

WITH THE SENSOR ON HARVEST DRIVE

EASIER MOUNTING AND MINIMIZED DOWNTIMES DUE TO SPECIAL DESIGN

Standard sensors are not always the best choice, e.g. if their installation and replacement during servicing are equally associated with some effort. As a leading manufacturer of harvesting headers, Geringhoff has therefore opted for a special solution from ipf electronic.

Carl Geringhoff GmbH & Co. KG, headquartered in Ahlen, Westphalia, specializes in the development and manufacture of harvesting headers for combine harvesters. "Almost 50 percent of our products are special machines. In the case of corn picker headers alone, which are our core business, there are over 10 million variations," says Jochen Scharmann, team leader for electrical development at Geringhoff.

BETTER CUT FOR HIGHER YIELDS

Each type of fruit has its own harvesting conditions. The company therefore developed the Truflex Razor belt cutterbar for cutting cereals and soybeans particularly close to the ground. A special feature: The belt cutterbars consist of a three-part frame for better adaptation of the harvesting headers to difficult soil conditions. Therefore, the height of the center section can be adjusted with the combine, while the level of the outer frames is controlled automatically by the wheels. In addition, as the mower blade on the cutterbar is flexible, it avoids obstacles on the ground such as stones better. "All in all, this gives optimum cutting results with higher yields," says Scharmann.

WEIGHT SAVINGS AND LOW-VIBRATION OPERATION

Unlike conventional harvesting headers, which are driven by a gearbox mounted on the outer duck, the TruFlex has the drive located in the center section of the frame. Thus, weight is saved because it does not have to be supported on the outside. Moreover, the mower blade has two counter-rotating blade halves, whereby the braking energy of one blade half is used to accelerate the second half. With additional counterweights installed, the entire blade unit therefore operates with very low vibration.

SAFE HARVESTING THANKS TO SPEED MONITORING

The mower blade is driven by a hydraulic motor. The advantage: If the blade is blocked once by a foreign object lying on the field, it switches off immediately via the hydraulic overload protection so that the foreign object can be removed. With mechanical drives, on the other hand, the switch-off usually occurs only after several blades may already have been destroyed. A sensor on the gearbox flange monitors the speed of the blade drive. This means that the cutter only switches the belts on once the required blade speed has been reached and switches them off again immediately in the event of a fault.

CHALLENGES DURING INSTALLATION AND REPLACEMENT

In the past, a standard sensor was used for speed monitoring, which had to be screwed into a thread on the gearbox flange at a specified depth in order to maintain the permissible switching distance of 1.5 to 2mm. "Among other things, we used a plastic sleeve that sat over the shaft between the gearbox and the motor to screw the sensor in as far as it would go, which required quite a bit of dexterity," explains Scharmann. The sensor was then firmly fixed in place using a counter screw and connected via an angled connector. Therefore, attention also had to be paid to the correct connector position.

Due to the tight installation conditions alone, mounting the sensor at the factory took some time. And even during an on-site service appointment in a field, a technician had to ensure both the correct switching distance of the new sensor and its correct position for the right-angle connector during a replacement. In addition, higher temperatures and vibrations caused more wear on the sensor. All good reasons, therefore, to look for an alternative.

SPECIFICATIONS WITH A WIDE RANGE OF REQUIREMENTS

"However economical standard sensors may be, an 'off-the-shelf' device could not help here. In the end, ipf electronic solved the problems for us and developed a sensor that met our requirements," says Jochen Scharmann. Here are some key features: A compact sensor in M8 design was required. Since the sensor is located between the gearbox and the oil engine, it must withstand higher temperatures, withstand the high vibrations of the cutting unit, and have a switching distance of at least 2mm. Above all, however, the installation and replacement of the solution in the event of a defect should be simple and, in this context, among other things, the connection should ideally be made via an M8-cable-connector.

SPECIAL DEVICE SOLVES SEVERAL PROBLEMS AT ONCE

The **IB08E337** inductive sensor from ipf electronic is designed for temperatures from -25°C to +85°C and has a maximum switching distance of 2mm. The design is particularly noticeable due to the combination of a wide hexagonal housing with a 12mm long M8 housing including thread. This special design makes it very easy to screw the sensor into an M8 thread as far as it will go and to mount it vibration-proof with a maximum tightening torque of 2.5Nm. The hexagonal stop also ensures that the correct switching distance is maintained for reliable speed monitoring. The electronics and the cable output of the sensor are molded (IP67). A switching frequency of up to 2.5kHz and finally a PUR cable with a M8-connector round off the special design.

EASY MOUNTING PLUS HIGH COMPATIBILITY

Jochen Scharmann is convinced by this solution in many respects: “The upper hexagonal housing as a fixed component of the sensor now enables a predefined stop when screwing in and replaces the lock nut previously used. The device can thus be mounted without any problems in confined spaces installation conditions. Thanks to the integrated connection cable, the connector position can be relocated to a less space-critical location, but we remain compatible with old machines in terms of the connector for servicing,” points out Scharmann.

