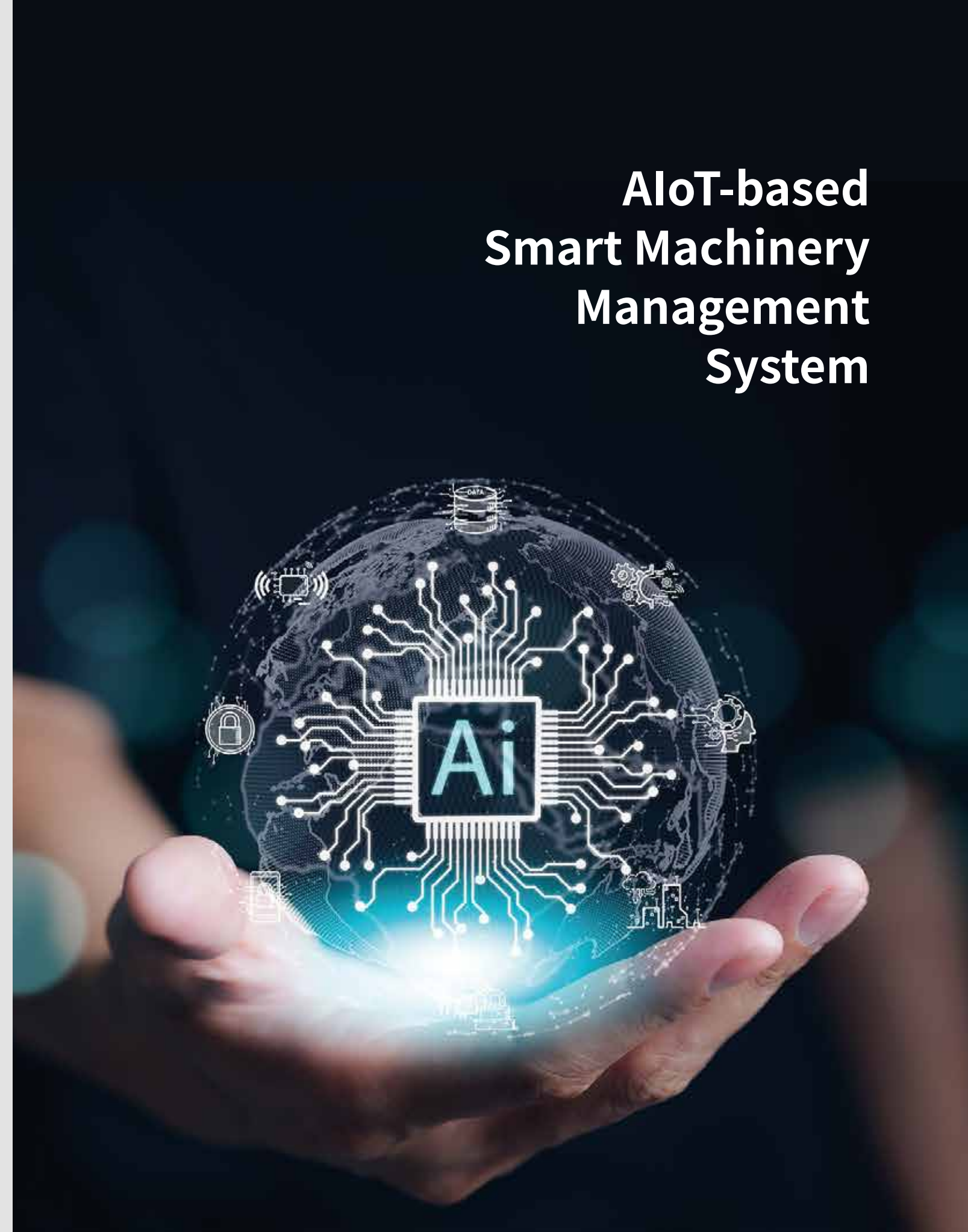


AIoT-based Smart Machinery Management System



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01

Introduction to AIoT-based Smart Machinery Management System

Experience the smart machinery management work that detects even the slightest issues in equipment in advance with the AIoT system

AIoT Machinery Predictive Maintenance System

Importance of AIoT Predictive Maintenance

Precise Diagnosis: Precise diagnosis through objective algorithms.
Fault Prediction: Preventing major breakdowns through anticipatory measures based on fault prediction.
Increased Work Efficiency: Maintenance time reduction through remote savings.

Features of the System

Monitors every condition of the equipment, even minor changes, in real-time.
Predicts breakdowns and anomalies in advance through AI analysis.
Automatically activates response mechanisms when a problem occurs.

