# Vehicle controller and remote service module

**At the SPS IPC Drives, STW (Germany) launched the ESX-3XL CAN-capable, programmable control unit separating safety-related and non-safety-related SW functions. It may be used in work vehicles, mobile machine and applications up to SIL 2. The company also introduced the remote service module ESX-TC3 with CAN connectivity.**

THE DEVICE IS BASED ON THE 150-MHz 32-bit Tricore TC 1796 processor by Infineon. It includes 6 MiB of flash memory, a 4-MiB RAM, and 32 KiB of EEPROM. The available I/Os are configurable via software, Up to six expansion boards (e.g. for EIA-232, EIA-485, RTC data memory, encoder, PVG, PWM etc.) are provided. The controller offers a C/C++ application programming interface (API), which supports safety-related and non-safety-related application software components together in a SIL-2/PL-d system. This solution is realized through memory protection mechanisms that ensure separation of standard and safety-related functions. During the application design phase, this clearly defines which modules need to be developed according to the IEC 61508 (functional safety of electronic systems) and ISO 13849 (safety of machinery) requirements. It also reduces programming effort. Additional software libraries, such as CANopen, are available. Using the API, it has also been possible to meet the ECU safety requirements for the Codesys SIL 2 version 3 run-time system. Thus, the company claims to be the first ECU supplier that can fulfill the safety relevant requirements for Codesys designs under IEC 61131-3 and IEC 61131-6.
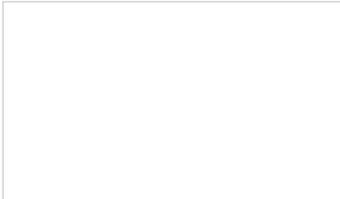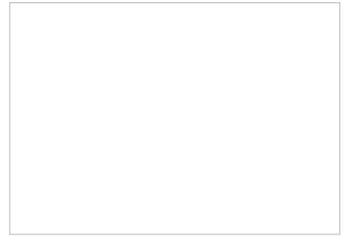
The Linux-based remote service module ESX-TC3 offers recording of operating data and their treatment. In addition to communication interfaces, such as CAN, a digital input and output, Ethernet and EIA-232, the device also offers a USB interface for service purposes. With the integrated GPS module, GPS information is recorded. The device incorporates a GSM/GPRS/EDGE module and a Bluetooth module, which allows wireless data transmission. Thus, all data can be transmitted wirelessly. The module includes a 400-MHz processor and a 1-GiB memory.

With the extended temperature range and the high vibration resistance, it can operate under extreme conditions. Additional protection against wetness and moisture is provided due to the internally located antennas. The system, based on open source is available with a support package, which includes drivers and software interfaces required for an embedded software application.

The 400-employees company has been awarded the "Supplier of the Year" by AGCO/Fendt in Marktoberdorf (Germany). The tractor manufacturer recognizes with this award the many years of development cooperation with STW in the drive control of the agricultural machines, in telemetry and the hybrid drive technology. STW develops, manufactures and distributes products in the field of measuring, control and hybrid technology. The company specializes in the areas of control systems for mobile equipment, on sensors for extreme conditions and future concepts for hybrid drives and fuel cells. All products are developed for the rugged, off-highway use.