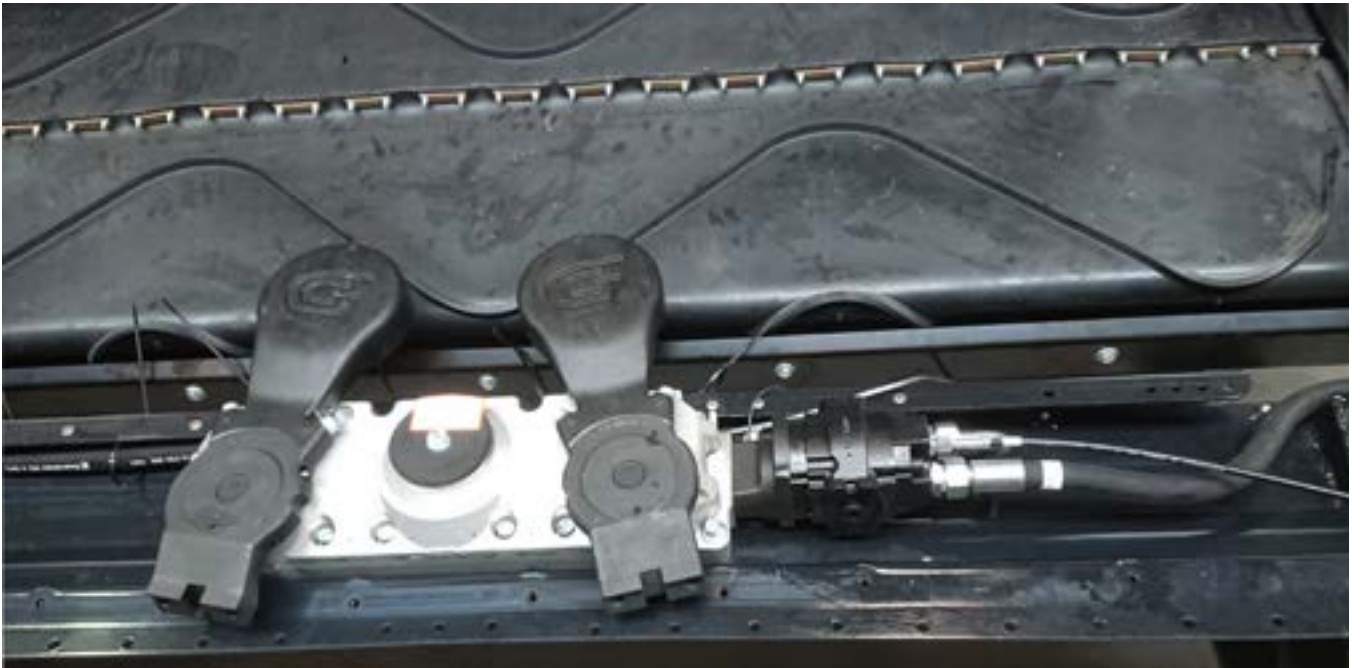
TIME AND COST SAVINGS ALSO IN THE FIELD

According to his estimation, the new solution enables a time saving of around 40 percent during sensor installation compared to the previous device. “We can now dispense with the plastic sleeve that was previously essential for correct installation, thus saving additional costs. The sensor is also easier to replace when servicing on site, which means the combine harvester is ready for use again more quickly.”

The **IB08E337** from ipf electronic has already been in use in Geringhoff’s TruFlex harvesting headers for several months. “We have come to appreciate the advantages of the solution during assembly. In practical use, we still need to gain more experience this season,” says the electrical development team leader.



Special solution for large machines: ipf electronic developed a sensor for monitoring the speed of the blade drives in Geringhoff belt cutting units for combine harvesters. (Image: Carl Geringhoff GmbH & Co. KG)



A sensor on the gearbox flange (right) monitors the speed of the blade drive located in the center of the TruFlex slitter.
(Image: Carl Geringhoff GmbH & Co. KG)



Detailed view of the gearbox flange: The hexagon on the IB08E337 inductive sensor ensures that the correct switching distance is maintained by means of the specified stop.
(Image: Carl Geringhoff GmbH & Co. KG)



The special solution from ipf electronic: The inductive sensor is designed for temperatures from -25°C to +85°C and has a maximum switching distance of 2mm. The design is particularly noticeable due to the combination of a wide hexagonal housing with a 12mm long M8 housing including thread.
(Image: ipf electronic gmbh)



Lateral view into the gearbox flange. In the center, you can see the internally toothed coupling shaft with the spur pin, which is detected by the sensor for the speed signal.
(Image: Carl Geringhoff GmbH & Co. KG)



The graphic shows the installation situation of the sensor on the gearbox flange of the oil engine. The special design of the sensor makes it possible to screw the solution into an M8 thread as far as it will go with little effort and to mount it vibration-proof with a maximum tightening torque of 2.5Nm.
(Image: ipf electronic gmbh)