

For testing purposes, magnets were used to attach the data logger to the tailboard. Krone recommends starting from a horizontal mounting position.



## Krone SmartConnect Solar telemetry unit

# Your smart Secretary

Mounted in an inconspicuous position on the machine, Krone's SmartConnect Solar logs away quietly in the background. We were keen to find out what this telemetry solution holds in store for users.

Entry-level machines and implements without on-board electronics or ISOBUS connectivity often leave a gap in your farm's digital job documentation. This gap is filled by the Krone SmartConnect Solar (KSC Solar) telemetry unit, previously featured in *profi* 11/2022.

In the 2025 season, we tested KSC Solar units on various machines - a push-off trailer, a silage tipper, a rigid cultivator and a folding knife roller. The goal was to log hectares covered and count wagon and trailer loads. What sets the KSC Solar apart from typical data loggers is mainly the fact

that it generates its own electricity, courtesy of an integrated solar panel. This feeds an internal battery, eliminating the need for a wired power source or regular charging. In our experience, the battery's capacity is sufficient - unless the unit is exclusively used at night time for weeks on end.

A joint development of Krone's agricultural machinery and commercial vehicle divisions, the data



The data logger is shipped complete with fasteners and mounting plates.

logger is priced at €655 (list price excluding VAT). This collaboration boosts production volumes and helps reduce unit costs.

The price includes the device itself, two mounting plates, fasteners and the licence for Smart Telematics at *mykrone.green*. It also covers the transmission fees for the integrated modem.

For another €150 a year,

## KEEPING IT BRIEF

Krone SmartConnect Solar is a solar-powered telemetry unit.

The data logger counts hectares covered and trips to the clamp or grain store.

The recorded data can be uploaded to Krone Smart Telematics for a free-of-charge analysis.

the Smart Telematics Plus package adds the following options:

- » Geofencing with zone entry/exit notifications
- » Excel or ISOXML file exports
- » Yield map SHP exports (for forage harvesters)
- » SmartBale App (for balers)
- » Master data management using the CCI. Maps app

### Durable hardware

The KSC Solar unit has neither switches nor wires, but an LED light which uses various colours and flashing patterns to indicate various states – active, working/transport mode, GPS positioning and mobile network connection. In addition to the battery and the solar panel, the casing houses a GNSS receiver, a position and acceleration sensor, a mobile wireless modem, a processor and a data logger.

The unit is supplied with universal adapter plates and the necessary bolts. Yet, you can also attach it with magnets, provided these are neither too large nor too strong to avoid sensor interference. After trialling both methods, we recommend bolting the plate in place. Although it takes a bit of creativity to find the perfect spot, the unit is tightly secured and also shrugs off the occasional nudge from a forage harvester. The magnets, by comparison, proved workable, but ultimately less dependable.

The moment the KSC detects motion, it wakes up and begins transmitting positioning and status data at ten-second intervals. After two minutes without detecting movement, it goes into idle mode. In active mode, it transmits the following data:

- » The current machine position
- » Stationary machine / its current forward/rearward speed
- » Distance covered

- » Working status
- » Trip count or hectares covered
- » The battery charge level

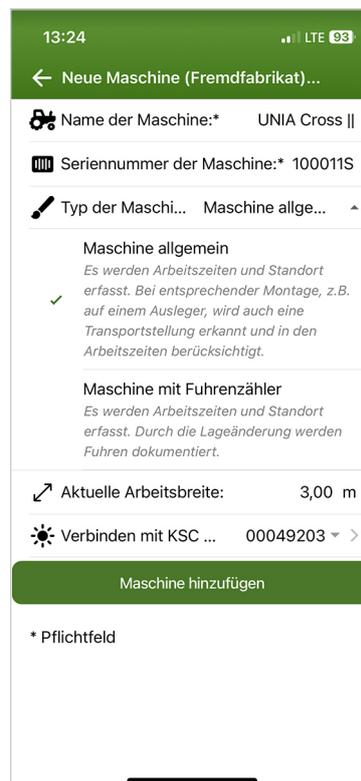
Whenever mobile reception is not available, the system buffers the recorded data for several days, says Krone. Users should be aware that the Smart Telematics live map displays only the machine's most recently transmitted position along with a time stamp.

