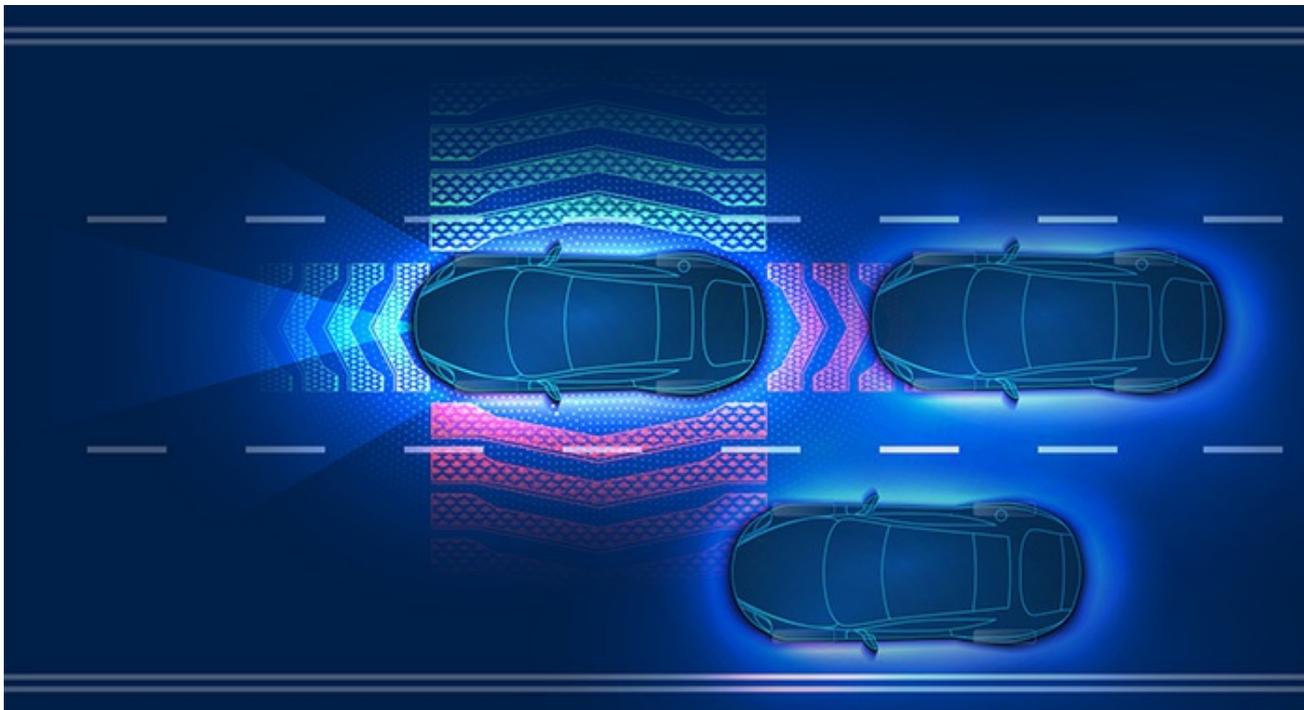


Data acquisition with Kvaser hardware

Kvaser and Elektrobit offer a webinar on CAN data acquisition for ADAS (advanced driver assistance systems) on June 21. Kvaser's CAN (FD) hardware is also used in some university projects for aerospace and solar boats.



The webinar introduces the use of Elektrobit tools and Kvaser hardware for ADAS development (Source: Kvaser)

The [webinar](#) discusses how Elektrobit's integrated toolchain provides CAN data acquisition for ADAS environments in virtual, real-time, remote, and logging scenarios. The experts also provide insight into the Kvaser device family and explain how using of virtual channels can speed up the ADAS development process.

Rocket test stand

The TU Wien Space Team uses CAN FD for design of its latest TS03-24-kN test stand (called "Franz") for scaling up of liquid-fueled rocket engines such as their suborbital [μHoubolt](#) rocket. For redundancy reasons, the test stand's electronics is based on multiple CAN FD networks connecting sensors (pressure, temperature, forces) and actuators to a web-based server. The latter runs a self-developed control, monitoring, and data acquisition software. To connect the CAN FD networks to the server the team uses a Kvaser Pciecan 4xHS CAN network card.

Daniel Frank, Board Member and μHoubolt Project Lead explained: "CAN FD was needed due to the high data rate required to send data from numerous sensors at sampling rates of up to 10 kHz to the server. We chose CAN FD over other networks such as EIA-485 or Ethernet due to its simple implementation in embedded systems, its deterministic behavior and the bus topology. Additionally, CAN FD is designated to be used in future rockets, so compatibility between rocket and test stand systems is another advantage."



Kvaser Pciecan 4xHS CAN enables to connect up to four CAN FD networks to a PC (Source: Kvaser)



The rocket test stand for engines with a thrust of up to 24 kN (Source: Kvaser)

The team works on aerospace projects including experimental rockets, rocket engines, and small satellites. In the recent project [Across Austria](#) an autonomous, hydrogen-fueled aircraft to fly across Austria is on development. While the electronics are yet to be planned out, the experience of some project members with CAN FD means that this bus system could be used.

Solar boat project

Since 2015, cross-degree engineering students at Lisbon's Instituto Superior Técnico work together on the development of solar-powered boats. The main purpose of the Técnico Solar Boat (TSB) project is to participate in worldwide engineering competitions. In the Monaco Solar & Energy Boat Challenge (biggest in the world), the SR02 boat took the 2nd place on the podium (A-class) in 2019. The team competed with 34 teams from 14 different nationalities. In a remote competition in 2020, the

students won the innovation prize among the eleven participating teams. As there was no further competition in Monaco, the university started its own Odisseia TSB event, traveling along the Portugal coast, doing some crossings, and testing the boat's capabilities.

The SR02 boat implements a CAN-based system to control the motors, the hydrofoils system, and to check the state of temperatures, voltages, currents, etc. The hydrofoils allow the boat to get elevated over the water line, which reduces the drag forces and the energy consumption. While development, the Kvaser Canking software was used to monitor and analyze the CAN traffic. The Kvaser Memorator Pro 2xHS v2 interface and Kvaser Database Editor helped to log data from the vessel for further analysis. A self-developed Matlab App allowed to extract required data from a .mat file generated with the Kvaser Memorator configuration tool. This enabled the team to evaluate the data from a desired period of time, to see the variables' change along a travelled distance, or to check the boat position for each instant of time.



CAN-controlled hydrofoils allow the SR02 boat to get elevated over the water line, thus reducing the drag forces and the energy consumption (Source: Kvaser)

The students are currently developing their third solar-powered boat SR03, and finishing its first hydrogen-powered boat São Miguel 01 (SM01), which will also use the Memorator Pro 2xHS v2 interface with dedicated software.

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