

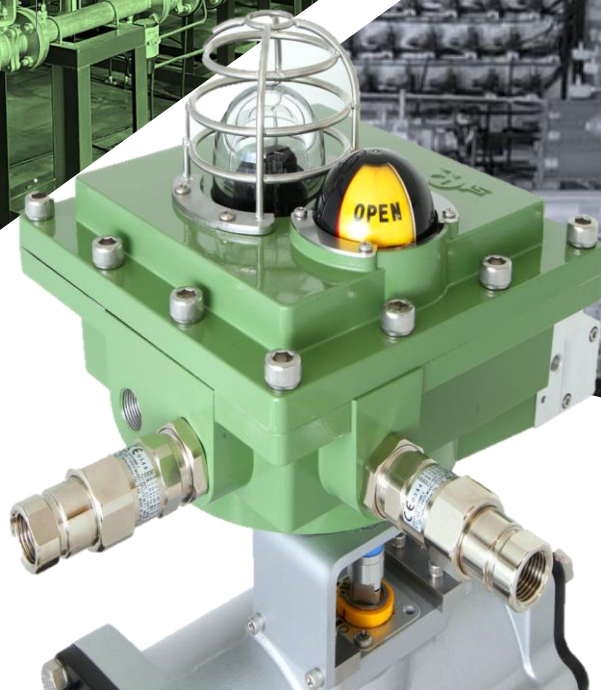
# The first official AI in the valve industry, proven by one million data\* in the practice of smart security.

IECEX/ATEX/JPEX Ex. proof certification planned.

# APOSA

AUTO PRO OPERATION BY SMART APPLICATIONS

Automatic collection of data of On-off valves,  
Status diagnosis and estimation by AI,  
Data visualization on the web,  
Abnormal notification via Mail,  
One-stop service supply for all functions.



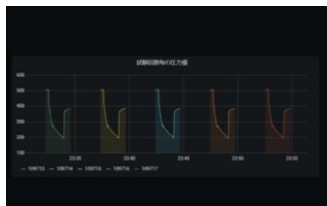
## 01 Valve state sensing

A smart device is capable to sense the status of On/Off valve and solenoid valve.



## 02 AI function application on cloud

Through the cloud, AI conducts such as leak prediction, torque estimation, state prediction, etc.



## 03 No required wiring Explosion-proof LTE communication

Using 4G/LTE communication, signal transmission is possible without cables even in a explosion-proof environment.