On a positive note, Smart Telematics does not allocate the data to the KSC Solar unit itself, but always to the machine or imple-

An ID number links the KSC Solar unit to your Smart Telematics account.



Only a few details are entered to register a machine to the system.



ment the logger is assigned to at the time of data recording. This makes the subsequent analysis a lot easier.

### Quick machine tracking

Like all user operations, the analysis is carried out by the Smart Telematics system in the mykrone.green customer portal. After logging in and entering your ID number that assigns the KSC Solar logger to your

farm, you enter the machines and implements you would like to monitor.

Krone machines are automatically identified on entering their serial numbers – so there is no need to enter the model name, working width or type information as is necessary for other brands. For tracking hectares covered, enter the physical offset between the data logger's and machine's centre points.

Since Smart Telematics is also available as a smartphone app, you can enter the machine to Smart Telematics and assign the KSC to as you stand at the machine. This comes in handy for those who use one KSC data logger on several machines, for example as an area counter on a rake and a trip counter on a forage wagon.

Speaking of smartphones: Krone claims GPS positioning at 'smartphone-level accuracy', which suggests deviations of up to 5 metres. During our test, we randomly compared the acreage logs with data in the farm's Single Application Form and found that the dif-

ferences were only marginal – meaning that the algorithm achieves a remarkable level of precision.

### Area covered or wagon load

You can use the KSC Solar either as an area counter or a wagon load counter. Smart Telematics computes hectares covered by using the machine's working width and the number of tramlines recorded with the

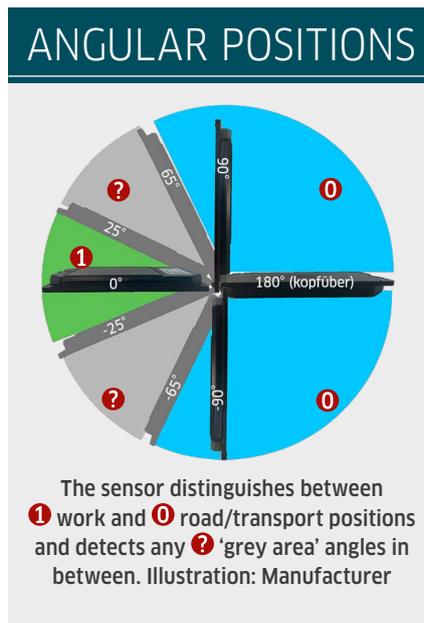
# ELECTRONICS

machine in working position. Overlaps are factored in based on tramline distance. The data logger will start recording a wagon load when its attitude changes from horizontal to vertical (or vice versa) and remains in that position for more than ten seconds.

Machine status is determined from the unit's angular position, as shown in the image on this page. The system uses the current angle to distinguish between working and transport positions. Yet, the angle values recorded relate to the horizontal ground line rather than to the mounting position of the device. Fail to bear this in mind during the installation and you end up with incorrect alignment data.

» On our test rake, we installed the unit to one of the box section tubes that run parallel to the rotor arms. This enabled precise detection of both the horizontal working position and the vertical transport position.

» On our push-off trailer, we initially installed the unit to the lower section of the sloping tailboard. In this position, however, the logger sat at roughly 45 degrees relative to the ground – a position in which it was impossible to detect a wagon load. We solved the issue



The data logger attached easily to a square tube on the twin-rotor rake. Photos: Holzhammer

by moving the logger to the vertical section of the tailboard, where it gave accurate readings.

» Tipping trailers are tricky, because the tailgate may open from vertical to horizontal, yet the bed may tilt to the rear by 45 degrees or more. Three-way tippers are even trickier. Expect some trial and error before achieving solid results.

Krone says further configuration options are in the pipeline to expand application options. Details, however, remain under wraps.

## Analysing data

Once data logging runs smoothly, you can shift your attention to making practical use of the figures. Smart Telematics offers a wide range of analysis tools, including real-time positioning on a map, which allows dispatchers to view the machine's current position and working status. Select a specific machine and the system reads out the following information for the selected day:

- » Number of road trips or hectares covered
- » Distance travelled
- » Active operating hours
- » Idle operating hours
- » Active distance
- » Idle distance.

