



Via smartphone, tablet or computer, operators can access harvesting and loading data.

### MyRopa and R-Connect:

# Beet in the Cloud

Initially developed by root harvesting specialists Ropa in 2018, the company's R-Connect online data logging system has since seen further refinements and developments, with unnecessary elements trimmed and new features added. Here we catch up with the latest version.

Since R-Connect was launched in 2018, Ropa beet harvesters and loaders have had the ability to send operational data to 'the cloud', with current Tiger 6S, Panther 2S and Maus 6 harvesters having this integration as standard. Most of the data collected by sensors is sent to servers in Germany, with the aim of tracking the company's harvesters in a manner that will help provide full operational data and potentially a 'heads up' if a service problem is likely to crop up (see user testimonial). The initial focus was integrating R-Connect to FarmPilot's management software, but the design goals have since evolved. This is

largely down to way existing data platforms, both local and global, operate when collecting cropping, logistics and harvesting data. Ropa is now pushing R-Connect as part of a stand-alone system that does not use existing systems to feed data directly to the cloud. "The existing XML data standard is not really suitable for our requirements," explains Michael Gruber, division manager of Ropa sugar beet equipment. "We need a simple and, above all, stable system. In our experience, devices that are not a part of own development can be susceptible to failure. As an example, the power supply to a tablet-PC, wired or wireless connections, and even manual data

## KEEPING IT BRIEF

Main developments have focussed upon improved data management and facilitating service work.

The latest system framework enables eased integration of future developments.

Existing MyRopa management software will fully integrate with Online R-Connect.

transfer, can lead to unpredictable problems that in turn degrade the value and dependability of the whole system. For these and other reasons we are now trying to integrate all working elements into the machine's terminal, with its own online portal." Michael Gruber adds that it is currently not possible to transfer fleet management and beet clamp data into the overall management package, but that Ropa has made the necessary preparations "We are now at a point where we can collect all related data, so further developments are possible."

## MyRopa.de

The R-Connect portal is up and running and has recently been enhanced with a second higher-level platform: myropa.de. This stores specific machine information to include chassis number, build specification and the software versions related to all electronic components. This may appear to be nothing more than digital data storage, but Ropa suggest by having this information available 'in the cloud' is a real help when it comes to servicing equipment.

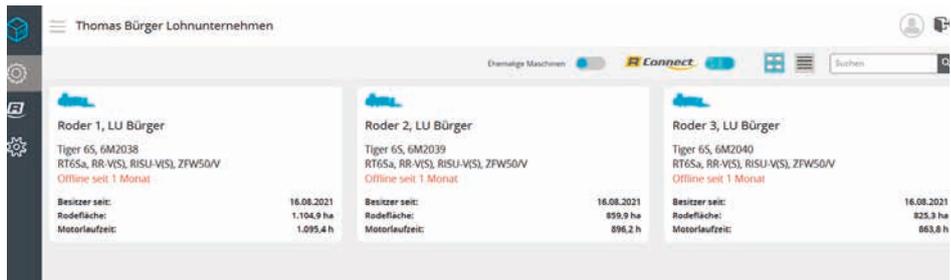
As an example, MyRopa retains all the original order data, making it accessible when the machine is connected to the system. This ensures, for example, that if there is need for a specific replacement part related to an individual machine, it will be ordered and supplied, so eliminating the risk of the wrong item being supplied. Future developments will enable spares to be ordered directly from the machine itself. The MyRopa platform will also provide access to the latest updates, service and maintenance instructions, the machine's service history and details on parts that have been replaced during the machine's working life.

All this data is stored both on servers and on the machine itself, with MyRopa providing a comprehensive digital machine file that logs all repairs and services carried out by the dealer. In future, the system will become proactive, with prompts to the operator when a service or some attention is needed.

## R-Connect expansion

For day-to-day business, R-Connect, which is also a web-based application, can be accessed via any internet browser.

The 'ropa-rconnect.de' website can also be added as a shortcut to a smartphone's home screen, the platform operating pretty much in the same way as any 'phone app. This entails logging in to access the dashboard that shows all machines that have been entered into the MyRopa portal (or made visible for



MyRopa.de provides machine management tools.



job data can be imported and created on the myRopa platform.



Every Ropa machine has a GPS receiver...



...and factory-installed telemetry module.

you) and lists customised data. This will include a chart showing key operating stats collected in the most recent work period. Alongside, live data can show current harvesting rate, ha/hr performance, fuel consumption and remaining fuel. Further sub-menus will provide other data to include the number of empty runs in metres, differing levels of fuel consumption per hectare etc.

