

New controller generation

EXCITING NEW SOLUTIONS FROM A GERMANY FAMILY FIRM OFFER SAFETY-RELEVANT APPLICATIONS FOR OFF-HIGHWAY MACHINES

▶ Mobil Elektronik is known for its auxiliary steering systems and steer-by-wire systems, in which safety has and always will remain of the highest priority.

As an expanding family-owned high-tech firm, Mobil Elektronik has been developing and producing complex control systems in safety-related applications for renowned manufacturers of mobile machinery, commercial and special vehicles worldwide for more than 45 years.

Safety standards

Depending on the area of application of the vehicle to be steered, the respective safety standards must be observed and complied with.

For on-highway vehicles, safety-related electronic systems must be developed in accordance with ISO 26262. In the off-highway sector, on the other hand, conformity to ISO 13849 is to be ensured.

Based on the vehicle manufacturer's risk assessment, a performance level (PL) must be achieved for safety-relevant control components in accordance with the standard derivation, which depends on the hazard potential when the vehicle is used as intended.

For example, the mixed operation of autonomously driving vehicles and people in logistics centres and port operations represents a particularly high hazard potential. The bandwidth of the performance level to be covered thus extends to the highest performance level (PLE).

New innovation

Since such applications represent an important market for Mobil Elektronik, the company has geared its new generation of safety steering computers to them. The portfolio of the medium-sized company includes the controls for on-highway applications with one steered axle, Safety Steering Computer SLC 020 xxx.

With this, applications up to Automotive Safety Integrity Level (ASIL) D can be represented. It usually finds its place in trucks and buses, where it controls the safety-critical auxiliary steering of a rear axle.

The two CAN interfaces enable communication with the vehicle and the other components of the steering system. It is also worth mentioning that the system can be easily integrated into the vehicle manufacturer's Unified Diagnostic Service



INSET: Autonomously driving straddle carrier equipped with steer-by-wire from Mobil Elektronik © KalmarGlobal

(UDS) via these interfaces.

The SLC 021 xxx controller is designed for one and two steered axles and can be used for safety-critical applications both in the on-highway sector, such as agricultural vehicles and mobile cranes, and in the off-highway sector with the highest requirements up to PL e.

Harsh conditions

The high IP protection class (IP 6K 9K) permits use even under extreme environmental conditions, such as those found in agricultural vehicles and construction machinery.

In the meantime, another new control unit, SLC 022 xxx, has been added. It is intended for very complex applications in the off-highway area,

which is already revealed by its equipment:

On board are five galvanically isolated CAN interfaces and well over 100 freely programmable digital inputs/outputs. Other highlights are the two plug-in slots that enable customised expansion boards for the connection of almost any external device.

Areas of application

Mobil Elektronik sees important areas of application for the new SLC 022 xxx controller primarily in the field of AGVs (automated guided vehicles), where there is a clear tendency to use them in the aforementioned mixed operation. This means that the working area is not completely sealed off, but that man and machine can be



LEFT: The city bus Movitas from Tribus, equipped with Ehla Optimal from Mobil Elektronik © Tribus B.V.

BELOW: Safety steering computer SLC 022 xxx for AGVs © STÄUBLI WFT GmbH



present in the working area at the same time. Personal safety is ensured by several scanners or cameras mounted on the vehicle, which the vehicle control system uses to initiate braking or evasive manoeuvres.

Sensor data

Such environment detection is therefore a core element of off-road vehicle safety, which is why Mobil Elektronik has provided for the reading of such sensor data as an integral part of its new control generation.

It should also be noted that Mobil Elektronik not only concentrates on the steering function of the vehicles, but also specialises in the implementation of safety-relevant work functions in compliance



LEFT: SLC 020 xxx safety steering computer for commercial vehicles

CENTRE: 2-axis safety steering computer SLC 021 xxx for extreme applications

RIGHT: AGV from WFT-Stäubli, equipped with Mobil Elektronik's steer-by-wire

with the applicable standards.

Control systems from Mobil Elektronik are highly evolved technology solutions that need to meet the highest safety requirements. As a result all are developed and produced entirely at the company's headquarters in Langenbrettach, Germany - from the initial idea and conceptual design right through to production. This way the company can keep the entire process in-house.



Experienced team in place

For the vehicle-specific adaptation of the systems and programming of the controls, Mobil Elektronik has a highly experienced development team at its disposal, in order to be able to implement almost any customer request in a timely and efficient manner.

The know-how built up over many years in the field of standard-compliant development of safety applications enables Mobil Elektronik to achieve the highest safety levels for all industry applications on the basis of the new control generation. iVT

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