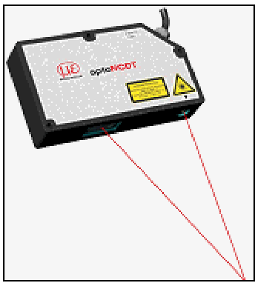
New laser sensors offer high accuracies at large base distances



In non-contact displacement measurement applications using laser sensors, the accuracy of the sensor suffers as the measuring range (or base distance to the target) increases. The smaller the distance between sensor and the target being measured, the smaller the measurement error will be. However, for some measurement tasks, it simply isn't possible to mount the sensor close enough to the target, either due to physical obstacles, high shock loads, vibrations or high process temperatures.

In the rail industry, for example, it is common to measure the movement of the carriage with respect to the rail. However, due to the high shock loads and vibrations levels, it is not possible to mount laser sensors on the bogies of the carriage near to the rails. Therefore, laser sensors with longer measuring ranges are required, which enable the sensor to be mounted further away on the carriage. Similarly, in the steel industry, due to the physical size of the steel strip and process temperatures, it is not possible to mount laser sensors close to the strip steel during production. Again, laser sensors with longer measuring ranges are required.

In order to solve problems such as these, precision sensor manufacturer Micro-Epsilon has developed a new range of high performance laser sensors, which offer large stand off or base distances, whilst still maintaining high levels of accuracy and resolution. The sensors are ideal for optical distance measurement of direct reflecting materials, including highly polished metal, mirrored objects, glass and chrome-plated products. The sensors are particularly suited to applications where it is not possible to mount the sensor close to the measurement target.

Compared to conventional non-contact, laser displacement sensors, Micro-Epsilon's new optoNCDT 1810-50 and optoNCDT 2210 measure targets at a large stand off distance, whilst still maintaining unprecedented levels of accuracy and resolution. The 1810-50, for example, offers a measuring range of 50mm (from 550mm up to 600mm) and a resolution of 5µm at a measuring rate of 2.5kHz. The 2210-10 offers a 10mm measuring range (from 95mm up to 105mm) with a resolution of 0.5µm at a measuring rate of 10kHz. The 2210-20 offers a 20mm measuring range (from 90mm up to 110mm) with a resolution of 1µm at a measuring rate of 10kHz.

Chris Jones, Managing Director at Micro-Epsilon UK Ltd comments: "In addition to the three standard sensors, we can offer OEM customers special versions of the sensor with customised stand off and resolutions to suit their application. None of our competitors are able to offer this type of service."

The optoNCDT 1810-50 and 2210 operate using the laser triangulation principle. A laser diode projects a visible point of light onto the surface of the target object. The light reflected from this point is then projected onto a CCD array. If the target changes position with respect to the sensor, the movement of the reflected light is projected on the CCD array and analysed to output the exact position of the target. The measurements are processed digitally in the integral controller. The data is output via analogue (I/U) and digital interface RS422 or USB.

What differentiates the optoNCDT 1810-50 and 2210 sensors from current competing laser sensors is the ability for the sensor to automatically compensate in real time for difficult-to-measure surfaces. Micro-Epsilon's patented real-time surface compensation (RTSC) feature and unique high-speed software algorithms dramatically reduce signal noise. When customers need to measure against a shiny surface, ideally they want a sensor that is able to automatically adjust the laser pulse duration (or laser on time) of the sensor to give them the optimum exposure time on the CCD for that particular surface. This, in turn, provides a higher accuracy measurement due to lower noise level on the output signal.

For further information on Micro-Epsilon's optoNCDT 1810-50 and 2210 sensors, email: chris.jones@micro-epsilon.co.uk

Non-destructive tools for MDXI X-ray inspection system

3DX-ray has introduced a set of non-destructive tools for its MDXI X-ray inspection system that allows engineers, for the first time ever, tp measure and analyse the expensive coatings and fills in diesel particulate filters and catalytic converters.

The new system allows manufacturers to improve performance, reduce costs and control product quality. The tools also work on liquid fills, even when imaging through a steel container. Previously only destructive testing has been possible for this billion dollar marketplace.

Diesel Particulate filters need to achieve high filtration efficiency, low filtration backpressure, and fast regeneration. Design engineers need to maximise the efficiency of catalysts and balance the high loading needed for performance against the low cost demands of the market place.

The 3DX-Ray MDXI system can accurately measure distances and alignments and the database it produces can be linked into a QC, SPC or SCADA systems. It uses the company's proprietary line-scanning technology, which eliminates the need for conventional, expensive panel X-ray detectors, whilst still providing impressive data acquisition speeds and quality images. It also allows the user to measure the substrate damage either during manufacture or as a consequence of regeneration and provide data to enable analysis of the catalyst performance over time.

For further information, e-mail: info@3dxray.com