



Operational Excellence Services

Smart O&M Solutions Piping Remaining Life AI Prediction



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Piping Remaining Life AI Prediction

Do you have any of these issues?

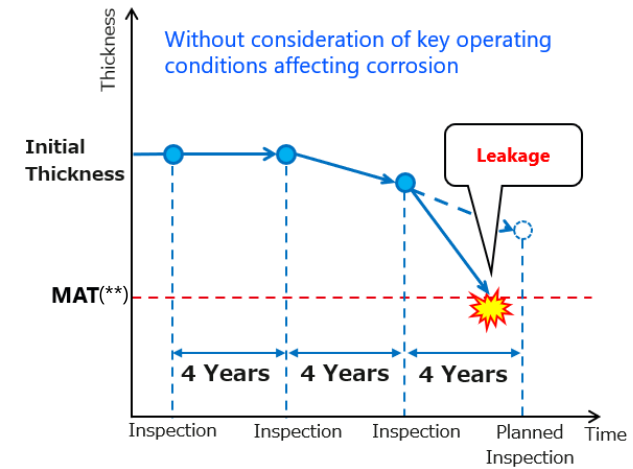
- **Unexpected incidents from piping corrosion**
- **Excessive inspection workload due to numerous TMLs (*)**
(Need to focus on critical locations)
- **Inability to reflect operating condition changes in remaining life**
- **Difficulty securing skilled personnel**

(*) Thickness Measurement Location

Conventional vs. JGC AI Method

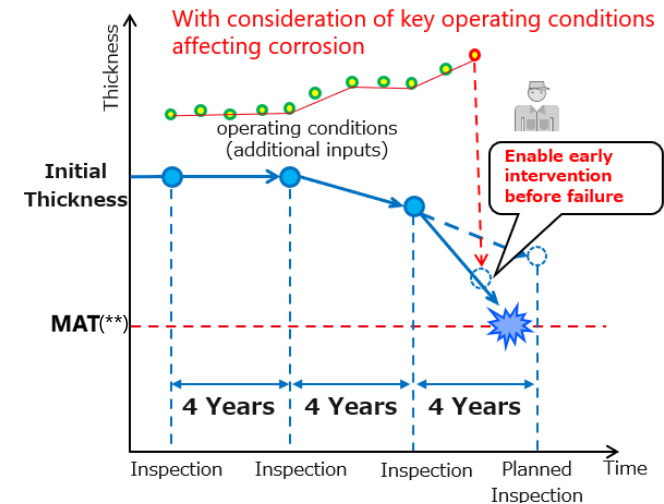
- **Conventional**
 - Based on past thickness data only
 - Static corrosion trend analysis
 - Inspection planning based on historical records
- **New AI Method (JGC solution)**
 - Combines thickness and operating data
 - Dynamic corrosion prediction
 - Data-driven, optimized inspection planning

➡ **Enabling proactive and optimized integrity management**



Conventional Prediction Methods

(**) MAT : Minimum Allowable Thickness



JGC AI-Driven Prediction Method

Piping Remaining Life AI Prediction

Continuous Improvement Through Lifecycle Operation

The system continuously improves accuracy throughout the plant lifecycle after initial development, through ongoing operation and periodic updates.