## USER TESTIMONIAL

### Accurate billing becomes a breeze

Today our machinery ring operates 50 KSC Solar units that are installed to tillage and mulching equipment. We also plan to equip muck spreaders and push-off trailers with the device in the future.

In autumn 2024, we installed the first 25 units to all our folding implements. On these machines, the loggers provide accurate angle measurements as the machine changes over from transport to work position and vice versa. In late 2025, we installed another 25 units to our rigid implements. For these machines, we defaulted the log-

gers to boundary-based working status detection, for which Krone provided the necessary support. Overall, we have been satisfied with the results. Spot checks against the Single Application Form



MR assistant manager Marco Schoenbein:

“Locating our machines and billing them has become a lot easier.”

showed deviations of  $\pm 3\%$  – which is accurate enough for our members. In rare cases, we find that the tramline data are erratic, which Krone attributes to excessive vibration. We have been testing rubber buffers to try and mitigate the issue.

Currently, we are using the recorded data for monitoring the current positions and cross-check the rental information that is submitted by the farmers. In the medium term, we plan to link Smart Telematics to the machinery ring's rental services app to leverage ERP-based billing. Ideally, the system would detect the working status by pto activity.

By clicking the timeline you retrieve the working position and travel speed at any time of day. Zoom in on the timeline or click on a tramline to view a specific field. Satellite imagery for visual field recognition makes navigation intuitive. If a job runs past midnight, the system will split the recording job at 00:00 hours, a detail that needs to be borne in mind during the analysis.

Another issue - identifying the current working status of a rigid implement - has meanwhile been addressed by Krone. The issue on these machines is the fact that they don't really change their angle as they are lifted and lowered. Hence, the sensor fails to distinguish clearly between work and transport positions, logging roads and



The reports provide a clear and structured overview of the available data.

The map shows in which areas the rake was active or idle.

tramlines as area covered. As a result, its daily area counts will be inaccurate. Addressing this issue, Krone announced a Smart Telematics update which is claimed to allow users to choose between detection based on field boundaries and sensor angle. The new option uses optical field recognition technology to switch between work and transport statuses: when operating within field boundaries, the machine is logged as active and as inactive when operating outside boundaries.

Field recognition is made much easier by the option of managing your master data via the cloud-based CCI.Maps platform. Provided your fields are stored in this universal portal, the Krone system retrieves and displays them together with the field owner, field name, field size and planned tramlines. Another feature announced by Krone is Individual Load View. This allows users to click on a tramline and display the associ-



The analysis for one day of ensiling maize shows 33 trips, 102 kilometres travelled and 10.1 hours of work.

ated trip number together with information on distance travelled and trip time. This data can then be used to compute average values, which may be useful when setting up forage/grain transport chains or for fine-tuning forage wagon logistics.

## Accurate billing

Users have the option to share all Smart Telematics information on the 'agrirouter' data exchange platform and have them transferred directly to their billing or farm management software. The system even includes a dedicated billing function which prepares so-called reports which summarise a machine's performance during one or several days.

These summaries can then be broken down by field simply by clicking on the timeline. Let's take maize silage operations as an example: The daily summary shows the tipper took 33 trips to the clamp. Using timeline or automatic boundary recognition data, we can count the number of trailer loads harvested from each of the individual fields. By default, these summaries are available as PDF downloads.

Exporting Excel sheets or ISOXML files calls for the fee-based Smart Telematics Plus add-on, which allows users to bundle multiple reports, for example all individual raking reports during the cutting season.

Another plus is Geofencing, an investment that may quickly offset the licence fee.

The feature allows users to define three virtual zones. It will then send an email notification whenever a machine enters or leaves one of these zones. This helps pinpoint rental periods accurately and reduces theft risks. We suggest offering additional alerts for enhanced theft protection such as push notifications or a phone call service.

## Summary

The Krone SmartConnect Solar telemetry unit, in combination with mykrone.green and Smart Telematics, provides a straightforward and affordable solution for generating telemetry data from machines that have no on-board electronics.

The solar panel ensures the data logger requires only little attention once it is installed. Smart Telematics delivers solid baseline analysis for a wide range of applications via an intuitive interface. Those wanting to dig deeper can export and process their data offline.

Andreas Holzhammer