

Use a machine that stays one step  
ahead of the competition

## ***Predict Failures*** with *Yaskawa's drive*

Predict potential  
conveyor failures



Detect filter clogging



Predict potential  
drive failures



Motor control

Something extra



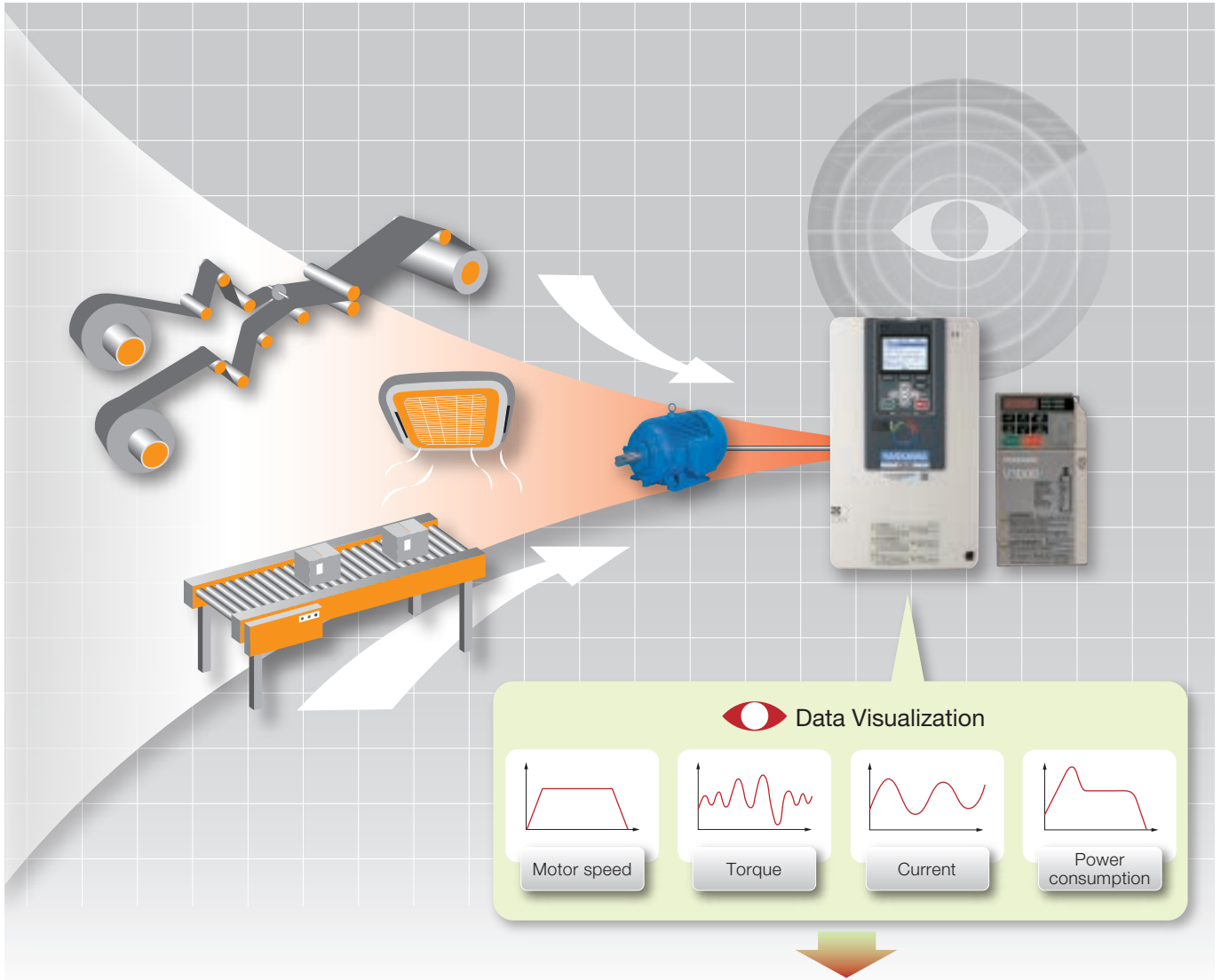
Machine failure prediction

## Monitor the state of machines

### Use visual data to predict potential machine failures

The drive and motor are important components in moving machines, but Yaskawa's drive does not simply control the motor.

