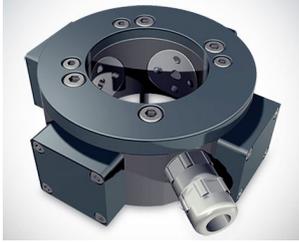# CAN *Newsletter Online*

MAGNETIC FORCE SENSOR

Sensor concept for weighing containers

Hirschmann MCS offers the magnetic fSens MLS force sensor. It weighs containers by indirectly measuring the force they apply to the twistlock during loading. The sensor communicates via CAN with the central controller.

(Photo: Hirschmann)

This magnetic force sensor can be implemented no matter whether an RTG, RMG, or STS crane, a reach stacker, or a straddle carrier is used. Static or dynamic weighing takes only moments, and the system can be integrated into existing material-handling processes. It also eliminates the need to add up individual weights.

For this solution, Hirschmann relies on contactless magnetic measurement. The force sensor is installed above the twistlock bush, surrounding the twistlock without actually touching it. The twistlock stretches when a load is applied, then contracts to its initial state when unloaded. The sensor generates a magnetic field that is altered by the stretching of the twistlock, and the sensor calculates the force by measuring this change. Weights can be determined within a tolerance of less than 1 %. The contactless measurement approach also prevents zero drift when weighing heavier loads.

Because the sensor itself is not directly subjected to any forces, it will not be damaged, bent, or broken no matter how heavy the load is. Nor does it move when the twistlock is locked or unlocked. It is therefore impossible for constantly changing loads to wear it out or cause its failure, for instance by breaking a cable. It isn't even necessary to remove the sensor in order to replace the twistlock.

The product has an IP67 protection rating and is resistant to saltwater. Its electromagnetic compatibility complies with the 2004/108/EC directive. For weighing containers, Hirschmann integrates the fSens MLS in a complete system comprising other TÜV-certified components. Its heart is a cScale controller with CANopen interfaces that acts as a scale. This controller communicates with the system via a CAN network. Both the controller and the sensor have been certified by OIML (International Organization of Legal Metrology).

All it takes to install and use the system is a power source. Other modifications and additions, including a communication link to the terminal operating system, can also be implemented. The fSens MLS can be additionally used to measure overloads.

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