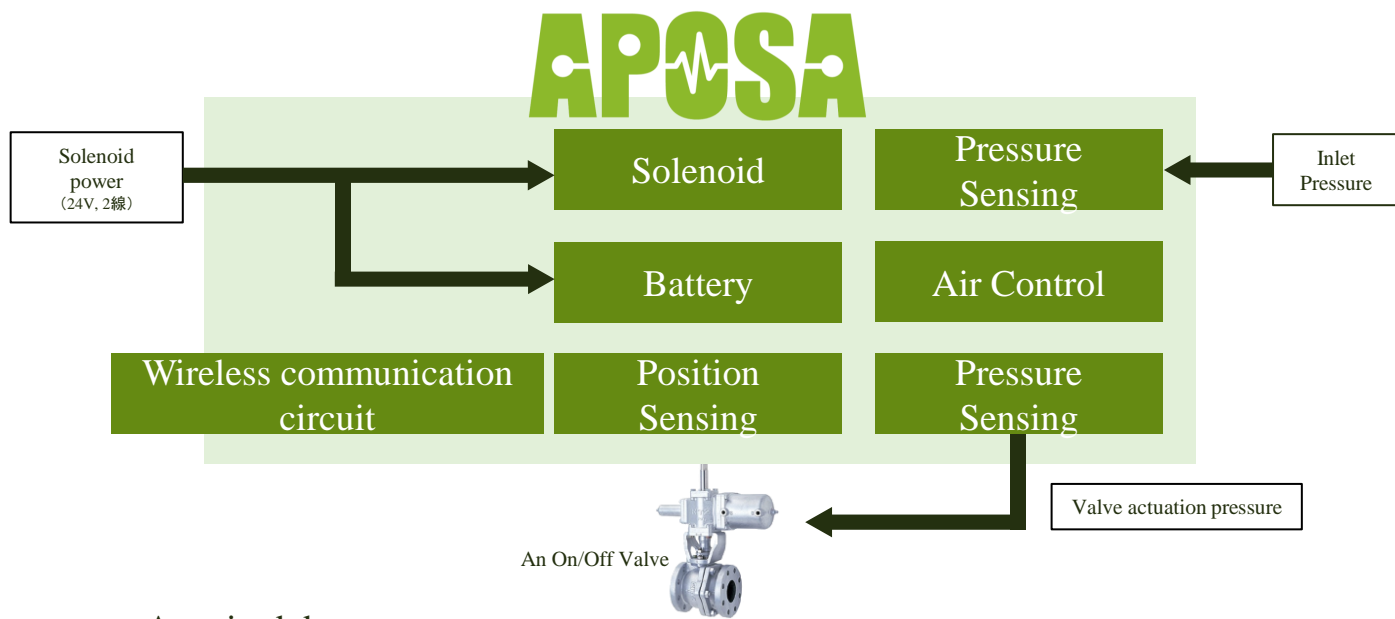
## 04 Labor cost saving. Smart security

Visualize on the Web and send abnormal notifications to e-Mail, Line to improve security efficiency.



Operation data has been collected from the experiment system in Vietnam Kaneko factory from 2019~2022.

# Features of APOSA



## Acquired data

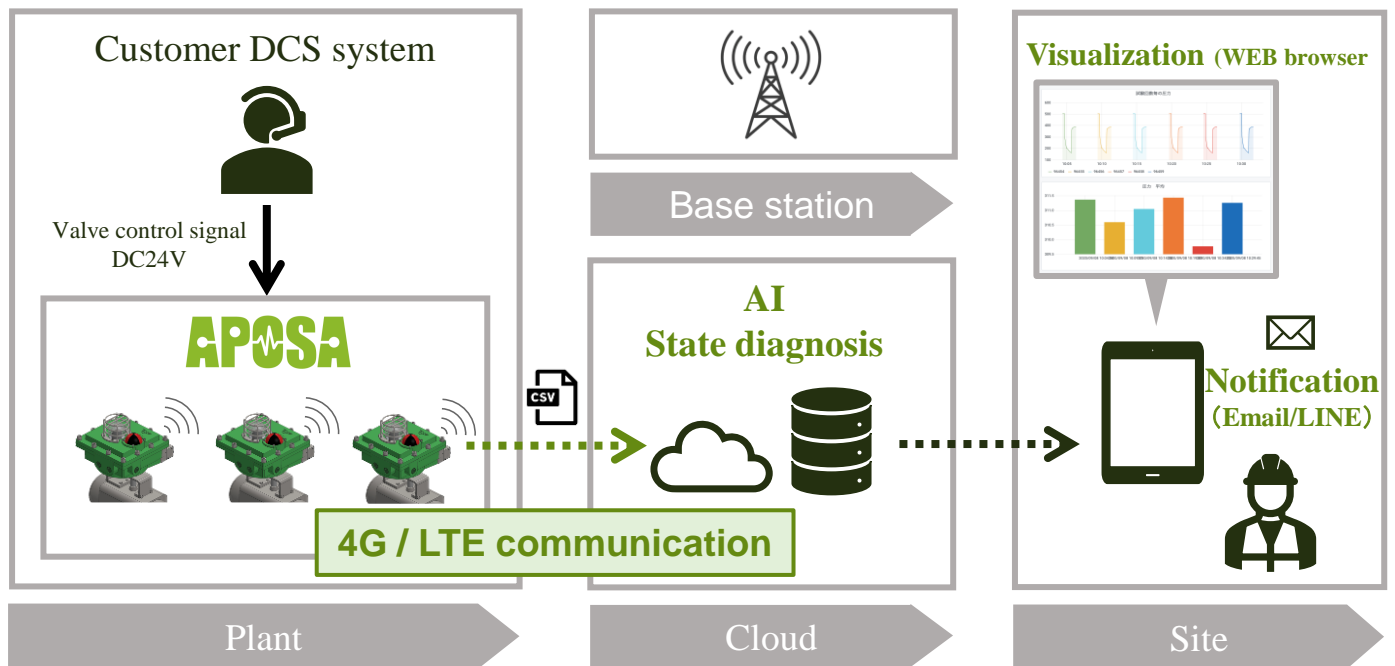
- Period: 10ms.
- Variables: acquisition time, valve opening, inlet pressure, actuation pressure, temperature, voltage, electric current.