Creating a Safe Working Environment Through AIoT Predictive Maintenance System

In modern industrial settings, safety is a core value that takes precedence over everything else. The AIoT Predictive Maintenance System has become a key partner in industrial safety.
The non-contact remote inspection feature allows workers to monitor the condition of equipment in real time without direct contact with the machinery. This capability is enabled by the diagnostic technology of AIoT. It analyzes various data generated by the equipment to quickly identify signs of anomalies, predicting and responding to failures or malfunctions in advance. Additionally, the technology includes continuous learning of data through machine learning, thereby enhancing diagnostic accuracy.
Such diagnostic technology of the AIoT Predictive Maintenance System prioritizes worker safety, significantly reducing the risk of safety accidents. This system plays a central role in forward-thinking safety management and is essential in the establishment of a reliable working environment.

Smart Maintenance System for Machinery

Smart Statistical Analysis Based on Big Data

Importance of Smart Machinery Management

Predicting the Average Lifespan of Components through Maintenance Statistical Analysis

Features of the System

Proactive Measures and Quality Control for Parts at Risk of Failure Based on Maintenance Data

All Equipment Management Information in One Hand

Integration of AIoT Technology and Smart Maintenance

The combination of innovative AIoT technology and smart management systems is changing the paradigm of equipment operation.
We enhance the business value of our customers with future-oriented technology.