They also visualize data to monitor the state of the machine and predict potential machine failures by detecting differences.

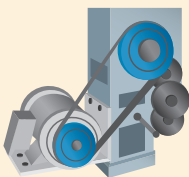


Realizing failure prediction based on the above data

#### Failure prediction in a variety of devices

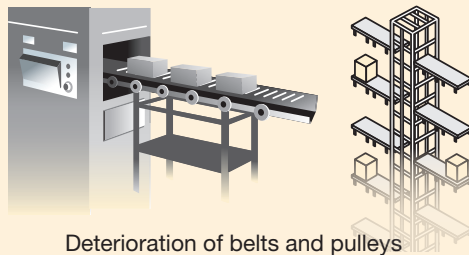
Many achievements have been recorded!

Belt drive



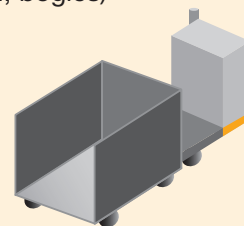
Deterioration of belts and bearings

Conveying equipment (e.g., elevators and conveyors)



Deterioration of belts and pulleys

Horizontal conveying equipment (e.g., bogies)

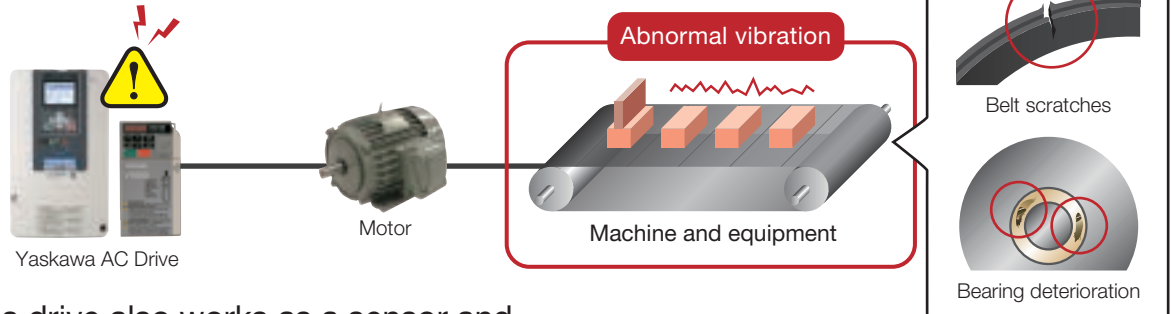


Deterioration of rollers



# Predict potential conveyor failures

Yaskawa's drive detects unusual torque pulsations (electric current ripples) caused by the deterioration of conveyor mechanical parts, such as the belt and pulley bearings. Users can diagnose abnormal signs while the machine is in motion.

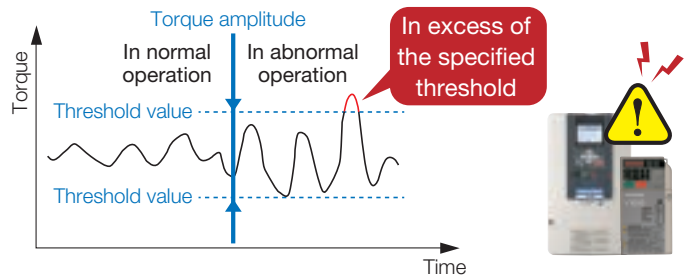


Yaskawa's drive also works as a sensor and eliminates the need for expensive sensors such as vibration pick-ups!



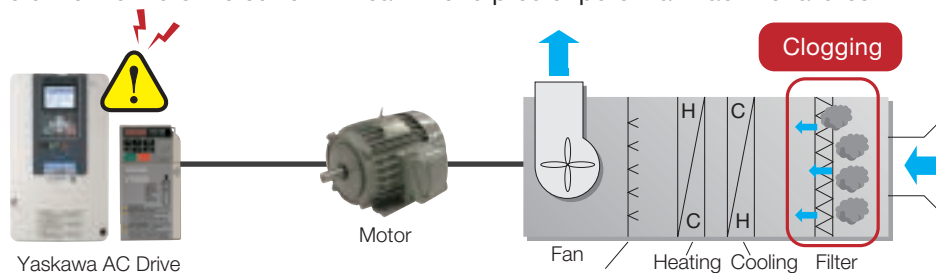
## Detecting abnormal vibrations

When the belt deteriorates, and the scratches on the belt come in contact with a roller, the vibration of the conveyor will be amplified. The alarm goes off when the drive's internal torque monitor detects the vibration change.



