Medical aid telematics for hovercrafts

A recent case study shows how the charity organization HoverAid uses the CANedge3 data logger from CSS Electronics to collect data from hovercrafts that bring medical teams to some of the world's most remote and forgotten communities.

Alongside trucks, off-road vehicles, and light aircraft, HoverAid also uses hovercraft, which are uniquely able to navigate shallow rivers in regions where there are no roads.

Over the last few years, Chris Evans (Commercial Director at RFC Power) worked with HoverAid to build a new hovercraft using a reconditioned BMW diesel engine and deliver it to Madagascar, handing it over to the local team in September 2025. The team needed a system for logging data and transmitting to the cloud so that they knew where the craft had been and how it was performing, as well as to enable remote troubleshooting.

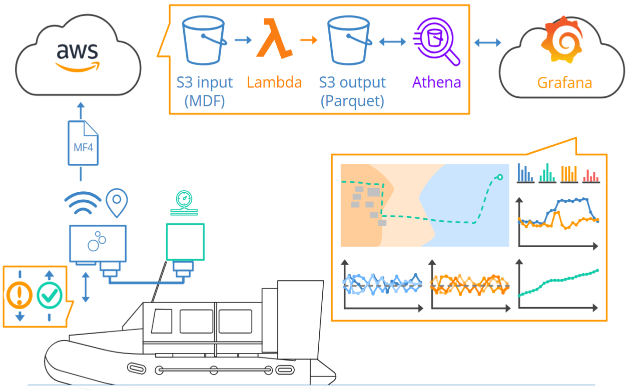

Figure 1: The developer team needed a system for logging data, transmitting it to the cloud and to enable remote troubleshooting (Source: CSS Electronics)

The team set up the CANedge3 CAN data logger with LTE (long term evolution) and GPS (global positioning system) support to record data from following five sources in the hovercraft:

- ECU (electronic control unit) data broadcast by the hovercraft (they reverse engineered parts of the BMW protocol via online resources);
- GPS data from the CANedge3 directly;
- UDS data from the ECU and OBD data (if requested by an external tester);
- Skirt pressure from a pressure-to-CAN box that the team made by itself.

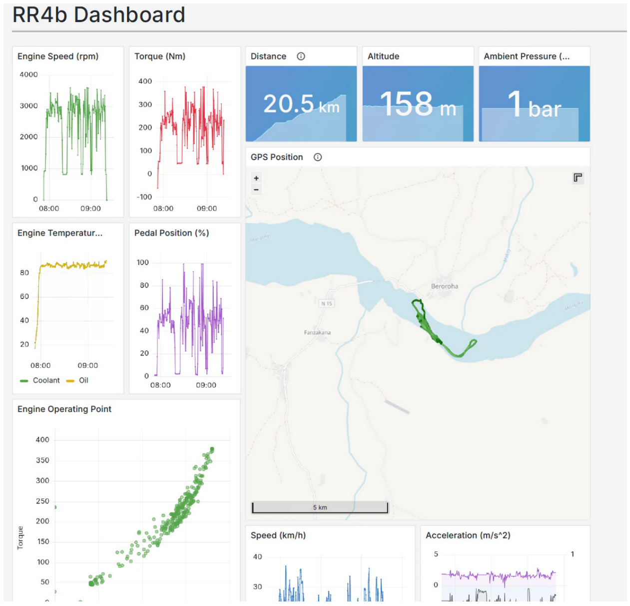

Figure 2: Example of the RR4b dashboard showing recorded data in a selected time span (Source: CSS Electronics)

The data was uploaded to the team's own AWS S3 bucket using the configuration instructions and files supplied by CSS Electronics, and a number of DBC (data base CAN) files to decode the data. A dashboard (see Figure 2) was built in Grafana using the Grafana-Athena integration, a plug-and-play automation workflow available for the CANedge data loggers.

Achieved benefits

The deployment of the CANedge3 has helped HoverAid in multiple ways for their medical team deployments. It has allowed them to report back to funders with reports that show exactly where the craft has been. The medical aid is deployed to very remote villages with no road access, and the GPS data really brings to life where the team has managed to reach with doctors and nurses.

Further, the telematics solution has enabled remote diagnostic and troubleshooting. The local team includes experienced engine mechanics, but the data can really help pinpoint the cause of any issues. As an example, the team had a sudden engine shut-down during commissioning and could see on the ECU data that the fuel supply pressure had fallen. This allowed them to quickly trace the problem back to the fuel supply.

In addition, the team has been able to develop online calculations, monitors, and prognostics. This will help the team in everything from pilot flying feedback, to alarms and early indications that performance of some part of the system is failing.

Figure 3: The deployment of the CANedge3 has helped HoverAid in multiple ways to work in the world's most remote and forgotten communities (Source: CSS Electronics)

As Chris Evans explains: "The CANedge has worked impeccably – and the APIs make complex data logging from remote locations remarkably simple". In particular, Mr. Evans highlighted the quality of information on the CSS website as being outstanding, including in particular the documentation on setting up the CANedge as well as the Grafana dashboards, along with the technical support offered by the company.

Conclusion

The team chose the CANedge3 because it had the hardware features required (two CAN interfaces, GPS, LTE) and enough configurability to deal with a variety of data sources. Further, the device had to be small, robust and reasonably priced. In the end, the team found that one of the primary benefits was the integration with AWS and Grafana, giving them robust data in the cloud. This has been possible for the team without writing any code.

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