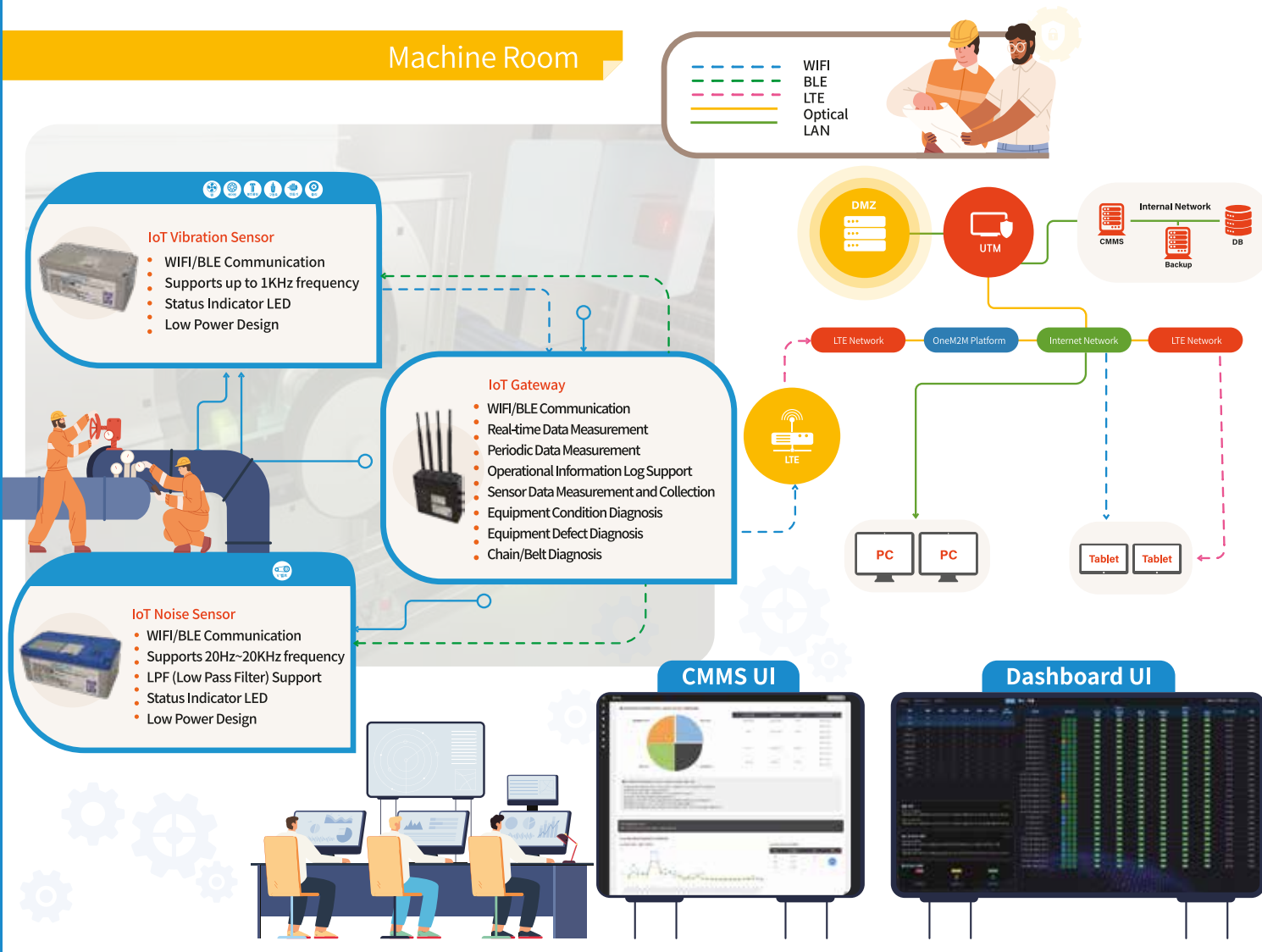
02

AIoT-Based Machinery Predictive Maintenance System

System Diagram

System Diagram and Equipment Location

Machine Room



2.1 Main Components of the System

IoT Sensors for Machinery Condition Diagnosis

IoT Vibration Sensor



Real-time Condition Edge Gateway



IoT Noise Sensor



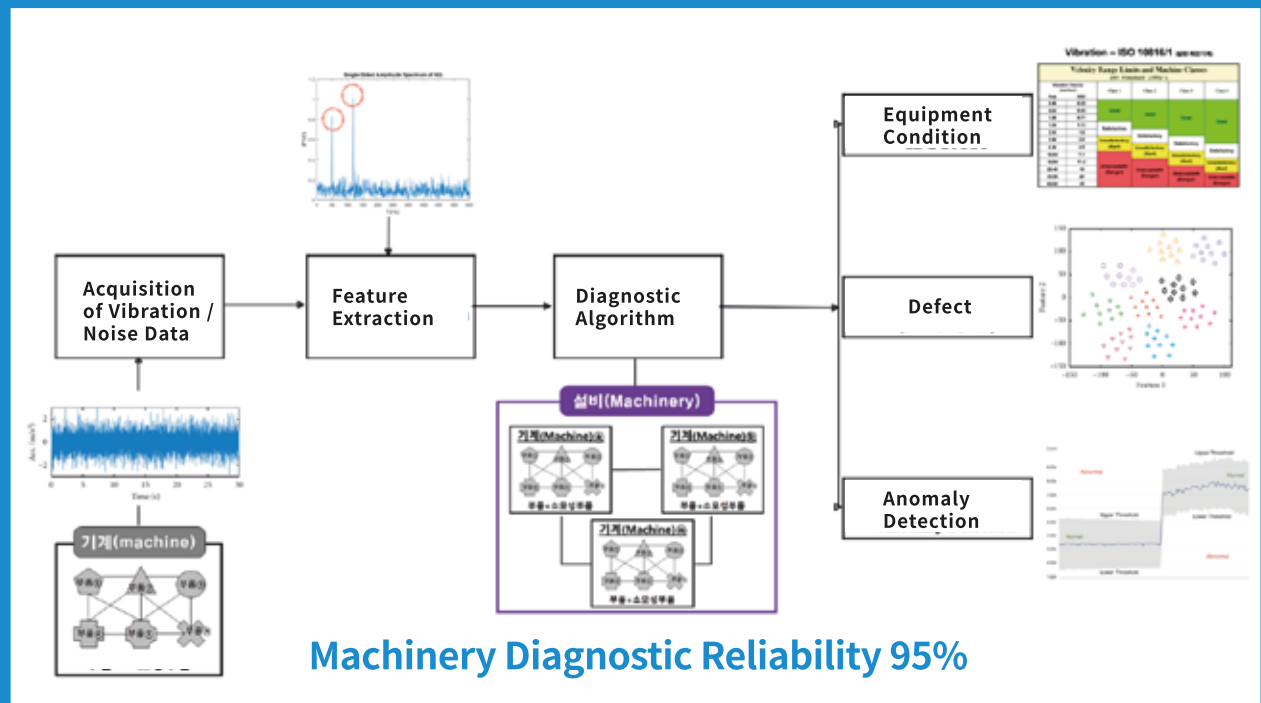
LTE Modem



Field Installation

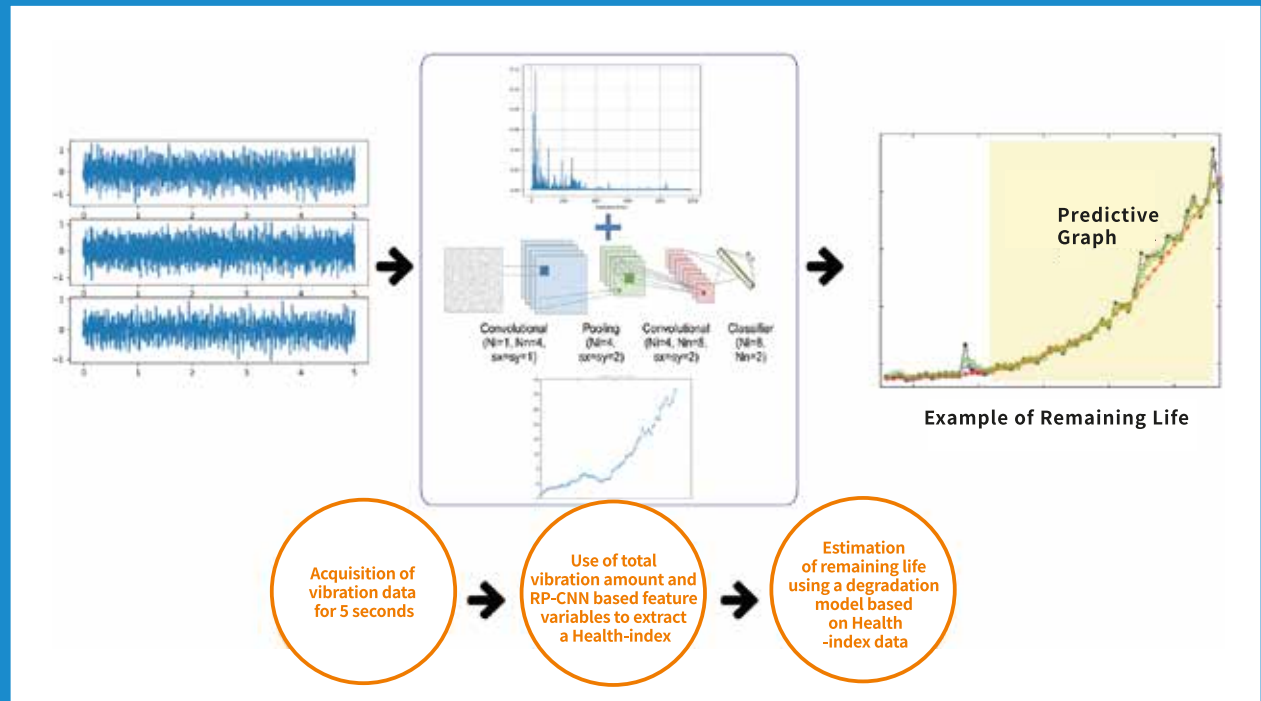


2.2. System Diagnostic Technology



Fault Prediction Diagnostic System using IoT Noise Sensor, Certification Num. 19-078148-01-1
Rotating Machinery Condition Diagnostic Software, Certification Num. 21-011224-01-1

Prognostics Software (installed on server)



2.3. System Operation IoT-based Machinery Condition and Fault Prediction



System Monitoring



Dashboard

Target Machinery for Diagnosis

Monitoring the current status of equipment, including condition status, alarm status, and inspection requirements

Querying equipment with IoT sensors installed, performing state diagnosis of equipment, generating and viewing diagnostic reports based on the results.