# Detect filter clogging

In fans or pumps, the current (power consumption) of the motor decreases as a result of clogging in filters and the accumulation of dust on the fan or pump. The drive monitors the current in real time to predict potential machine failures.

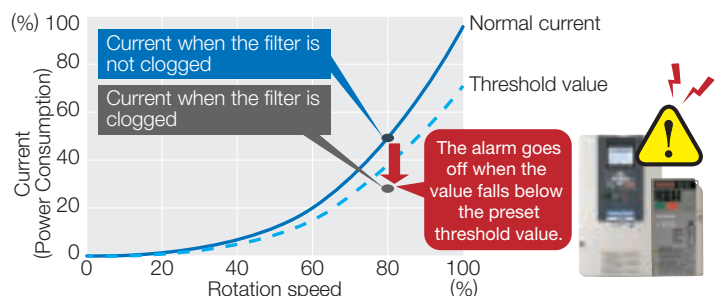


Yaskawa's drive also works as a sensor and eliminates the need for expensive sensors, such as air flow sensors!



## Detecting clogging

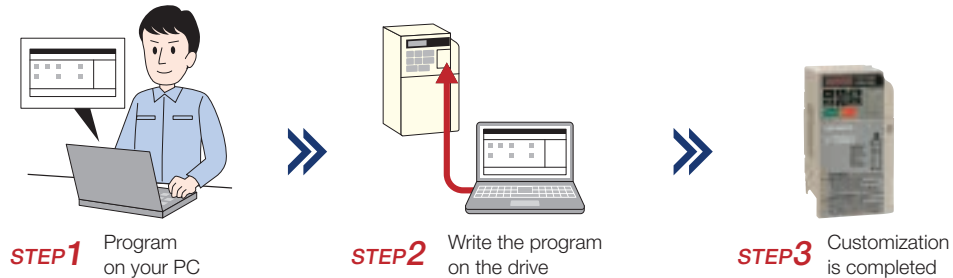
The power consumption of a fan is calculated from the wind force of the fan multiplied by the air volume. When the input filter is clogged, the wind force falls and the current decreases. The alarm goes off when the drive detects this situation using the power consumption monitor of the drive.



# Easy customization with the DriveWorksEZ programming tool!

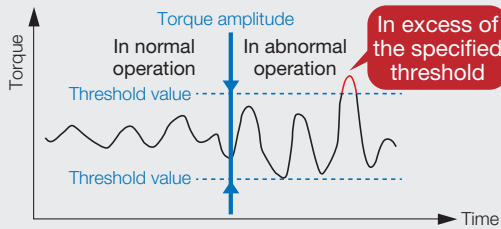
Predict potential machine failures by customizing Yaskawa's drive with the DriveWorksEZ programming tool. By installing Yaskawa's machine failure prediction program, you can introduce and adjust the DriveWorksEZ with ease according to your machine and equipment. (Make your request through your Yaskawa representative.)

