



## **For liquids and bulk materials: evaluating vibrations, detecting limit levels**

**Waldkirch, Innovation No. 17, 2009 – The vibrating fork limit sensors of the LFV300 and LBV300 series are new in SICK AG's portfolio of level measurement technology. The devices offer widespread use, can be configured according to the particular process, have approvals for a wide variety of applications, and convince through their non-friction and maintenance-free operation.**

Both the LFV and the LBV limit switches utilise the piezoelectric measurement process and exploit the damping properties of liquids and powdered bulk materials. The electronics of the LFV evaluate frequency changes while, in the case of the LBV, the rise or fall in amplitude determines whether a switching signal is transmitted to an evaluation device.

### **Modular sensor configuration allows adaptation to process conditions**

Starting with the sensor itself – consisting of the piezoelectric unit and the vibrating fork, designed for immunity to the particular medium – vibration limit switches from SICK offer modular configuration according to the task involved. The modular principle permits differing sizes and designs to be selected for the particular process. Threads of different sizes are available for both the LBV and the LFV sensors; the latter series can also be combined with tri-clamp tube attachments or flanges. If necessary, optional tube exten

sions or carrier wires allow removal of the vibrating fork from the housing in order to achieve a desired response height. For tasks in which the limit switch is used to prevent dry-running in closed coolant and lubricant circulatory systems, direct installation in the pump housing or piping in the immediate vicinity allows reliable monitoring of the medium. Plastic, aluminium or stainless steel can be selected for the housings and cable screw connections. The switching electronics may be in the form of a contact-free switch, or a relay or transistor output. The approvals granted to the limit switches are also of decisive importance for many areas of use. In addition to the standard versions without approvals, the LFV and LBV series also offer devices that are ATEX-certified for installation in potentially explosive zones. Versions approved by the WHG for preventing overfilling, or certified for use on ships, round out the LFV series.

### **Broad application**

Providing overfilling signals or preventing dry-running for all pumped liquids are typical tasks of the LFV series. The vibrating fork sensors of the LBV family have been specially designed for containers with bulk materials or powdered media such as flour, wood pellets, plastic granulate or rubber. Whether the LFV or LBV: in both series the piezoelectric measurement principle and symmetrical structure of the vibration probes ensure high immunity to contamination, depositing and external vibration effects. Pressure differences and eddies (e.g. during the filling of containers), as well as foam, gas or bubble formation have no effect on sensor function or switching accuracy.

## **SICK's level measurement portfolio is growing**

Vibrating fork limit sensors from SICK offer ideal prerequisites for use in many areas of factory automation. Depending on the particular sector, the media to be detected can be correspondingly wide-ranging – from old oil or aggressive alkalis, through lubricating coolants, detergents and granulates, to rubber or wood pellets. The sensors of the LFV and LBV series thus represent an ideal supplement to SICK's existing level measurement portfolio. Solutions based on differing principles are available both for continuous measurement and for limit level detection of liquids and bulk materials – ultrasonic and guided microwaves, lasers with pulsed or time-of-flight measurement, as well as capacitive sensors and rotating paddle systems.



For decades, SICK has been one of the world's most innovative companies in the sensor sector. The latest technological knowledge and processes are implemented in innovative products and system solutions. They position SICK as a technology and market leader in the customer segments of factory, logistics and process automation.

More than 50 innovations in sensor and control solutions are planned for 2009. SICK will launch a new product each week as part of its "SICK Innovation Marathon 2009". All innovations – from No. 1 to No. 52 – are more than just products: they solve tasks intelligently, efficiently and precisely. And create unbeatable customer advantages.