## Touch button records

Each completed job is signed off by entering the customer's name, operator name, and the field name. The machine will log this and related data and then open a new job automatically. Each job completed is automatically given a consecutive order number that will be duplicated in the harvester terminal and in the R-Connect online portal.

The data is not just stored as a list, but also can be accessed in a map view. This will show the number of harvesting passes, empty and full transport hauls as well as the clamp sites; these can be visualised in various colours. The latter can make it easier to identify specific customer clamps, a future algorithm possibly identifying the optimum positioning of clamps to reduce transport costs.

Another new function is play-back. This provides a visual representation on the machine terminal during harvesting. Displayed at up to 100 times the normal working speed, the operator can view when and where settings were changed and relate this back to how the harvester was performing at any given time.

At present, the Ropa R-Connect portal cannot integrate with accounting programmes such as FarmPilot, but the company suggests this is something they are working upon. Having software that integrates with existing systems can be a useful aid when it comes to overall, as opposed to specific, machine management.

## USER TESTIMONIAL

### First ridiculed, then loved

Farmer and contractor Thomas Bürger has been using R-Connect since 2018. Back then, his fleet consisted of one Internet-compatible Tiger 6 and three V8 Tigers without cloud connectivity. For his fleet, the benefits of R-Connect were not that great but he says this changed for the 2021 season when he swapped from tanker harvesters to three Tiger 6Ss.

"In the beginning, I ridiculed the entire online topic. Now I see it differently". This he says is in part down to how his machines are operated. His drivers routinely swap between harvesters, and it can be difficult to record all the work done, the more so as his operation has to cope with numerous small 3-4ha fields spread over a 30km radius.



Contractor Thomas Bürger:

**"R-Connect was developed by people who know what matters."**

Thomas says managing his fleet himself and keeping in touch with his customers was always stressful, but less so now. "R-Connect is like gold for me. I used to make over 50 'phone calls a day to just connect customers and drivers. But since the team has been using R-Connect, the 'phone calls have been reduced to the bare minimum. My drivers have their own accesses to the system. They always know where the harvesters are in relation to each other and can now organise shift changes themselves".

Thomas adds he now better able to answer customer queries about the imminent start of harvesting. "Fortunately, the system is simple and easy to access and operate. Even during a phone call, I can look at the smartphone and see current harvesting

progress and when a field change is coming up".

As yet he doesn't use the contract management part of the system but Thomas, who harvested around 2,800 ha in 2021, is optimistic about the future "I am still more familiar with the analogue way of doing things. In future we will want to use digital management, but it will take time to exploit all it has to offer. I am using the digital fuel gauge as it is me that typically refuels the harvesters. The ability to see the levels in each machine without having to call the operator makes it easier to optimise how I top them up".

After some initial scepticism, Thomas Bürger says he has now come to see the advantage of using camera recordings. "We make a note of any special incidents, the recordings helping us to understand what was going on at the time. I am sure that we will use other data more intensively in the future too, such as better evaluating fuel use".

At present, each harvester has an additional tablet on board, on which the drivers draw in the locations of the clamps for the trailers. "In the foreseeable future, this step will hopefully be dropped as we use the Ropa software".

There are still a few things on his wish list. "A manually triggered photo function would be good. Additional warnings, such as when the hydraulic oil level drops to a low level, would also help." He would also find it useful to have a live view of the machine terminal and a navigation function to aid different operators to find a machine when it is not actually working and perhaps stored at a customer's.

As to surveillance by Ropa, he does not see this as a problem. "I signed the ABG (German confidentiality agreement) immediately. I am not worried that Ropa will gain too much about the machine's usage. They get most of the information anyway when they service the machine or when it is sold. Ropa will learn through the live usage data and can, if necessary, warn of a potential problem before it becomes an actual problem. If something does crop up, the mechanic in the field has easy access to a specialist in the factory who will have full remote access to all operating data. I see the sharing of data as a win-win for operators, customers and manufactures".

### Review with photos

A further new option, R-View, looks interesting. This offers a slightly different play-back function using a further two cameras, one on the cab roof and a second on the unloading conveyor. Each camera automatically takes a picture when unloading begins and a second at the start of each bout. When a job has been completed, the system can display these georeferenced photos, the operator then knowing when and where they were taken.

This has the potential to provide a more detailed look at how various settings and conditions impact upon work rates and beet condition. As an example, it could help outline why beet in one clamp stores better than in another or why topping performance has varied between different jobs.

