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OMRON Introduced Four Series of Condition Monitoring Devices

Omron Industrial. Johannesburg. South Africa.

OMRON Corporation have introduced on February 1, 2018, four series of condition monitoring devices to monitor operational status in manufacturing sites for workers.

- Motor Condition Monitoring Devices that predict a failure of 3-phase induction motors.
- Power Supplies with Network that can predict the service life and failures of a power supply installed in a control panel.
- Flow Sensors and Pressure Sensors that monitor hydraulic oil and cooling water used for press machines and moulding machines.
- Smart Condition Monitoring Amplifier that accelerate IoT of existing analogue sensors installed in facilities or machines.

The release of condition monitoring devices is part of OMRON's effort to complete a 100 000 IoT component line up. The monitoring devices visualise facility and equipment condition constantly that could not have been seen previously, detect status errors of facilities in advance, and maintain production lines and productivity.

The condition monitoring devices monitor changes in power system and circulation system of production facilities in real time. They inform replacement time of parts before failures through communication networks and contribute to prevention of unexpected facility stoppages and quality abnormality of products. Anyone can easily capture a sign of abnormality of facilities and failures that have relied on experience and intuition of skilled workers. This enables to reduce opportunity loss due to unexpected facility stoppages and enhance the accuracy of maintenance plans.

Motor Condition Monitoring Devices

Motor Condition Monitoring Devices detect errors caused by aging deterioration of three-phase induction motors used for many production facilities including conveyors, lifters and pumps. The monitoring devices detect errors by status changes in vibration, temperature, current, insulation resistors, monitor by display on the main unit or Ethernet/IP™ communications remotely, and solve the following issues.

- Minimize opportunity loss caused by unexpected facility stoppages

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- Digitalize knowledge of skilled maintenance engineers and homogenize motor maintenance from a remote location

- Shift from periodical inspection to preventative inspection to significantly reduce inspection work

Monitoring data- Motor vibration, surface temperature, insulation resistance, current, degradation level.

Output method- EtherNet/IP (monitorable by a dedicated tool operated on PC), alarm output, transistor output, bar indicator, monitor display

Power Supplies with Network

Power Supplies with Network visualise necessary information to maintain and control power supply in addition to supply DC electricity to devices in facilities, which is a basic function of a power supply. This Power Supplies can visualise when to replace itself, information on output voltage/current, and boost current by remote control using Ethernet/IP communications and the main unit monitor, contributing to solve the following issues:

- Notify the power supply replacement time in advance to reduce unexpected facility stoppages due to a trouble of power supply
- Monitor the replacement time, total run time, voltage, and current of a power supply remotely to reduce maintenance work in facilities
- Use in combination with the dedicated software Power Supply Monitoring Tool (scheduled to support soon) to visualise power supply condition on the derating curve.
- To extend the service life, you can consider and implement improving measures easily by improving installation environments and changing power supply capacity.

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Monitoring data- power supply replacement, total run time, output voltage/current, boost current, self-diagnostics (overheating, measured value error, memory error), product model, serial number.

Output method- Ethernet/IP, Modbus/TCP, monitor display.

Flow Sensors, Pressure Sensors

A single Flow Sensors can measure both flow rate and temperature of cooling water used for a welding or moulding machine. Monitoring errors caused by temperature in addition to flow rate of cooling water enables to detect and capture warning signs of unexpected stoppages due to overheated current transformers in order to achieve more stable welding quality, and prevent defective moulding.

Pressure Sensors visualise pressure and temperature of hydraulic oil for machining centres and press machines simultaneously. They capture a sign of packing deterioration due to temperature rise and following hydraulic oil leakage. They also detect temperature changes due to deterioration of the hydraulic oil viscosity to maintain stable processing quality. There is no need for separate installation of temperature or pressure sensors on pipes resulting in a 50% cut in installation time. By sensing a plurality of measurement data elements such as "flow rate and temperature" and "pressure and temperature" by itself, these sensors can visualise facility condition at less cost, work, and space.

Monitoring data- Flow rate + temperature. Pressure + temperature

Output method- Status output, control output, analogue output, IO-Link, monitor display, status indicator

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Smart Condition Monitoring Amplifier

Smart Condition Monitoring Amplifier connect to general analogue output sensors.
OMRON offers N-Smart Next-generation Sensor Series that connect to fibre sensors and lazar sensors. Now, Smart Condition Monitoring Amplifier that can connect to general analogue output sensors are joining the line-up, enabling to build inexpensive and easy network with various sensors used to understand facility condition.
Previously, obtaining data of analogue output sensors required system up with expensive data loggers and measurement equipment. The sensor can synchronize up to 30 units at high speed of 1 ms, collect data at the timing of facility operation, capture subtle changes of facilities and correlation of signs reliably, enabling optimum machine control according to facility status changes.

Connectable sensor heads -Sensors which output and transmit measurement result by current (DC 4 to 20 mA) or voltage (1 to 5 VDC).
(Flow Sensors and Pressure Sensors are also connectable.)

Output method

- Control output, monitor display, compatible with open networks (EtherCAT®, CC-Link) by connecting to communications units.

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- An induction generator which use 3-phase AC power supply, send electric power from primary side (stator) to secondary side (rotor) by electromagnetic introduction, and generate power.

- It is OMRON's unique index to show errors on the load side in addition to motors by measuring and analysing motor current by a unique algorithm.

- Stipulate the use conditions by ambient operating temperature and load ratio under which specifications of a power supply can be guaranteed. Operation characteristics of internal circuits caused by temperature rise of internal parts and temperature environments are taken into account.

- Processing equipment that makes a hole and grind on metal or other materials.

- Sensors which output and transmit measurement result by current (DC 4 to 20 mA) or voltage (1 to 5 VDC).

- Air pressure sensors which monitor air suction state, or other sensors for pick and place of electrical parts

- Next-generation sensor series consisting of sensor communications units that integrate presence, detection and measurement data of fibre sensors, laser sensors, contact sensors, and proximity sensors. They are also compatible with EtherCAT and CC-Link (high-speed communications open network).

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About Omron

Omron Electronics is the South African subsidiary of Omron Corporation, a global leader in the field of automation based on its core technology of "Sensing & Control + Think." Established in 1933, Omron has about 36,000 employees worldwide, working to provide products and services in more than 110 countries and regions. The company's business fields cover a broad spectrum, ranging from industrial automation and electronic components to automotive electronics, social infrastructure systems, healthcare, and environmental solutions. In the field of industrial automation, Omron supports manufacturing innovation by providing advanced automation technology and products, as well as through extensive customer support, in order to help create a better society. For more information, visit Omron's website: http://www.industrial.omron.co.za

For enquiries about Omron Industrial Automation please contact:

Omron Electronics (Pty) Ltd
Tel: 011 579 2600
Direct Email: info.sa@eu.omron.com
Website: www.industrial.omron.co.za

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