Focus on Maintenance

ARE YOU OPERATING YOUR MACHINES in the dark?

IF A MACHINE'S NOT BEING CONDITION MONITORED, YOU'RE EFFECTIVELY OPERATING IT IN THE DARK – BECAUSE THE FIRST YOU'LL KNOW OF A PROBLEM IS WHEN IT FAILS. BUT NOW SKF OFFERS A LOW-COST ALTERNATIVE TO A FULL CONDITION MONITORING SYSTEM, WHICH MAKES IT COST-EFFECTIVE TO MONITOR EVEN YOUR NON-CRITICAL MACHINES.

The benefits of Condition Monitoring are clear. But the perceived cost and complexity of installing a full-scale system deters many people. Even those who do invest in Condition Monitoring often leave non-critical machines unmonitored to save money. So the first-ever individual machine mounted Machine Condition Indicator makes real economic sense – whether your plant is already part-monitored, or has no condition monitoring at all.

Check for problems
The SKF Machine Condition Indicator does for industrial machinery what the 'check engine' light does for a car: warns you that all is not right and that you need to take a proper look at the equipment before a more serious fault develops.

The Indicator incorporates a vibration sensor which measures velocity, enveloped acceleration (bearing or gear impulsive vibration) and machine surface temperature. If any of these goes beyond a preset threshold, the Indicator alerts the predictive maintenance technician via an LED on top of the Indicator unit. The three LEDs – green, amber and red – blink at intervals and for various durations, to indicate the current mode. Green signifies the equipment is operating within the accepted parameters; amber that there is a potential problem; and red is alarm mode.

The parameters are programmed at installation using a magnetic read-key, which activates the Condition Indicator and allows changing of the operating modes, setting of vibration baselines, and also acknowledgement of alarms and resetting when an alarm has been tripped.

A measured response
The SKF Machine Condition Indicator takes a number of measurements to establish whether a machine is in danger of failure.

It measures velocity, as an indication of general machine health. It takes enveloped acceleration measurements for early detection of bearing failure. And it takes temperature measurements to indicate uncharacteristic heat, which is a good indication of a machine problem. It has transient protection and a retry algorithm to avoid false alarms, and also offers two modes of operation – which means it is suitable for many different machine types.

The default Threshold Mode compares velocity and enveloping measurement results with fault alarm threshold levels. These levels, applicable to most 'standard' machinery running at constant speeds from 900–3,600 r/min, are:

- Velocity – 9.0mm/s rms (0.35 inch/s rms; 0.5 inch/s equivalent peak)
- Enveloped acceleration – 4 gE
- Temperature – 105°C (220°F)

Percentage Mode works by taking machine measurements to establish a baseline norm value for the machine's velocity and enveloped acceleration vibration levels, and then comparing these with a multiple of the established baseline value:

- Velocity – 2 x baseline value (200%)
- Enveloped acceleration – 2 x baseline value (200%)
- Temperature – baseline value plus 50°C (90°F)

The Condition Indicator takes measurements at preset intervals eight times a day. If the measurements are satisfactory and no alarm is triggered, the Indicator goes to sleep until the next preset time, to conserve battery power.

Alarmed and alerted
If the measurements indicate an alarm condition, the Indicator retries its measurements to rule out transient conditions and false alarms.

If the measurements are only slightly above the preset level, the Condition Indicator will verify the condition for a maximum of 12 hours before displaying the red alarm LED. If the measurements are greatly above the preset level, the Condition Indicator makes fewer repeat checks before illuminating the red LED.

The LED blinks in a specific pattern – according to the measurement type which has triggered the alarm – for up to one week.

Quick, easy, economical
The SKF Machine Condition Indicator is so easy to install and so cost-effective to operate that it has been described as 'a useful toolbox tool'. Compared with installing a full-blown Condition Monitoring system, or adding extra machines to an existing system, installing the Machine Condition Indicator on a machine can be done by any competent maintenance technician, and it can be up and running in minutes, rather than hours.

Once installed, the Indicator frees up large amounts of time for the predictive maintenance technician.

The frequency of routes round non-critical machines can be reduced, and the time taken will also be less, as all that's required to identify if there is a problem is a quick check of the LEDs. The technician is free to concentrate on root cause analysis of problems already detected by the Indicator, and on maintenance to prevent the problems recurring.

Launched this quarter, the new SKF Machine Condition Indicator makes light work of monitoring more machines for less. So now there really is no need to work in the dark.