Sounds great but the captured pictures could do with an upgrade. Currently the images have a modest resolution of just 800 x 600 pixels which is not good enough for detailed analysis. That said, the pictures have their uses to include recording if a crop was heavily weed infested or the foliage was excessively diseased when it was lifted. As for the size of the images, Ropa points out at the issue is related to uploading data from field to server over mobile networks as opposed to not being able to record better pictures.

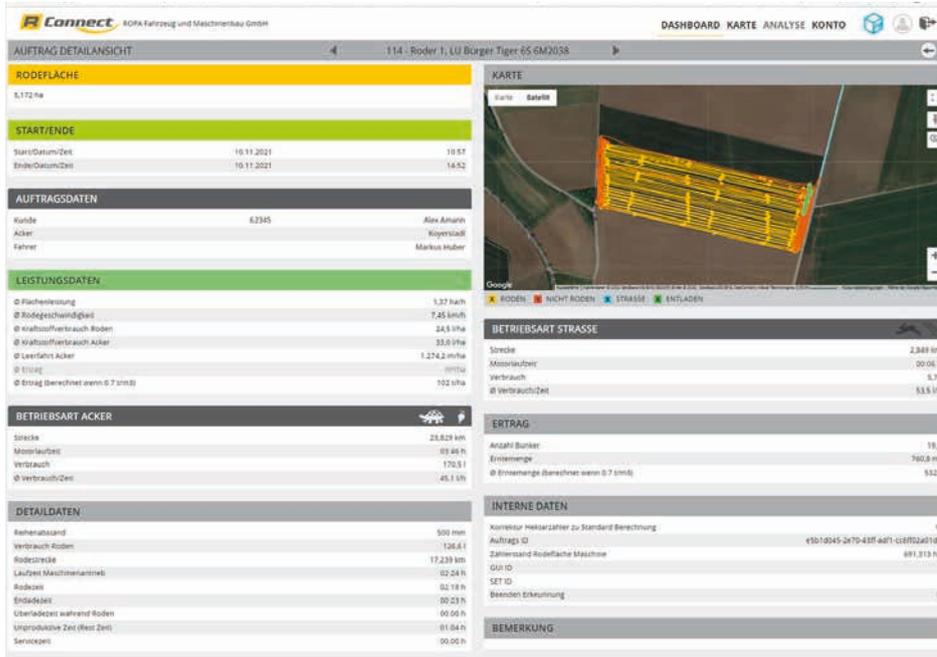
This brings us to the GSM modem. The current system uses a factory-installed SIM card that is compatible with networks worldwide. At present Ropa will pay for the costs for the contract, but in the long term they will introduce a flat rate fee.

### Service support is a key winner

"It can be a real problem dealing with sporadic machine error codes," says Michael Gruber. "Since we developed R-Connect, with its online connection, we have much better data collection. We can filter problems so we can locate them faster and more accurately, reducing downtime". He adds this has benefits for both the operator and the company as its service personnel can offer support remotely. The system can also be used to alert fuel suppliers when the harvester's tank level drops below 20%, enabling those lucky enough to have a tanker service ready to top them up 'on-site' to use R-Connect to do the logistics for them. It also works well for those fuelling harvesters themselves.

### A look into the future

"Since we started collecting data, we have developed further ideas," says Gruber. He adds that even though the agenda in this fast-



The system prepares a report and visual map of every job as it is completed. Photos and screenshots: Schulz, Bürger, manufacturer

The R-Connect display will also show basic operating data.



moving field is always being readjusted, things like anticipatory and adaptive driving, to include steering, are conceivable developments. This technology, he suggests, can automatically 'learn' from how the harvester is operated and perhaps then make field-specific recommendations to improve efficiency. This could include suggesting the optimum location for the clamp, avoiding empty hauls or the most efficient way to lift beet from awkwardly shaped fields.

### Further details in a nutshell:

- A data buffer compensates for mobile signal failures.
- All data is encrypted and sent through a VPN tunnel.
- The online capabilities of the machines are based on four CANbus data strands.
- When a machine is sold to a new owner, all relevant changeover data is carried out virtually.
- R-Connect will be developed to work with the company's potato equipment.

### Summary

Since Ropa has been developing software for harvesting and loading technology in-house, online services for the machines has also been growing. After Ropa introduced the R-Connect platform, it has been further developed and expanded to include the higher-level MyRopa platform. The more data the manufacturer collects, the more it can expand its online applications.

Sönke Schulz