CAN Newsletter Online

OVERLOAD PROTECTION

Certified safety for crane systems

Tecsis has introduced Germany’s first certified system solution for overload protection in crane systems. With PLd/SIL2 certification, the ELMS1 protects personnel when heavy loads are moved.

ELMS1 overload protection consists of a controller, force transducers, and software (Photo: Tecsis)

The safety of the personnel plays an important part in any situation where heavy loads are being moved or lifted. The machinery directive is clear about the requirements that must be fulfilled by the control technology for overload protection in cranes or other applications. Germany's first certified system solution for overload protection in crane systems has been introduced by Tecsis. The "DGUV Testing and Certification Body for Lifting Gears, Safety Components and Machinery" has awarded PLd/SIL2 certification to ELMS1 overload protection, which consists of a central controller, up to four redundant force transducers, and the relevant software in accordance with DIN EN ISO 13849 and DIN EN 62061.

Up to four individual loads and the cumulative load can be monitored with the overload protection. In order to do this, the controller evaluates the signals of the force transducers and prevents overload situations from occurring by means of prompt intervention in the crane controller. The controller can be integrated in a supervisory controller architecture via the outputs or an optional fieldbus interface. Alternatively, the controller supports CANopen, Profibus-DP, and Profinet. Typical applications for the certified system solution can be found in gantry cranes in the steel industry, ship cranes, and offshore cranes in harbor areas and in other areas of lifting technology.

The main advantage for the user is that complicated individual certification of the overload shut-off of the crane system is not required if the overload protection is used. The main ELMS1 safety controller has safe analog and digital inputs and outputs, relay outputs and semiconductor outputs to which force transducers and other sensors can be connected. To monitor loads in all relevant measuring ranges, for example, the load pins F53S8 can be used. The load pins have two channels per sensor and therefore allow redundant measurement.

The load pins also have an integrated amplifier. This means that they can be integrated in the crane if the amount of available space is restricted. Typical examples of installation locations are the cable reels in the crane system. Tecsis adapts the load pins individually to the respective customer application. This applies to the measuring range and the geometry alike. The system makes it possible for the force transducers to be calibrated automatically during the commissioning of the crane system.

ae