

Smart O&M Solutions

Plant Smartification with AI Technology



Contact Us

Technology Inquiries | Contact Us | JGC HOLDINGS CORPORATION

Access to Our Homepage

https://www.jgc.com/en/business/epc/operation-maintanance/service/

Plant Smartification with AI Technology

Do you have any of these issues?

- Lack of specific expertise for O&M improvement
- Decline in productivity due to plant aging
- Accumulated large amount of data but not being used
- Solution Content that the experience of senior O&M personnel is not shared well with other members of the team.

Why choose an Al Solution with JGC

Know your Process Design Extensive achievement in process engineering for various types of EPC project

Excellent Al experts

30+ Cases

Longstanding O&M Service Our team has wide knowledge and experience in O&M service

Multi-field Engineers Our engineers can propose AI solution with multiple fields including process, pressure vessels, rotating equipment, static equipment, electrical, instrumentation, HSE, etc.

Various Types of Facilities

Extensive successful experience in providing AI solutions and well-developed implementation methodology.

Prediction of catalyst degradation, Digital systemization of O&M, Equipment Failure Prediction System...etc.

Oil Producing, Power Plant, LNG Plant, Chemical plant, Space station, Waste treatment plant...etc.

© 2025 JGC CORPORATION

Plant Smartification with AI Technology

Our Solution



Visualize plant operation data to intuitively determine operating conditions



Anomaly Detection Quickly detect abnormalities and analyze causes to prevent any unforeseen events and trouble



Predicts age-related deterioration of catalysts, solvents, etc., and suggests
optimal replacement times.



Incorporating external factor such as climate data into operational data analysis to improve productivity





Trace the process determine the cause Time-dependent catalyst deterioration

Our Approach



© 2025 JGC CORPORATION

Enhancing planetary health



(1) Issue

- 😒 Equipment clogging occurs frequently
- To clean the clogging, the plant had to be shutdown and resulting in a significant loss of production.
- Difficult to analyze the large number of operating conditions under which clogging occurs.

(2) Our Solution

- **Step-1** To develop AI model based on algorithms for LightGBM Classifier model to investigate operating conditions during clogging for the past 10 years
- **Step-2** The model calculates clogging in real time during operation and extracts operational factors (e.g., sensor values) related to blockages sequentially.
- **Step-3** Approximately 20 factors representing operating conditions that contribute to blockage were found. The top three factors were visualized as a three-dimensional plot. **(Fig. 1)**
- **Step-4** The result allows engineers to properly analyze the elements causing the clogging and develop an efficient solution.





(3) Client's Benefit

Improved productivity was achieved by operating to prevent clogging