Machinery Inspection

Alarm Suspension

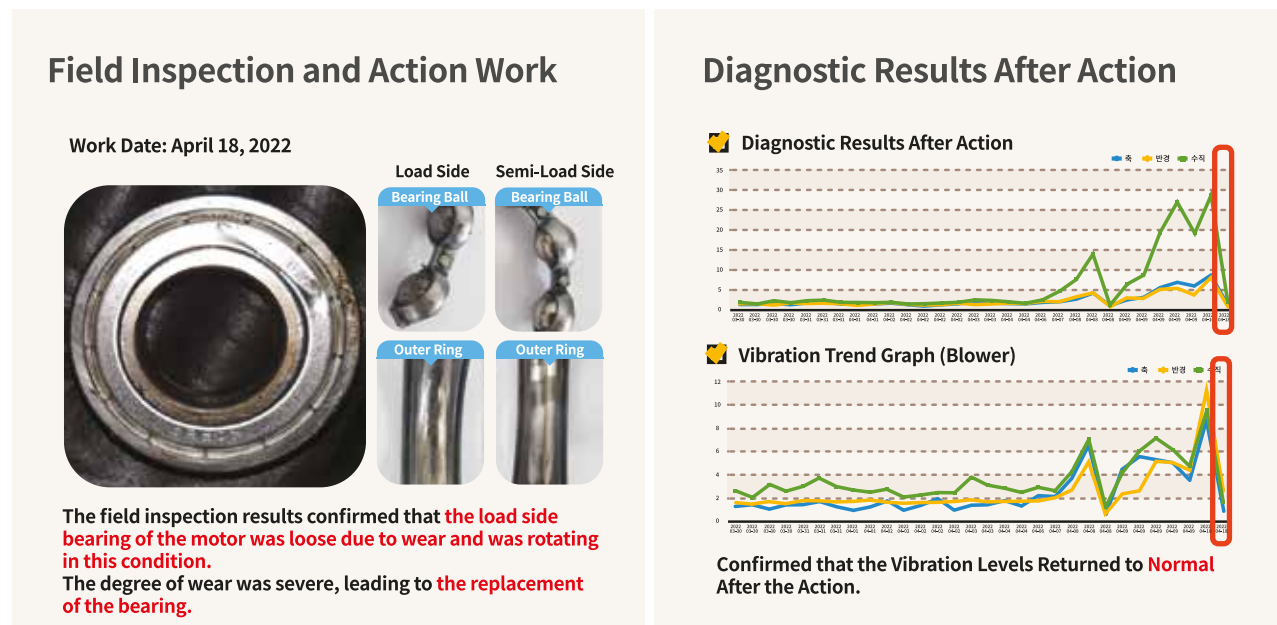
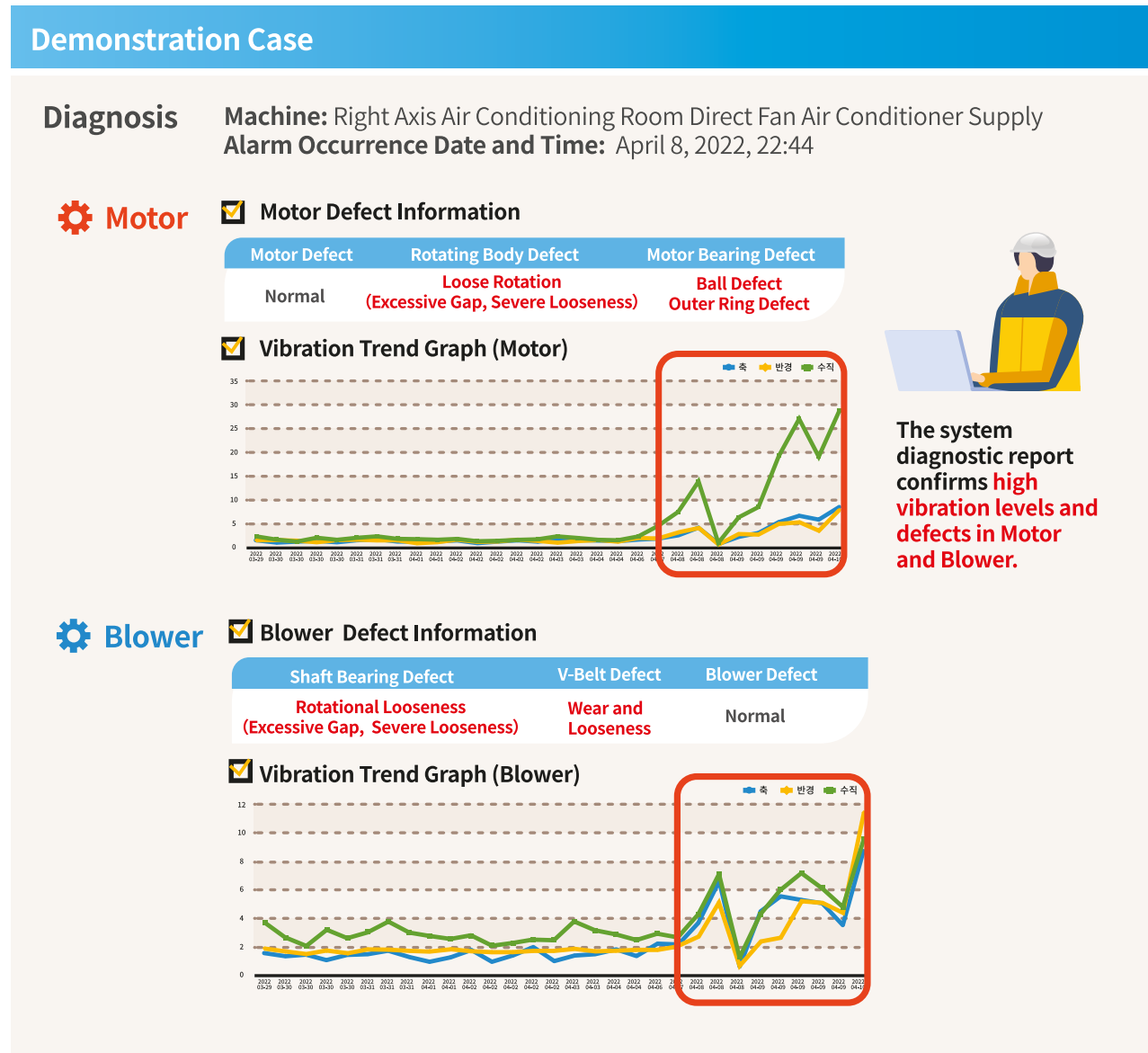
Inspection Tracking

Querying the alarm status of each equipment and detailed IoT alarm details.

Detailed query of equipment with alarm suspension settings.

Querying detailed IoT alarm details.

