



Forecast-based Wind Turbine Decision Support Service



Wind Turbine Smart O&M platform

<https://bywind.co.kr>

Achievements

We conduct R&D for system development and technology development for commercialization, sponsored by the Korea Institute of Energy Technology Evaluation and Planning (KETEP) and the National IT Industry Promotion Agency (NIPA) under the Ministry of Trade, Industry and Energy.

- 2018 ~ 2021 Development of Smart O&M Platform for WindTurbine — **KRW 5.78 bil.**
- 2020 ~ 2022 Development and Demonstration of Integrated O&M Service Solution for Digital-Based Offshore Wind Power Plant — **KRW 7.22 bil.**
- 2022 Development of a SCADA data-based wind power generation forecasting AI service — **KRW 300 mil.**

Distinctions from Conventional Technologies

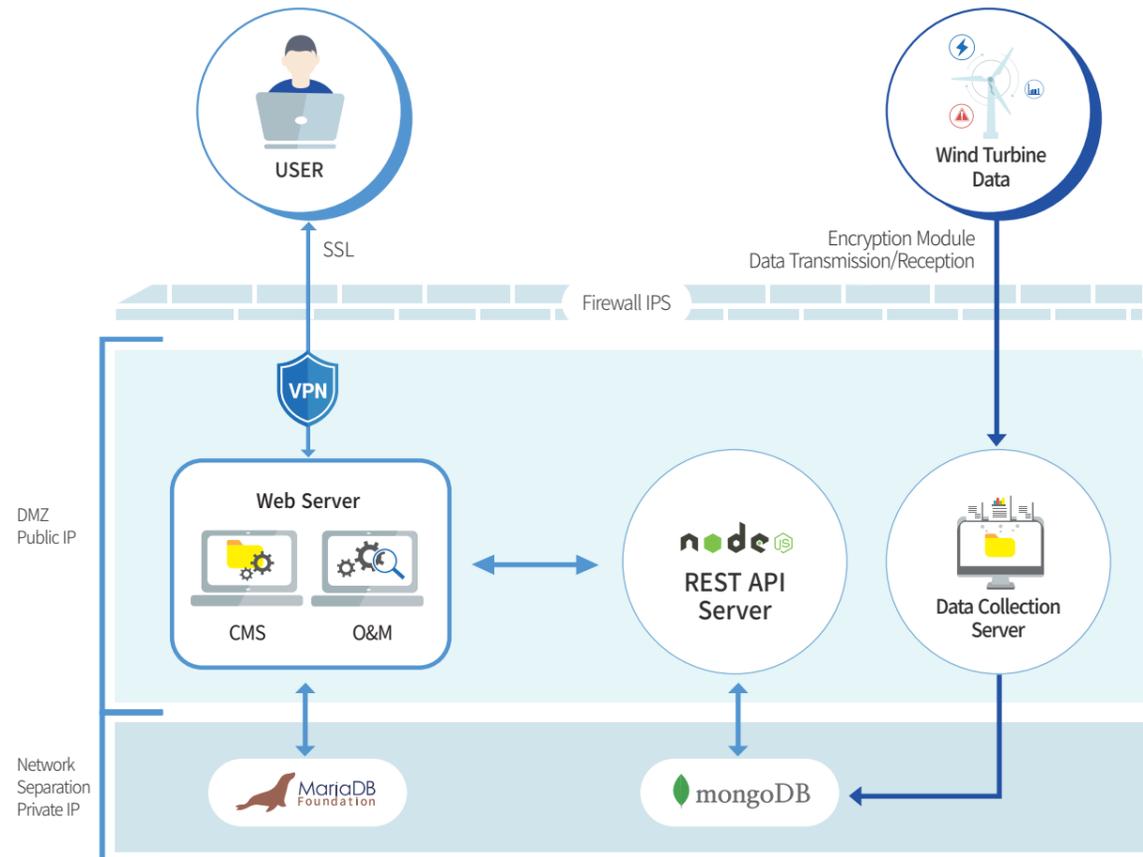
	Current Technology	ATWOM's Technology and Improvements
Data Management	- The conventional SCADA system gathers data every 5-10 minutes so that data linkage is poor (event data only accumulated).	- The SCADA-dependent data-gathering system upgraded, using open hardware (track record acquisition, big data management)
Construction	- On-premise system; closed and low scalability - Hard to sort personalization requested by the client	- Applicable to diverse wind turbines based on the strength of the platform 'universal modulation' - Supports system extension in a flexible fashion according to client needs - Able to respond to diverse hardware and cloud environments
Maintenance Support	- A maintenance support tool for workers not provided	- A remote field work management system developed, using a wearable smart device - Provides realistic educational materials after applying VR technology to such materials and manual for workers
Starting Time of Maintenance	- Hard to figure out when maintenance should be performed due to differences in ability to analyze and conclude the failure of parts among workers	- Offers a self-directed decision-making service through algorithm implementation after linking fatigue life management data with maintenance history after load and vibration measurements
Growth Forecast	- Forecasts primarily based on current and cumulative power generations	- Provides power generation and failure forecasts based on meteorological information and power turbine's SCADA data
Support Management	- Absence of wind power generation-related ERP	- Provides features needed for power generator makers, operators and maintenance service providers to purchase and manage parts and materials on the platform (the ground for a supply chain to enhance the competitiveness of domestic wind power industry established)
Maintenance History Management	- Offline management of maintenance history by manufacturer - Loss of time and money due to the inefficient maintenance process	- Expected to reduce maintenance costs by sharing maintenance information - Avoids unnecessary manpower input through a platform and reduces maintenance costs through parts supply and demand management throughout lifecycle