## ■ Steps to customize the drive

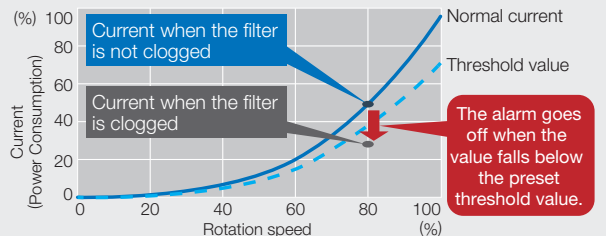


## ■ Failure prediction program (DriveWorksEZ)

### ◎ Detection of abnormal vibration of machine



### ◎ Filter clogging detection



## ■ Yaskawa's General-Purpose AC Drive Series realizes failure prediction.



## ■ DriveWorksEZ system environment

Item	GA700	U1000, A1000, V1000						
CPU	Pentium processor 1 GHz and above or equivalent	Pentium processor 800 MHz and above or equivalent						
Memory	1 GB or above	256 MB or above						
Hard disc space	500 MB or above	400 MB or above in the standard setup						
OS	Supports the 32-bit OS and the 64-bit OS Windows 10, Windows 8/8.1, Windows 7	· 32 bit OS (Windows 2000, XP, Vista) · 32 bit OS/64 bit OS (Windows 7)						
Monitor resolution	A resolution of 800×600 (SVGA) or above Note: XGA Monitor (1024×768) or higher is recommended.	A resolution of 1024×768 (XGA) or above						
Numbers of colors	256 colors or more Note: 65536 colors (16 bits) or more are recommended.	65536 colors (16 bits) or more						
Communication cable for drive and PC connections	Use a commercially available USB 2.0 cable. (A to Mini B type, 3 meters or less)	You can purchase the cable from Yaskawa. Order them from your Yaskawa distributor if required. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Drive model</th> <th>Cable type</th> </tr> </thead> <tbody> <tr> <td>U1000, A1000</td> <td>WV103, USB cable*</td> </tr> <tr> <td>V1000</td> <td>WV103</td> </tr> </tbody> </table> <p>* A USB port driver is required to connect the USB port of the U1000 or the A1000 to the PC. You can download the driver for free from the following link. (<a href="http://www.e-mechatronics.com/">http://www.e-mechatronics.com/</a>)</p>	Drive model	Cable type	U1000, A1000	WV103, USB cable*	V1000	WV103
Drive model	Cable type							
U1000, A1000	WV103, USB cable*							
V1000	WV103							

Note: For the specifications and system environment in detail, please see the information on the drive support tool on our e-mechatronics website. Microsoft and Windows are registered trademarks or trademarks of Microsoft Corporation in the United States and other countries. Intel and Pentium are registered trademarks or trademarks of the Intel Corporation or its subsidiaries in the United States and other countries. The specifications are subject to change without notice for improvement.



# Predict potential drive failures

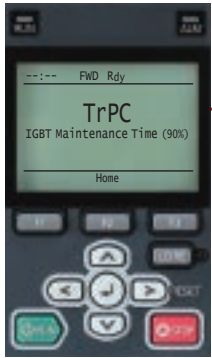
Simply predicting potential failures in a machine will not result in stable operation without stopping production lines.

If the drive that controls the machine fails, the production line will stop.

Yaskawa's drive predicts not only machine failures but also failures in the drive itself.

## Yaskawa's drive has a function to monitor the service life of its components.

The drive itself calculates the life of the parts from information, including information on the operating conditions, temperature, and load ratio, and warns about potential failures.

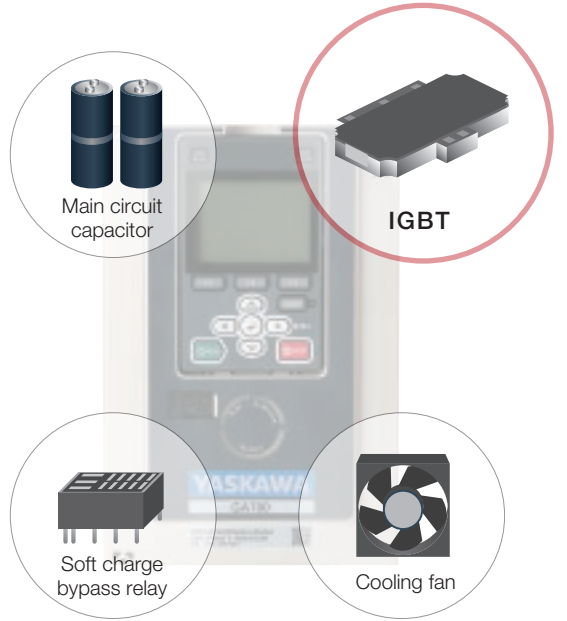


The operator will be alerted when any component reaches a lifetime warning level.



Predicted service life of component	Replacement
Cooling fan	By user
Main circuit capacitor	Replacement of components (by Yaskawa's Service Department)
Soft charge bypass relay	Yaskawa's Service Department
<b>IGBT (Power module)</b>	Drive replacement

Predicts failure in the drive's core components too!



The user can set the maintenance period as desired.



### Predicting potential failures in the drive

The drive keypad shows percentage values for replacement parts to inform users of when to replace those components.