## Additional features

- Aperture indicator
- ON/OFF micro switch

# APOSA Solution



- Receive control signal of DC24V from the customer's system to switch the valve on/off.
- Upload data from APOSA to cloud via 4G / LTE communication.

- Data acquired by APOSA and it is automatically synchronized to the cloud.
- Data is encrypted and stored securely in the cloud.

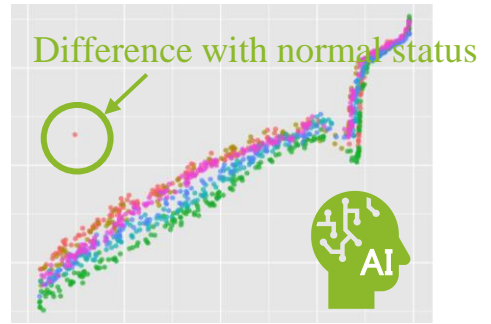
- In the cloud, the processing of predicting On/of valve status. Web Visualization, Abnormal notification, etc.

# Applying AI to predict abnormally

AI knew the feature of the valve's normal operating status.

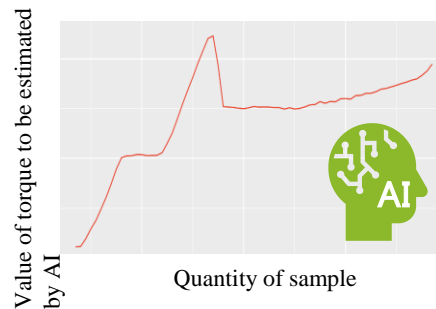
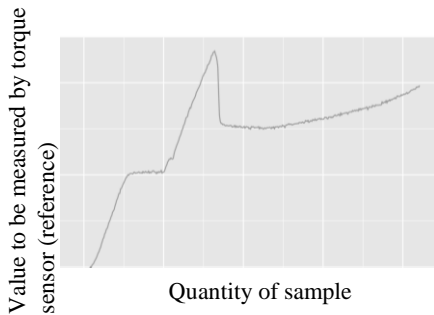


**Ability to detect 'abnormal status' which is NOT able to be recognized by the threshold value.**



# Applying AI to estimate the torque

Based on data of valve's operating status, AI conducts to estimates the valve torque during valve's operation.