Operating Environments

We provide **security-enhanced operating environments** to protect important information and resources.

- Access via SSL VPN
- Access control according to network separation
- Power security services such as firewall and intrusion detection system (IDS)
- Data backup and replication, etc.

※ Security services are subject to changes depending on the terms agreed with the client and operating environments.



Introduction Effects

1. Reinforcement of wind farm and wind turbine management features

Provides services optimized for wind power generation facilities after customizing through system modulation according to client needs

2. Improvement of maintenance efficiency for workers

Offers quick decision-making environments according to the optimization of the logistics, inventory and maintenance plan

3. Decrease in power generation costs through the resources management system

Prevents system failure by tracing parts and components through analysis of their lifecycle and provides them according to the economic schedule

4. Sharing of safe inventory and system failure incidents

Able to refer to the previous data prior other maintenance operations

5. Strategic operation & maintenance optimization simulation

Offers a wind farm operation & maintenance cost forecast system

Patents

2019 - Integrated management platform system for wind power generation

2019 - Maintenance system and method for preemptive forecast based-power generation facility, by using data analysis indicators

2019 - Web-based wind power generation blade management system

2020 - Scheduler-based maintenance supporting O&M platform device for wind power generators

🇨🇳 Patent pending in China

2020 - Wind farm simulator in consideration of environmental impact assessment

🇻🇳 Patent pending in Vietnam

2021 - Digital technology-based integrated O&M service platform device for offshore wind farms, by using an analysis of wake effect and farm control simulation

2021 - Smart watch-based integrated safety management system for field workers

2021 - Service provision system that supports the decision of vessel navigation for wind farm maintenance

