YASKAWA

Data that couldn't been seen
until now can now be...

Seen!
Collected!
and Understood!

i³-Mechatronics
New value with "i cube", digital data solution

Improved Data Detection Function
of Machine Controller MP3000 and AC Servo Drive Σ-7 Series

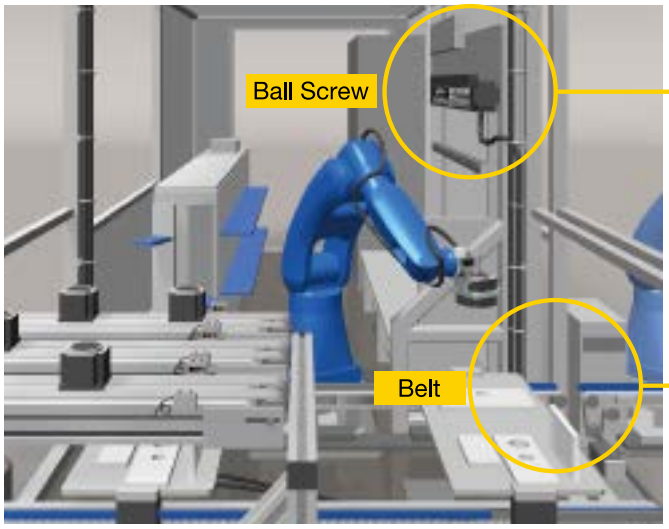
For introducing the IoT to customer production sites.
We can resolve big data collection and sensor installation problems.

MP3000 Σ-7

Big data detected from facilities or equipment can now be enhanced in terms of type, amount and accuracy.

By improving product data detection functions, we are now able to help customers resolve their data collection and sensor installation problems at their production sites.

Emergent Issues



- Malfunction period cannot be predicted
- Unexpected production line stoppage
- Increased costs due to need for specialized software and equipment
- Lack of space to equip sensors

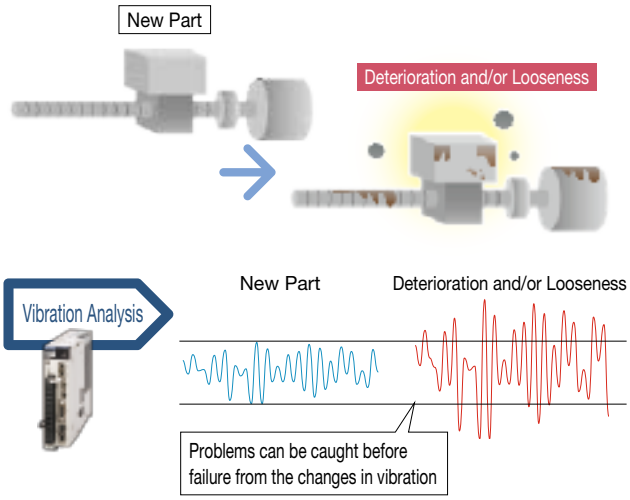
- Belt looseness causes positioning error
- The positioning error harms the produce equality

Solutions

Application-1 Ball screw preventive maintenance

New Functions Use of sensing data (Vibration monitor)

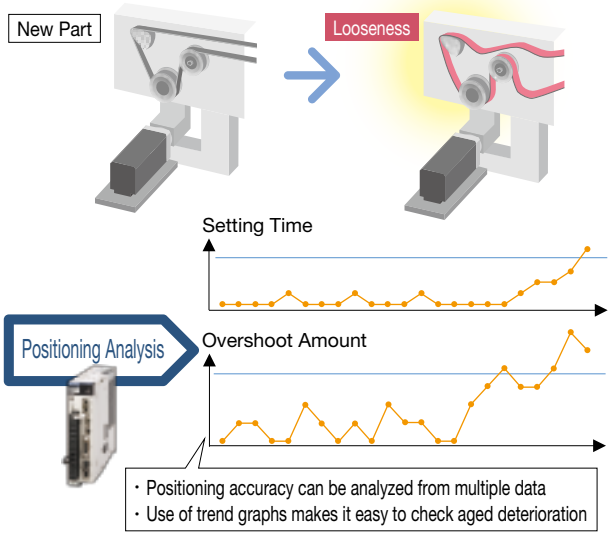
The vibrational component is ascertained by the SERVOPACK (amplifier) from the motor response to monitor the "estimated vibration". Users can then infer a ball screw failure from the changes in vibration so that the parts can be replaced before an actual malfunction.



Application-2 Monitoring belt deterioration by aging

New Functions Use of sensing data (Positioning monitor)

The SERVOPACK (amplifier) can perform primary analysis of positioning status from the motor response. The positioning "settling time" and "overshoot", passing the specified position are monitored in order to ascertain positioning changes.



Use servo drives as a sensor!

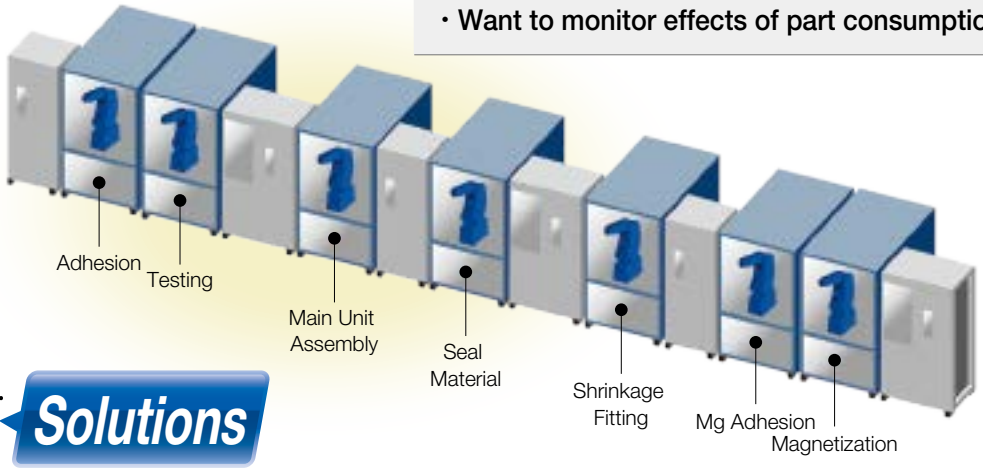
AC Servo Drive
Σ-7 Series

Use data logging function!