Development Phase

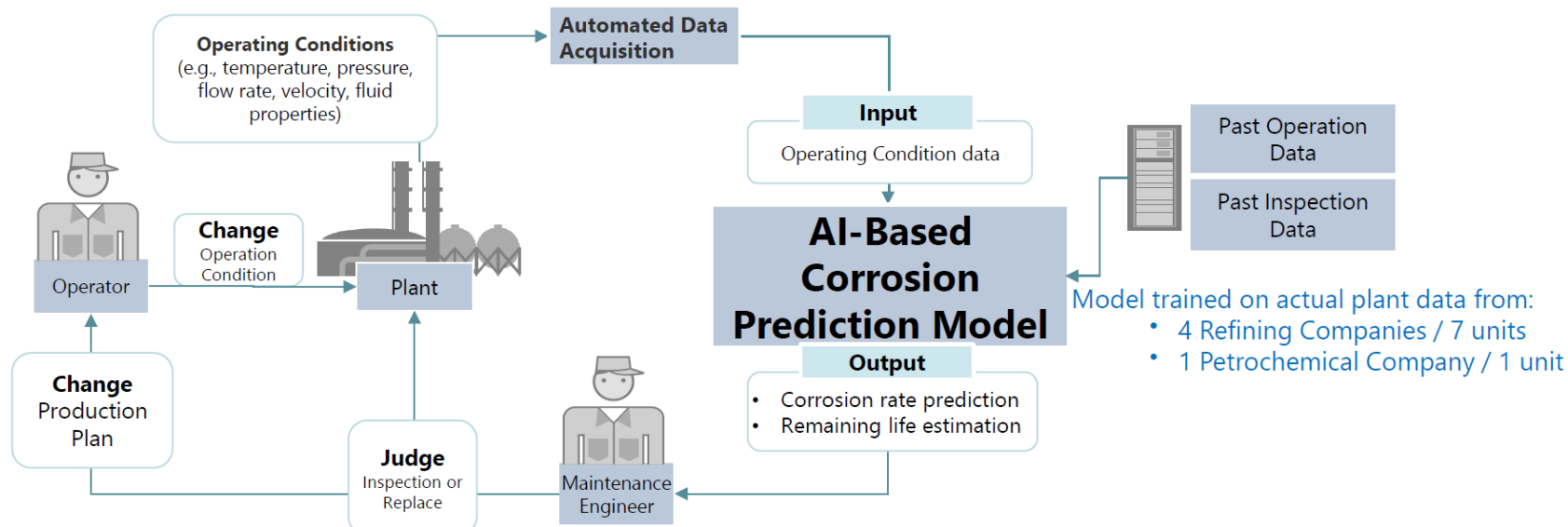
- Initial AI model training using historical thickness and process data

Operation phase

- Continuous prediction based on operating data (e.g., flow, pressure, temperature, pH)
- Model updated periodically with new inspection results (e.g., SDM)

User Benefits

- Condition-based predictions** under changing operating conditions
- Highly accurate decisions** regardless of experience
- Optimized operating conditions** based on corrosion behavior
- Preservation** and sharing of expert **knowledge**



Piping Remaining Life AI Prediction

Key Features

- **Daily Prediction**
 - Predict remaining life based on latest operating data (up to the previous day)
- **Planning Support**
 - Predict remaining life at specific future timings (e.g., next SDM)
 - Enables optimized inspection planning
- **Simulation**
 - Simulate remaining life under planned operating conditions
 - User-defined scenarios can be evaluated in advance

Pipe Internal Corrosion AI Prediction (Daily Prediction)

UTT-FLARE

M-15

UTT-CHEMA

E-111

M-18

M-07

M-08A

M-12

UTT-CHEM

M-23A

M-23B

M-21

M-20

M-09A

M-09B

M-09C

M-09D

M-09E

M-09F

M-09G

M-09H

M-09I

M-09J

M-09K

M-09L

M-09M

M-09N

M-09O

M-09P

M-09Q

M-09R

M-09S

M-09T

M-09U

M-09V

M-09W

M-09X

M-09Y

M-09Z

Result_All

Summary

Back

ST_No.	C.R_Medi mm	C.R_Max mm	API_C.R mm	R.L_Min year	State
M-01	0.02	0.04	0.03	27.5	■
M-01A	0.0	0.0	0.03	99.9	■
M-02	0.01	0.03	0.03	78.2	■
M-02A	0.05	0.05	0.03	50.6	■
M-03	0.01	0.05	0.03	47.2	■
M-04	0.0	0.0	0.03	99.9	■
M-05	0.0	0.0	0.03	99.9	■
M-06	0.0	0.0	0.03	99.9	■
M-07	0.0	0.0	0.03	99.9	■
M-08	0.0	0.04	0.03	83.7	■
M-08A	0.0	0.0	0.03	99.9	■
M-08B	0.0	0.0	0.05	99.9	■
M-08C	0.0	0.01	0.05	62.2	■
M-08D	0.0	0.04	0.03	17.6	■
M-09	0.0	0.03	0.03	58.3	■
M-09A	0.0	0.0	0.03	99.9	■
M-12	0.0	0.02	0.03	99.9	■
M-13	0.0	0.01	0.03	99.9	■
M-14	0.0	0.01	0.03	99.9	■
M-15	0.03	0.03	0.03	0.8	■
M-16	0.0	0.03	0.03	99.9	■
M-19	0.0	0.0	0.03	99.9	■
M-19A	0.0	0.0	0.03	99.9	■

Enable timely inspection of
critical TMLs upon alert

Alert

Click

Select Target Spool Drawing

L-0011

Download

Circle R.L.
(rs)
>=1.0
<1.0

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Enhancing planetary health