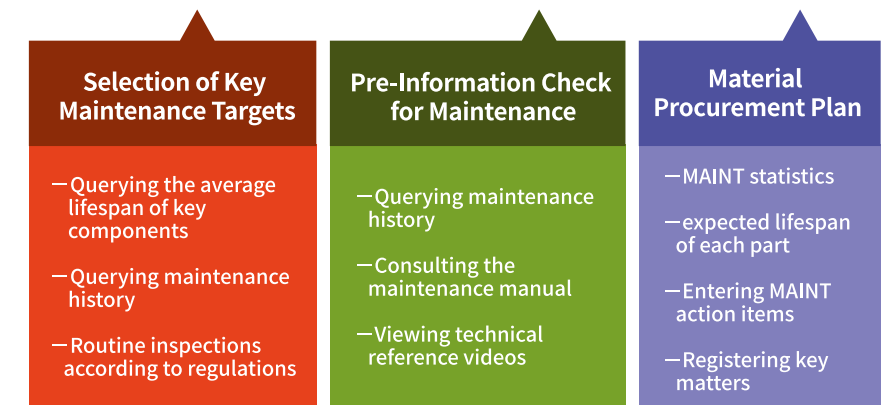
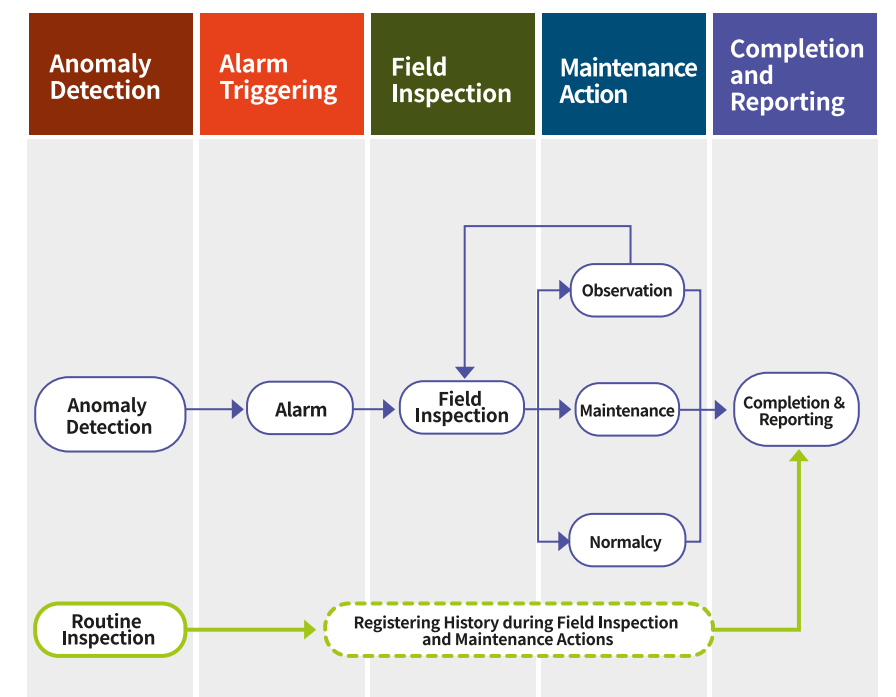
2.4 Operational Diagnostic Case



03

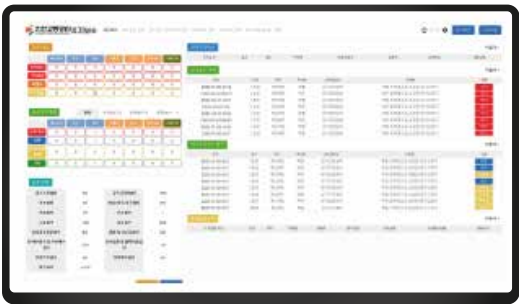
Smart Maintenance System for Machinery

3.1 Smart Maintenance Flowchart



3.2 Operation of Smart Maintenance System

Enhancing work efficiency through the establishment of a facility management system based on the Machinery Equipment Law and status management.



Maintenance Dashboard

Monitoring the current maintenance status of equipment, including inspection targets, maintenance history, and equipment requiring close observation.



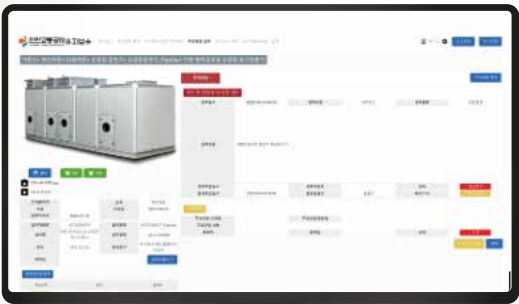
Maintenance Equipment

Detailed query of the entire list of managed equipment and equipment information, maintenance schedule, and querying equipment condition diagnostic reports.



Tracking Management

Detailed query of equipment with alarms triggered by IoT, fault reports, etc.