Machine Controller
MP3000 Series

Emergent Issues

- The types and amounts of data are insufficient for completely monitoring the entire equipment
- A fault occurs but it cannot be recreated when examined such that no countermeasures can be applied
- Want to monitor effects of part consumption and wear

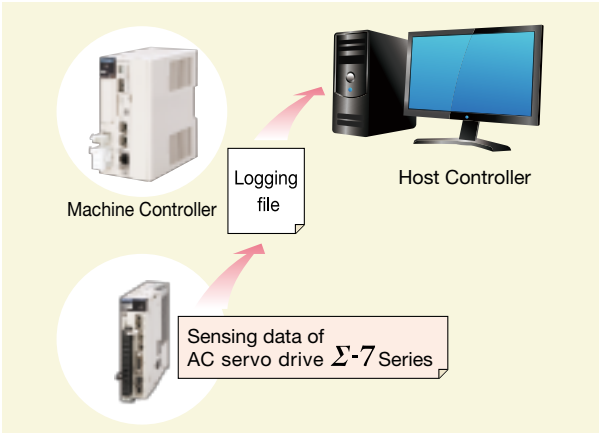


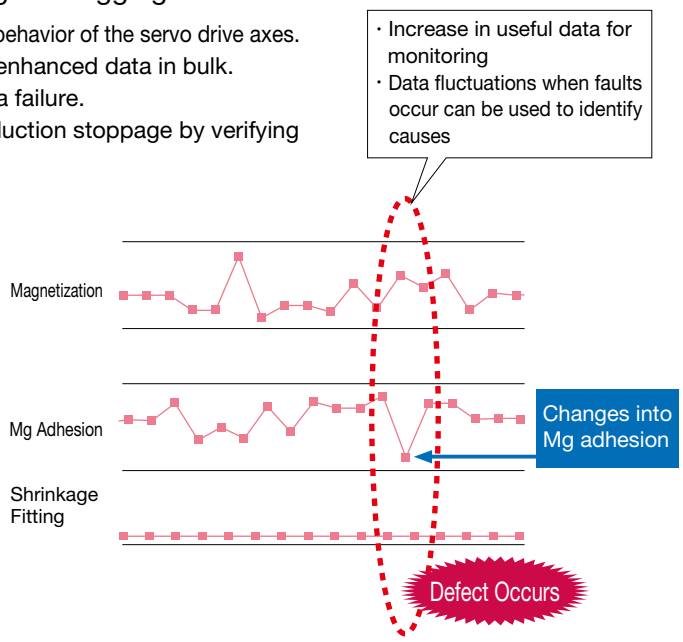
Solutions

Application-3 Monitoring of aged deterioration of equipment

New Functions Use of increased amounts of sensing and logging data

You can monitor production equipment status from changes in behavior of the servo drive axes.
Increased amount of data enables the collection of richly enhanced data in bulk.
You can trace back data when investigating the cause of a failure.
You can prevent defective products and unexpected production stoppage by verifying the accumulated data and product quality.





Features of improved data detection functions

AC Servo Drive
Σ-7 Series

Use servo drives as a sensor!

Increased number of sensing data types (monitoring functions)

Types of sensing data provided by the AC Servo Drive Σ-7 Series include vibration, external disturbance, positioning, communication quality and temperature data, etc.

Advantages

Various types of data can be collected without having to add sensors, enabling real-time detection of aged deterioration of equipment or changes in operating environment.

Sensing Data Type of Σ-7 Series

Classification		Sensing Data
Control	Vibration monitor	Estimated vibration Max. value of estimated vibrational amplitude
	Disturbance monitor	Estimated disturbance torque (thrust) Max. value of estimated disturbance torque (thrust) Min. value of estimated disturbance torque (thrust)
	Positioning monitor	Setting time Overshoot amount Residual vibration frequency
Environment	Communications quality monitor	Number of serial encoder communication errors Number of MECHATROLINK communication errors
	Temperature monitor	Servomotor overheating margin
Operational status	Operational status monitor	Max. value of accumulated load factor Overload margin

Machine Controller
MP3000 Series

Use data logging function!

Increased amount of logging data

Increased from 64 points ×4 groups to 256 points ×4 groups

Improved timestamping

Identification is possible using everything from second units to μs units (1/1,000,000th of a second).

Advantages

Richly enhanced data can be collected in bulk.

Aligning timestamps for multiple logging data enables analysis accuracy to be improved while facilitating cause identification.

Corresponding models and versions

Corresponding Product	Model	Supported Ver.
Machine Controller	MP3100	1.44 or later
	MP3200	
	MP3300	
Two-axis SERVOPACK with built-in controller	Σ-7C	1.09 or later (Only the enhanced data logging function is supported)
SERVOPACK	Σ-7S MECHATROLINK-Ⅲ	002C or later
	Σ-7W MECHATROLINK-Ⅲ	
Tools	YASKAWA Cockpit	1.0 or later
	MPE720 Ver.7	7.46 or later
	SigmaWin+	7.27 or later

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YASKAWA ELECTRIC CORPORATION

http://www.yaskawa.co.jp

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