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80GHz Technology Puts Continuous Level Measurement on SICK's Radar

An innovative non-contact radar sensing technology from SICK is opening up the prospect of robust and reliable real-time monitoring of the levels of liquids and bulk solids in challenging industrial applications. The SICK SicWave uses higher-frequency 80 gigahertz free-space radar to overcome the limitations of lower-frequency radar sensors or mechanical devices to achieve precision continuous level measurement in demanding environments.

Where previously operators have settled for switch point level indication or have been defeated by the challenges of using non-contact sensors in harsh environments, the narrowly focused, highly effective microwave pulses of the SICK SicWave sensors penetrate through dust, vapour and material build-up to output highly accurate results.

Non-Contact Breakthrough

The SICK LBR SicWave is a bulk solids level sensor with an exceptional range up to 120m and the SICK LFR SicWave a fluid level sensor with a maximum range of 30m. Both represent a breakthrough in technology for continuous level measurement to optimise material storage in silos, tanks and other vessels in industries as diverse as mining and cement manufacture, to chemical processing and food and drink processing.

Darren Pratt, SICK's UK product manager for industrial instrumentation explains:

"Anyone who needs to manage the supply of liquids or solids in storage vessels will understand the frustrations that can be caused when trying to achieve a reliable level measurement using a non-contact optical or radar principle when the signal is disrupted by the presence of dust, moisture, build-up of residue, or by other obstructions in the vessel.

"When positioned at the top of a tank or silo, or over a heap or bunker, a SICK SicWave sensor sends a highly-focused narrow beam of microwave radar pulses and uses the time-of-flight principle to

return a high-quality signal even at exceptionally long ranges or extreme temperatures and pressures.”

High Availability

The SICK SicWave 80 GHz free-space radar sensors are a thousand times more sensitive than previous-generation 26 GHz radar technologies, ensuring high availability in even the most challenging environments with minimal maintenance requirements. The narrow field of view also avoids the potential for false signals caused by deposits on walls, or by other obstructions inside the vessel and ensures focused alignment to enable simple and rapid set-up.

Remote set-up and interrogation of the sensors is straightforward, either using the on-board WPAN interface to a smartphone or tablet via Bluetooth or through standard HART communication, which also enables easy integration with higher level controls and diagnostic systems. The sensors have a standard 4 – 20 mA output, enabling signals to be monitored and displayed on a dashboard in a cloud environment using IIoT gateways such as SICK’s Telematic Data Collector.

The SICK SicWave LFR fluid level sensor and LBR bulk level sensor come in a wide range of space-saving antenna designs, versatile flange or thread process connections and a range of application-specific mounting options. The robust IP66/IP67 plastic or aluminium housings are ready for harsh industrial environments with an IP69 stainless steel housing available in the LFR sensor range for use in hygienic environments. Variants with ATEX or IEC Ex certification are also available for use in explosive environments.

The SICK LFR SicWave measures fluid levels reliably between -196°C and +200°C, and process pressures between -1 and 25 bar. The SICK LBR SicWave measures bulk solid levels reliably at process temperatures between -40°C and +200°C and at process pressures between -1 and 20 bar.

‘A Gamechanger for Demanding Environments’

“The 80 GHz free space radar technology, when combined with the wide-ranging application versatility of these sensors, promises to be a true gamechanger for many operators working in demanding industrial environments,” concludes Darren Pratt. “Whether you have struggled with dust clouds when filling a silo, or with steam in a tank, the SICK SicWave free-space radar opens up the potential to optimise your material flows by enable high-availability continuous measurement.”

The SICK LFR and LBR SicWave sensors are complemented by other SICK technologies for bulk solids and fluids handling, including the SICK LMS BulkScan for measurement of mass and volume on belts and conveyors, as well as by the SICK range of process instrumentation for level, pressure, flow and temperature.

For more information about the Sick SicWave LFR and LBR free-space radar sensors, please contact Andrea Hornby on 01727 831121 or email andrea.hornby@sick.co.uk.

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