(Source: Adobe Stock)

Vibration sensor for mobile machines

Whether there is an imbalance in the rotating blades of a mowing machine, cavitation or foreign objects in mobile drainage pumps, impacts on critical components: If such issues go unnoticed, they can cause costly damages and long downtimes. The 3-axis condition monitoring sensor VMB301 from ifm (Germany) is designed for use in mobile applications and can be integrated into the vehicle network thanks to its CANopen interface.

Once integrated, the sensor transmits a large number of condition indicators in real time: Fatigue (v-RMS), mechanical friction (a-RMS), shocks (a-Peak), mechanical stresses (d-Peak2Peak), statistical bearing wear (crest), and the surface temperature. The Bearingscout parameter can be used for bearing analysis and dynamic unbalance measurement. For remote monitoring, the condition and machine data can be transmitted via a radio modem to “mobile IoT”, the company’s IIoT platform for mobile machines. *of*

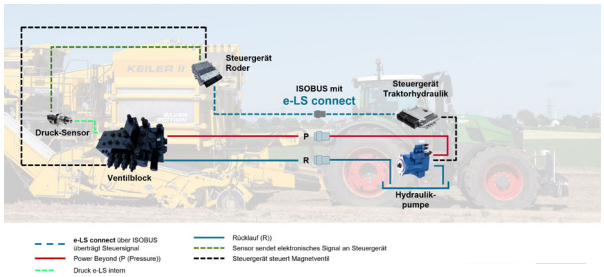
CAN-connected hydraulics

(Source: Ropa/Fendt)

At Agritechnica 2025, Ropa and Fendt (both Germany) introduced the e-LS connect control unit. It enables electronic transmission of the oil pressure signal via CAN-based Isobus communication – without a separate hydraulic load-sensing control line.

For around 30 years, oil pressure has been communicated between the tractor and the attached equipment via a hydraulic load-sensing line. With e-LS connect control unit, this connection is now digitalized. The required oil pressure is transmitted electronically from the attached machine to the tractor via the Isobus network, allowing the pump to deliver the right volume flow.

Components such as pressure control valves, sensors, and LS control lines are no longer required, which reduces potential causes of error, increases operational safety and simplifies the process of coupling and uncoupling. The Ropa Keiler 2 RK22 potato harvester demonstrated at the trade show the benefits of this approach. The working hydraulics respond even more quickly and precisely, e.g., when unloading the bunker. At the same time, diesel consumption is reduced because the hydraulic pump always operates at the optimum control pressure differential. It results in greater efficiency, improved quality of the harvested crop and increased profitability, stated the implement manufacturer. No hydraulic couplings means neither oil leaks nor dirt contamination. The operation becomes even more user-friendly since the driver no longer has to manually adjust control pressure differences.

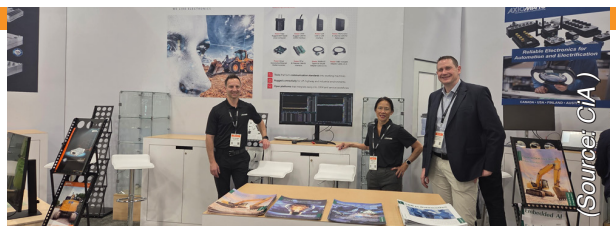


Block diagram of the tractor/potato harvester combination (Source: Ropa/Fendt)

From June 2026, operating Fendt tractors of the 500 Vario Gen4, 600 Vario, 700 Vario Gen7/7.1, and 800 Vario Gen5 series can be prepared for the e-LS connect via a software update. "Thanks to the consistent digitalization of hydraulic communication, the increase in efficiency is being achieved for the first time for the entire tractor-trailed machine coupling. For users, this means greater precision, comfort and sustainability in everyday use," stated Ropa in a press release. *hz*

Joint CiA booth on Conexpo 2026

CiA organized a joint stand for its members Axiomatic (Canada), Intercontrol (Germany), Kvaser (Sweden), and Sontheim (Germany). The exhibitors focused on CANopen and J1939 networks in construction, earth-moving equipment, and the migration toward CANopen FD and J1939-22. Persons on the figure (left to right):


(Source: CiA)

Daniel Kasamis and Tammy Purdy from Kvaser as well as Reiner Zitzmann, General Manager at CiA. *hz*

CAN-based control platform for excavators

The PC220LCi-12 excavator by Komatsu (Japan) is the first using the IMC 3.0 control platform. It uses embedded CAN networks and can increase the fuel efficiency by 20 percent. The platform currently does not utilize AI (artificial intelligence) for the programming. Work-equipment sensor data and GPS (general positioning system) data can be collected remotely, aiding in advanced troubleshooting.

The launched excavator features 3D (three-dimensional) boundary control (3DBC), which allows operators to set a work-restriction surface for height, depth, front, back, and side boundaries. The mobile machine is designed to stop automatically, when it approaches a restricted zone. 3DBC is a first-of-its-kind technology, allowing the operator to set digital planar boundaries as warning zones. 2D systems require the operator to reset these boundaries after every movement. The 3D approach considers dimensions of the entire machine, from work equipment to counterweight, and travel, too. It also can compensate for changes in machine elevation to relate back to restrictions set for power lines, for example, or depth of existing known utilities that are underground.

Compatible with CAN-connected tilt sensors, the platform introduces auto-swing control to help optimize loading and trenching operations. This function is based on three teaching inputs from the operator: a dig point, an unloading point, and an avoidance height. With a two-button combination, the machine follows the pre-set path without any inputs on the joysticks by the operator. The same combination returns the work equipment and bucket to the original point set.

Future updates of the excavator control platform will provide travel-along-line (TAL) and swing-to-line (STL) functions, reported the SAE Magazine. The TAL function automates alignment for travel as the STL function does for work equipment. Once a polyline representing a trench is selected, the excavator automatically aligns itself along the centerline while the operator maintains control of forward and backward travel along line. The STL function enables operators to select a polyline representing a trench. The machine automatically swings the upper body and work equipment from the trench center to the dump point and back to trench center in one cycle with a two-button press.

The platform includes real-time payload weighing function, indicating underload or overload versus the set payload target. It also features the possibility to record overall load-out and truck identification. The introduced excavator can be regarded as a software-defined vehicle (SDV), meaning the platform's hardware is configurable by means of software. This includes the possibility to configure joysticks by individual operators. Through the operator ID (identification) function, all of these settings are able to be saved specific to each individual for each start-up. Up to 50 configuration profiles can be stored. *hz*