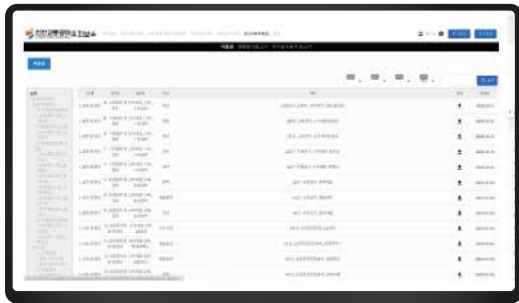
Observation

Register and manage equipment that requires continuous observation after field inspection completion, based on alarms or inspection schedules.



Maintenance History

Management of maintenance history performed by responsible personnel.



Reports & Data Library

Querying management data such as manuals, maintenance videos, and viewing maintenance statistics reports.

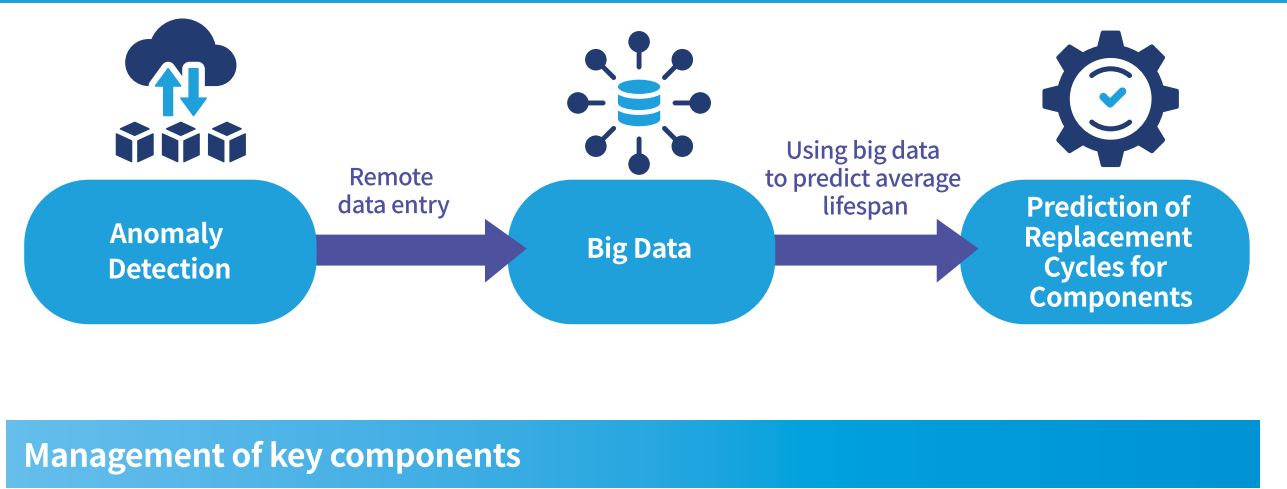


Settings

Managing equipment specification information, IoT device management, and system operation information

3.3 Operational Effect

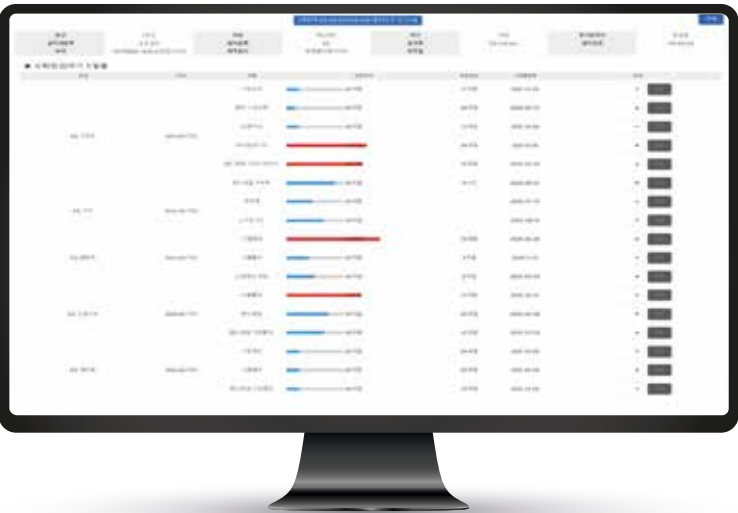
3.3.1 Proactive Component Management and Smart Maintenance through Big Data-Based Prediction of Average Lifespan of Key Components



