that can be customized or combined according to customer requirements. Key features of the solution include:

- **Digital Twin and 3D Visualization:**
 - To create a precise replica of the building based on a lightweight Building Information Model (BIM)
 - To optimize multi-level management from the exterior and interior of the building
- **Data Visualization for Real-Time Management:**
 - To assist building owners in promptly managing real-time operational data, energy consumption and environmental data, and other status of building equipment
- **AI Decision System and Algorithms:**
 - To collect energy data for utilities such as water, electricity, and gas
 - To automatically optimize energy consumption by integrating AI decision control systems and smart frequency conversion control algorithms
- **Lifecycle Management and Predictive Maintenance:**
 - To track the full lifecycle records of equipment, including operation, maintenance, repair, and inspection
 - To enable predictive maintenance for key equipment to prevent operational losses

POTENTIAL APPLICATIONS

This intelligent operation and maintenance solution is ideal for a wide range of building environments, such as smart buildings, campuses, hospitals, commercial real estate, manufacturing facilities, and smart cities in need of digital upgrades or smart energy management. It is suitable for both new and existing buildings. The solution can be implemented at the level of individual buildings and scaled up to cover entire regions or cities, regardless of geographical scale.

UNIQUE VALUE PROPOSITION

- **Full-chain Solution:** from hardware, software to platform service
- **Flexibility:** able to deliver diverse and customized solutions by integrating various models
- **Scalability:** applicable to singular building and expandable to cover an entire city