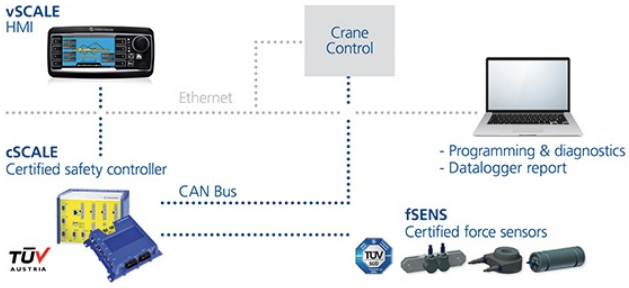
CAN Newsletter Online

FUNCTIONAL SAFETY

# Certified overload protection for gantry cranes

**Gantry and bridge cranes need to be able to move heavy loads easily and safely. Hirschmann MCS (Germany) has developed and obtained certification for a complete overload protection concept.**

PSV overload protection devices (originally introduced by PAT and Krueger, now Hirschmann MCS) have been a mainstay for decades. Recently, however, they became obsolete with the advent of the cScale Truesafety controller. The individual cScale devices are harmonized with the fSens force sensors, said Hirschmann. Both were recently certified under the latest versions of the EN ISO 13849 and EN 62061 standards as well as the EN 15011:2011+A1:2014 standard for bridge and gantry cranes, which covers all safety functions and sequences.




*(Photo: Hirschmann)*

The certified overload protection concept saves crane manufacturers and operators the expense and trouble of obtaining individual certificates when equipping or re-equipping cranes. All of the devices involved are interoperable. Parameterization, calibration, and checking are easier than with PSV, due to a user-friendly, browser-based service tool, said the company. It enables both on-site work and remote maintenance. Everything is password-protected with assignable access privileges. The cScale controller integrates into the overall control architecture. Besides CANopen, the company provides optionally other communication interfaces.

The certified system meets all of the requirements for overload protection according to EN 15011:2011. Overloads are detected to ensure timely system cutout in critical situations while complying with Performance Level (PL) d. This can happen in either of two different ways: indirectly with a delayed cutout to compensate for hysteresis, or immediately if the weight involved is greater.

A large number of other functions can also be optionally enabled. They include a limit switch that protects hoists by blocking their upward motion when triggered (complying with PL d category 3), limiting wire rope layers in winches by blocking their downward motion, horizontal and vertical monitoring of unbalanced loads, cutout when the load falls short of a defined minimum, monitoring of proper functioning according to PL d, and monitoring of loads on individual ropes according to PL d.

According to the company, once the system has been configured, it ensures maximum safety. Audible and visual alarms are activated in compliance with PL d, including a slack cable warning, sirens, and lamps. The data logger shows error and event messages, status information (e.g. the selected operating mode), analog measurement values, and calculated values (e.g. total and individual loads). Data are stored at regular intervals and after certain events. Reports are also compiled, containing data from the operating hour counter, the stroke counter, and the timespan load counter. Strokes are recorded in different load ranges. These values are continuously recorded for at least 30 days and can be imported into Excel using a memory stick. The cScale controller supports up to eight different operating modes (e.g. for different spreads or grippers) according to PL d. A key switch-protected, PL d category 3-compliant servicing mode is also integrated.

The engineers of Hirschmann have designed the solution so it can be parameterized for a variety of requirements. They include: support for between one and eight redundant force sensors, digital or analog height correction, i.e. correction of the load display to compensate for the angles of the stay ropes, and adjustable cutout points.

*CW*