Management of key components



Replacement cycles for each component



3.3.2 Systematic Facility Management through the Establishment of a Machinery-Based Management System

Machinery Equipment

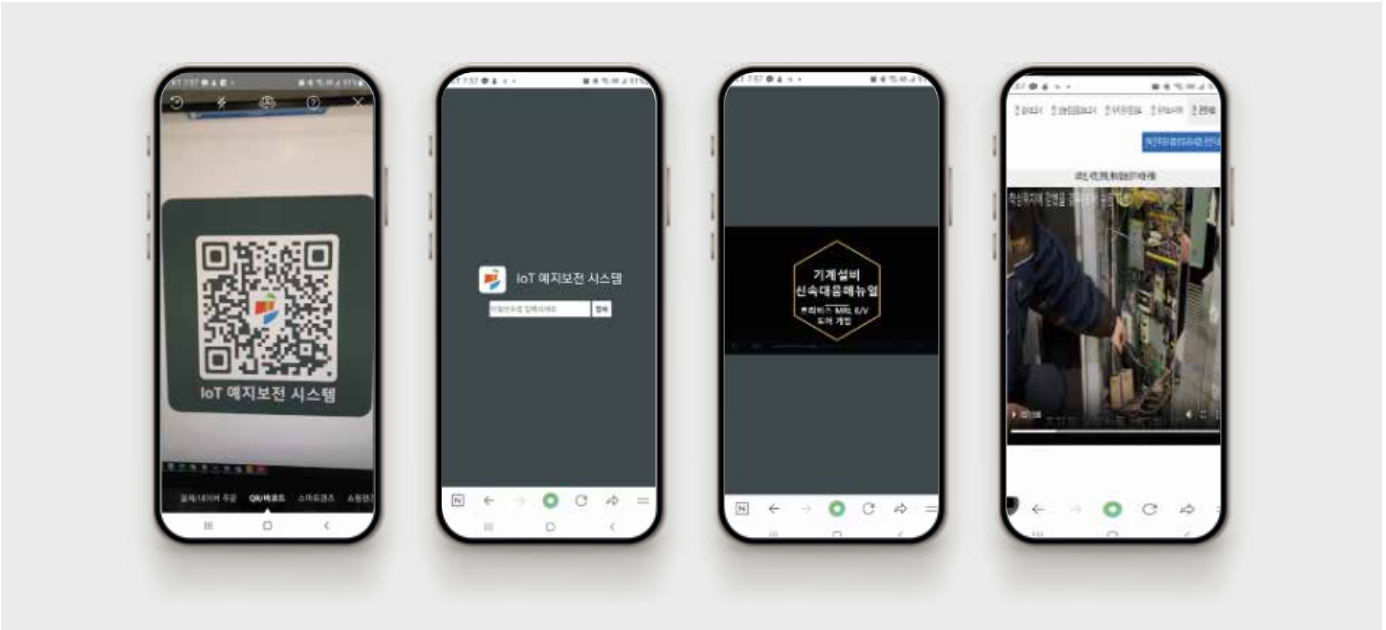
- Heat Source and Heating/Cooling Equipment
- Air Conditioning Equipment
- Ventilation Equipment
- Sanitary Fixture Equipment
- Water Supply and Hot Water Equipment
- Drainage, Ventilation, and Stormwater Drainage Equipment
- Sludge Purification and Water Reuse Equipment
- Piping Equipment
- Duct Equipment
- Insulation Equipment
- Automatic Control Equipment
- Soundproofing, Vibration Proofing, and Seismic Equipment

Non-Machinery Operation

- Elevator Equipment
- Elevator Safety Door Equipment
- Firefighting Equipment



3.3.3 Enhancing Work Efficiency through Remote Management Using QR Codes



04

Effectiveness of Introducing an AIoT-Based Smart Machinery Management System

Take a Look at the Heart
of Machinery Equipment.
AIoT Makes It Possible.

4.1 Ensuring Optimal Performance Through Stable Facility Operation

Securing Long-term Stability and Reliability

Guaranteeing continuous stability and reliability of facilities through a remote inspection system.
Strengthening long-term stability of equipment through prolonged monitoring and timely maintenance.

Reducing Failure Rates and Proactive Maintenance

Early detection of potential problems and proactive measures through real-time monitoring
Reducing failure rates and minimizing emergency repair costs and work stoppages through
a preventive maintenance approach.

Extending the Life of Machinery Equipment

Extending the life of machinery equipment with continuous monitoring and proper maintenance.
Maintaining long-term facility value by preventing early wear and tear and breakdowns of equipment.

4.2 Reducing the Risk of Safety Accidents Through Remote Non-Contact Inspection

Reducing Exposure to Hazardous Environments

Reducing direct exposure to dangerous chemicals and harmful working environments through
remote inspections.

Decreasing Accident and Injury Risks

Reducing the risks of accidents and injuries through non-contact inspections.

Improving Emergency Response

Immediate response to emerging issues through remote monitoring, enabling prompt emergency response.

Reducing Human Errors

Reducing subjective judgment-based human errors by providing accurate data through
sensor-based remote monitoring systems.

Technical Support and Consulting

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