**Without torque sensor, value of torque still can be estimated.**

# Maintenance \* daily report creating support function

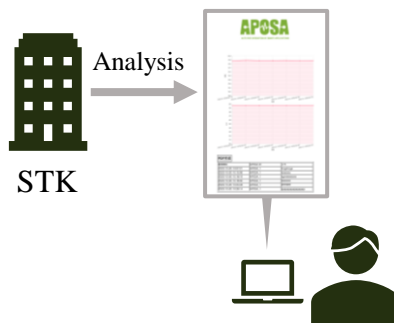
During on-site maintenance activities

**MEMO VOICE INPUT**



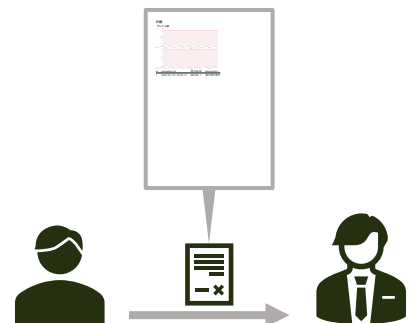
After maintenance activities

**APOSA data reference**



Leading to more efficient maintenance activities

**Daily report PDF creation**



- During maintenance activities, the intuitive voice input by evaluating based on the five senses of maintenance workers.
- Upload for time + documental data of voice + APOSA information to the cloud.

- Linked to APOSA operation data on the cloud and it can be viewed at any time on the web.
- STK also supports data analysis.

- Ability to create the daily report in PDF document format by converting voice documental data and APOSA operation data into the template which is specified by customer.

# Valve suitable specification to integrate APOSA

For application of APOSA, able to combine with the upper part of cylinder which has diameter of size from 15A to 150A.  
 ※Depending on kind of the cylinder, some kinds of cylinder can't be installed. Example as cylinder without mounting holes.

Cylinder Type	ON-OFF Valve	Diameter	Air working pressure
Single and double cylinder	Ball Valve	15A~150A (Cv=0.87)	0.4~0.7MPaG

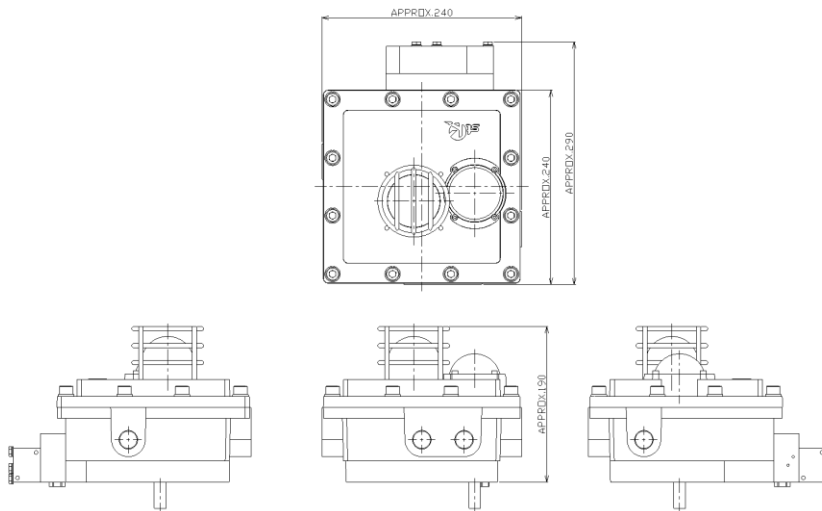
## APOSA—general specifications

Category	Specification
Power supply connection	M20*1.5 3 wired
Body material	Aluminum alloy
Rubber material	NBR/VMQ
Cv value (Flow)	0.87
Power supply	24VDC±10%
Valve spool pressure	0.3~0.7MPaG
Communication circuit power supply	Shared with solenoid power supply (DC24V)
Temperature Range	Normal type : 0°C~+60°C
	Ex. proof type : 0°C~+60°C
Humidity Range	5~95%RH Class 3K3

## Protection specification

Category	Specification
Explosion-proof Standard	Pressure-resistant Explosion-proof
	Japan: Equivalent to Ex d IIB+H2 T6 Gb
	IEC Ex: Equivalent to Ex db IIB+H2 T5...T6 Gb.
	Temperature Range: 0°C~+60°C(T 5)
	0°C~+40°C(T 6)
As per request of Ex. proof for each countries	
IP level	IP65

## APOSA external dimensions



## INQUIRY

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Agency