



(Photo: Epec)

## Partners in agriculture machines

*Epec is specialized in electronics for off-highway and off-road vehicles. It supplies its CANopen products also for farming equipment. Recently, the CiA member has launched Isobus support.*

The Draco seeder by Tume-Agri, introduced last year, is equipped with two 3606 control units and the 6107 display unit by Epec. On a single screen the operator can view the machine's operating system and follow live camera feed of the seeding process transmitting from cameras located at the back on both sides of the machine. Previously, doing the same thing required two different displays, which meant an investment of over 2000 €, explained Tume-Agri Development Manager Heikki Sola. The CANopen-based control system has enabled the seeding machine to have an added feature alongside already existing ones – splitting the machine.

With a push of a button, the operator can choose whether the 4-m wide machine sows at only a 2-m width, to the machine's left or right side. For example, at the end of a field, splitting the machine provides a clear benefit in terms of cost savings and environmental savings, because the area to be fertilized is optimized correctly, Heikki Sola continues.

For Tume-Agri, the partnership with Epec has offered a chance to respond to the development pressures brought

on by the Internet of Things (IoT). Already, agricultural machinery requires diverse electronic management. In the future, they must be flexibly adjustable in terms of different development needs. Epec's know-how of producing scalable control systems and control devices for demanding circumstances assured us, acknowledged Heikki Sola. "The cooperation with Epec has served both us and our clients. We are now able to offer our clients a machine that you can operate and monitor simultaneously from just one display, which also has the capability to make use of the technology of the future, as well as have lower manufacturing costs than before," said Kari Sutinen from Tume-Agri.

Epec headquartered in Seinäjoki (Finland), a long-time CiA member, has provided CANopen-connectable 3606 host controllers programmable in IEC 61131-3 languages for many years. The robust, leak proof zinc/plastic housing has been tested against different environmental conditions. Also, the shape of the casing works to protect the electronics inside against mechanical wear. Three-point fixing confirms firm mounting also on irregular surfaces.

The control unit has a number of both input and output pins. This includes 3606 controllers providing eight PWM outputs. The total number of I/O pins is 21, including digital inputs and outputs, analog inputs, pulse inputs, proportional (PWM) outputs, and current feedback inputs. The design of the robust unit carries features such as signal LED for control unit diagnostics. One CAN interface is equipped with double pins, which makes cabling easier since there is no need for branches in the wire harness. A second CAN port is also available as an option. Epec will show these CANopen devices and other products at Bauma 2016 in Munich (Germany) on its booth in hall A5, stand 313.

## Isobus support and remote management service

At the Agritechnica 2015 tradeshow in Hanover (Germany), Epec announced the support of the ISO 11783 compliant communication interface in its control units. ISO 11783 is a CAN-based higher-layer protocol using the same communication methods as defined in SAE J1939 with some extensions. The interface is also known as Isobus, when it is conformance tested according to the AEF specifications. The purpose of Isobus is to provide interoperability between tractors and implements from different manufacturers and enable the use of a single Virtual Terminal (VT) for all implements. A typical Isobus system consists of a VT unit, Task Controller (TC), Tractor ECU (TECU), and Implement ECU (I-ECU).

“Our main focus with the Isobus solution is going to be on the implement control systems and I-ECU functionalities. We are able to offer a complete package for the implement control system development,” explained Marjo Takkula, Product Manager of software products from Epec. The following products are under development and will be launched in summer 2016:

- ◆ Isobus and SAE J1939 libraries to take care of the Isobus communication between implement and tractor;
- ◆ Multi Tool for configuration of the implement control system including the Isobus communication;
- ◆ CANmoon application to create and download VT object pool binary together with Codesys applications to ECUs;
- ◆ Isobus implement ECUs (Epec 3000/4000 series) providing a Codesys runtime software;
- ◆ The Isobus library will include a protocol stack (ISO 11783-3), the network management (ISO 11783-5), a VT client (ISO 11783-6), the implement application profile without tractor control commands (ISO 11783-7), the TC client (ISO 11783-10), and diagnostics services (ISO 11783-12).

Additionally, the Finnish company launched in Hanover its GlobE remote management service for OEMs and machine/fleet owners to remotely access the machine data. The customer need for remote management has increased significantly. The GlobE



Figure 1: Remote access unit with CANopen and SAE J1939 support (Photo: Epec)

## CAN Newsletter Online

The CAN Newsletter Online sister publication provides brief product-related information. For more details please visit [www.can-newsletter.org](http://www.can-newsletter.org).



### Agritechnica 2015 *Agricultural machinery innovations*

Innovations in agricultural machinery and equipment and the latest solutions and concepts for the future of plant production are presented every two years at Agritechnica.

[Read on](#)



### Agritechnica 2015 *Universally usable operating and display unit*

At the Agritechnica 2015, Bosch Rexroth presents its universally usable Bodas DI4 display. It is suitable for modern operating concepts with service functions in mobile working machines.

[Read on](#)



### Agritechnica 2015 *Automation for agricultural technology*

At the Agritechnica 2015, Bosch Rexroth presents its universal. At this year's Agritechnica, Jetter (Germany) presents a select portfolio of scalable automation solutions for agricultural implements.

[Read on](#)



### Isobus conformance test *For farm management information systems*

At Agritechnica 2015, the Agricultural Industry Electronics Foundation (AEF) presents a prototype of the Isobus conformance test for farm management information systems (FMIS).

[Read on](#)

service, together with the company's 6000 series product family, offers machine manufacturers a way to connect their machines to the Internet. The service provider takes the overall responsibility of the system from the sensor to the Cloud.

The hardware base is the 6100 remote access unit, coming in a fully enclosed aluminum housing. It is equipped with a built-in 2G/3G/GPS interface, which allows connecting the mobile machinery to the internet. The IP66-rated remote access unit together with the Multi Tool and the Codesys 3.5 programming environment makes it easy to integrate machine control system with higher-level information systems and industrial internet solutions, such as the GlobE service. The CAN interface supports CANopen as well as SAE J1939.

## Author

Holger Zeltwanger  
CAN in Automation  
[headquarters@can-cia.org](mailto:headquarters@can-cia.org)  
[www.can-cia.org](http://www.can-cia.org)