2022 - Preemptive maintenance system for wind power generation

🇨🇳 Patent pending in China

Certifications

※ As of 2022

- TTA Good Software Quality Certification System **GS Level 1**

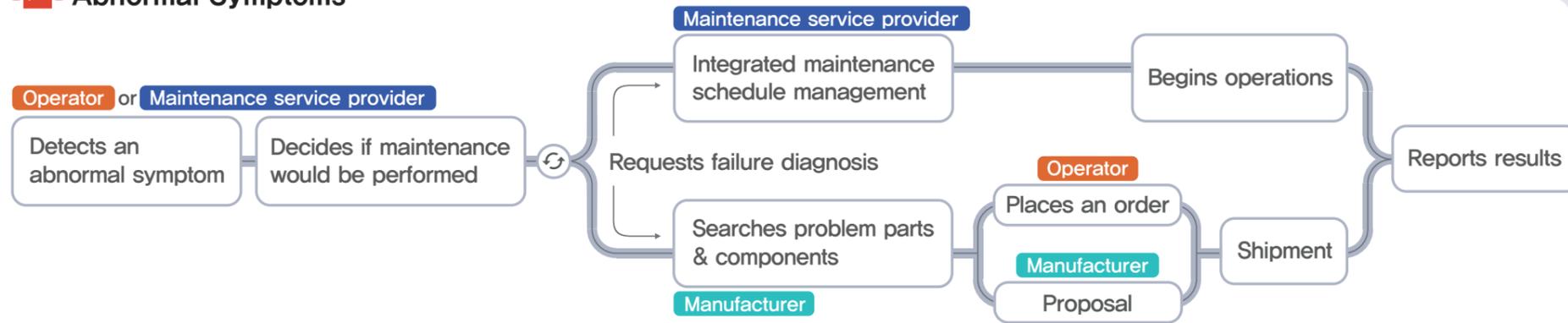
- 8th Korea Software Quality Awards **'Excellent Prize (TTA President's Prize)'**

- Successfully passed TTA Verification & Validation (V&V)

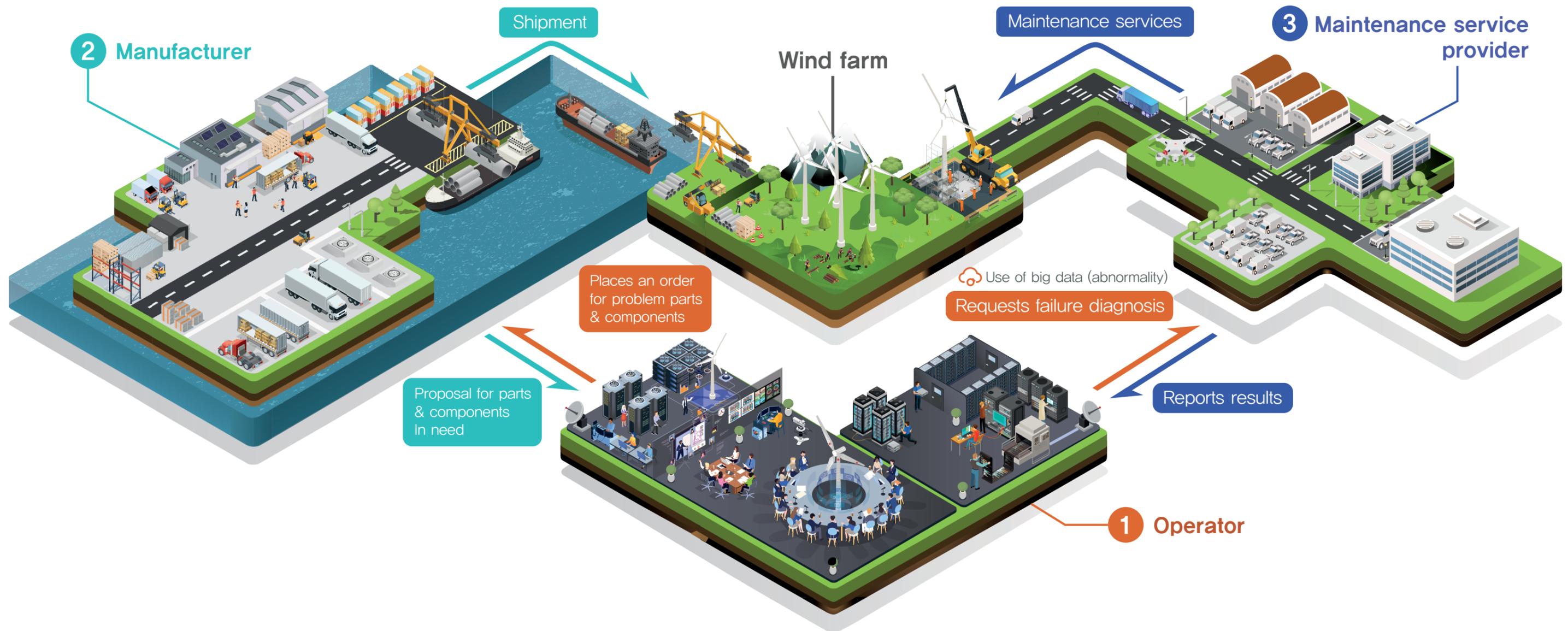
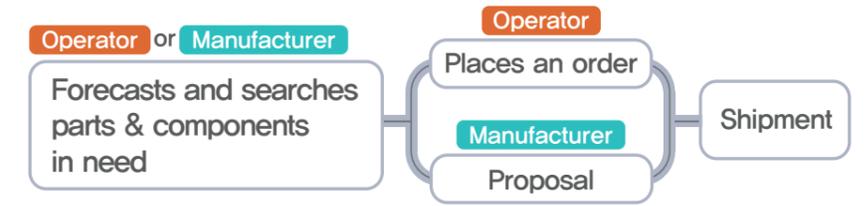
- Successfully passed KOTCA V&V