#### Cool Fan Maintenance

The drive predicts the lifetime of cooling fans based on the operating hours of the fans

#### Capacitor Maintenance

The drive predicts the lifetime of capacitors based on the operating hours of the drive, ambient temperature, and load ratio

#### Soft charge bypass relay maintenance

The drive predicts the lifetime of soft charge bypass relays based on the number of times that the power is turned ON/OFF.

#### IGBT Maintenance

The drive predicts the lifetime of IGBT based on the run speed, carrier frequency, and load ratio



### Advantages



Easily create stable maintenance plans based on information of the service life from the drive. Save costs as a result of the reduced frequency of unexpected maintenance.



Maintain stable operation and high operation rates for machines with functions to predict service life.

### Supported models



High Performance AC Drive GA700



Low Harmonics Regenerative Matrix Converter U1000



High Performance Vector Control Drive A1000



Compact Vector Control Drive V1000



Compact V/f Control Drive J1000

Improvements  
in ease of use

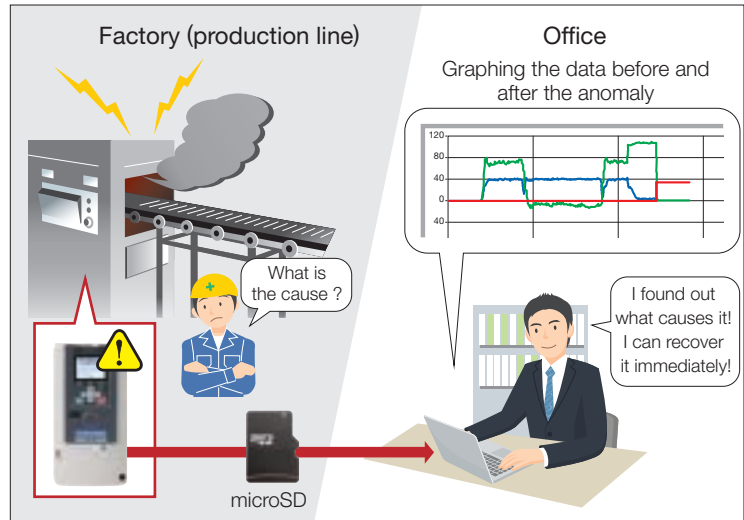
# Quickly restores machinery and equipment to provide a sense of security even in the event of a failure!

## Data logging function to analyze anomalies!

Insert a microSD card into the drive's keypad to record operating conditions of the drive (including current, frequency, and torque), similar to a dash cam.

Recorded data can be reproduced in waveform on a computer to analyze anomalies, even in the event of a failure (under development).

Note: It needs coin-cell batteries to display the time.



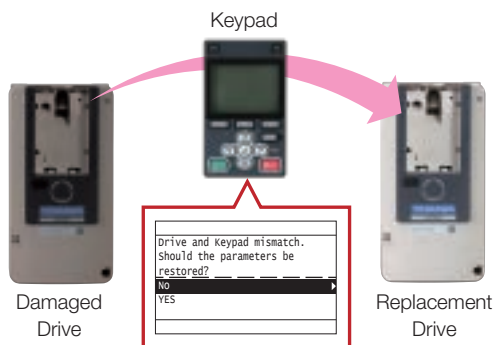
## Automatic parameter backup function for quick recovery even in the event of a failure!

The parameters will be saved automatically 30 minutes\* after turning power ON or changing the parameter settings.

In the event of a failure, parameters can be recovered with ease by simply replacing the keypad on the drive.

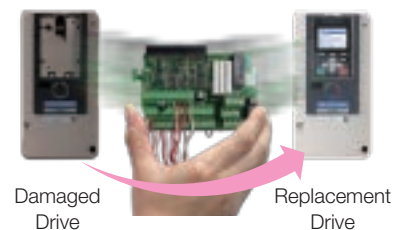
\* Can also be changed after 10 minutes, 60 minutes, or 12 hours when parameters are set to o3-07 (Auto Parameter Backup Interval).

Just answer  
the questions



Not only changing the parameters  
but also the rewiring is possible by  
simply replacing the board.

Just replace terminal block



**YASKAWA**

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Monday through Friday  
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9:00 to 12:00, 13:00 to 16:30

Note: Faxes are accepted 24 hours a day.

Contact Information

Specifications are subject to change without notice for ongoing product modifications and improvements.  
For inquiries on the contents of this document, contact a Yaskawa representative or the Yaskawa sales  
department listed above.

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