- byWIND and byWIND Plus SW research outcome listed (Korea Copyright Commission)

Abnormal Symptoms



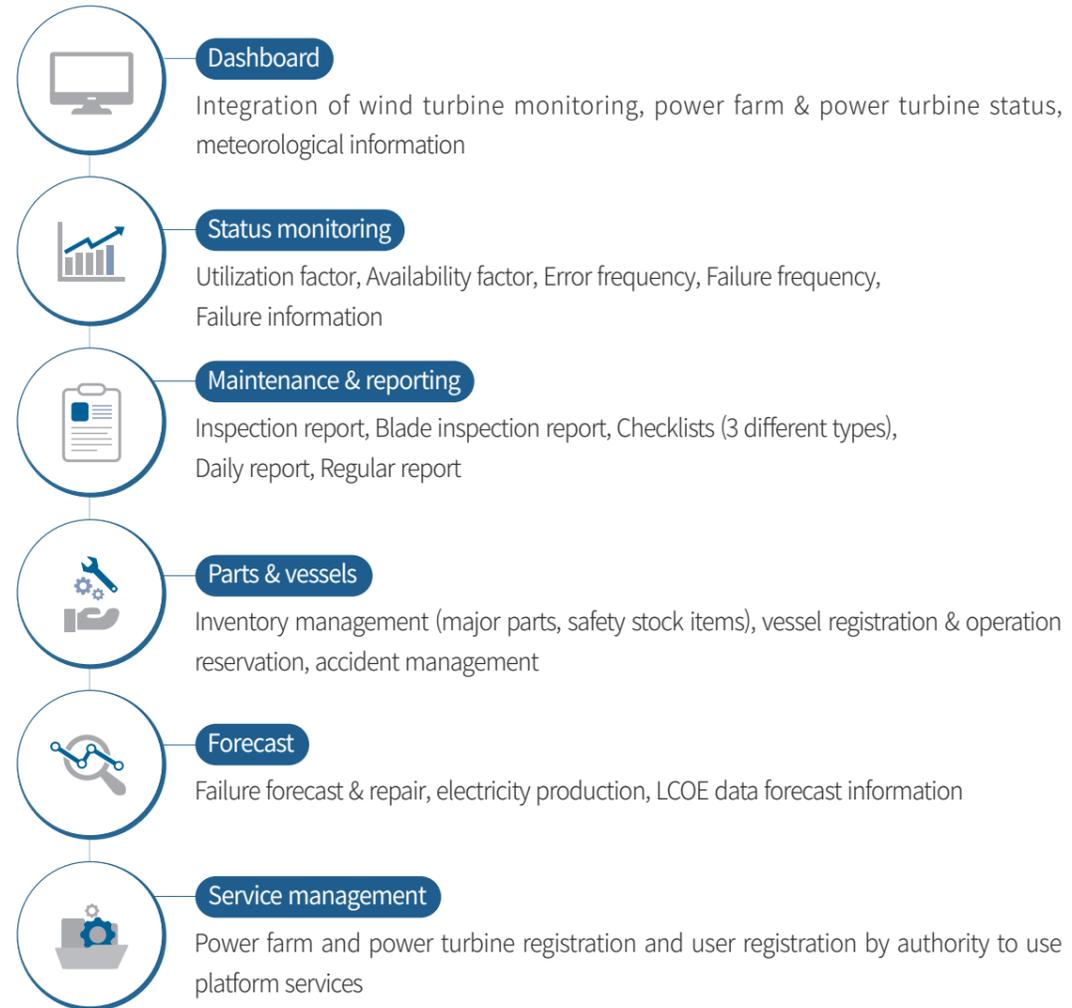
Supply and demand of parts & components in need



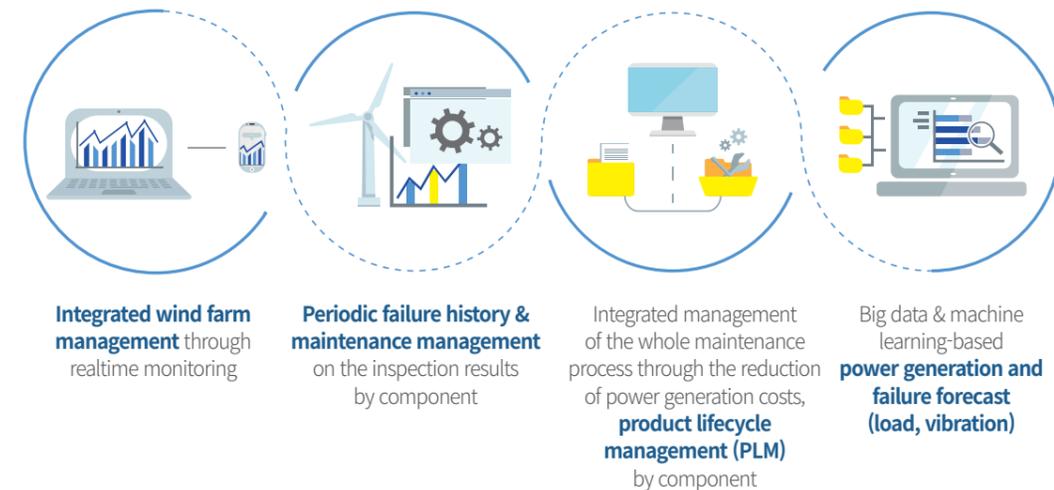
Characteristics of Services

We provide operation and maintenance services for the new & renewable energy generation system, providing diverse forecast information (e.g., electricity production, failure rate, maintenance cost estimation, etc.) based on the database accumulated by monitoring sensor & SCADA data and power generation in realtime.

Services



Advantages



ATWOM

was founded in 1998. Since then, we have gradually expanded our business to solutions, energy ICT and big data platforms based on public & research institute-centered information businesses.

#byWIND

#MG

#EMS

#EP

#MIS

#PMS

#BMS

#EIS

#Solution



Inquiry for introduction/demonstration : bywind@a2m.co.kr

We will send you the brochure, a site link and account information to the email address you provided.

