How HMS Ixxat CAN Solutions helped the Forze racing team develop a world beating hydrogen powered race car.

The world of transportation is changing. Not since the launch of the first mass produced and affordable internal combustion engine powered cars has the world seen such a huge shift in technology.

One thing that seems certain is that electricity will be at the heart of this move to clean transportation and the team at Forze racing believe that hydrogen technology will provide the electrical energy that powers this change. Forze is a multi-discipline team of students from the Delft University of Technology in the Netherlands. The Forze project is open to students from a wide range of areas from Marketing through to Engineering and of course, drivers!

The Hydrogen Powered Race Car

The team started its journey in the “Formula Zero” racing series, building, and racing hydrogen powered karts for 3 years before moving on to the “Formula Student” competition. 2 years later work started on building the Forze VI, their first full sized hydrogen powered race car. In 2015 this amazing car lapped the Nürburgring Nordschleife in less than 11 minutes, setting a record for hydrogen powered vehicles.
There followed the Forze VII & Forze VIII. Forze VIII is not only the first hydrogen car to finish the supercar challenge, but even the first hydrogen powered race car in the world to compete in an official race against conventional petrol powered cars. During that race, the team achieved second place.

The next challenge, the Forze IX is now being developed and is aimed directly at beating prestigious cars such as the Porche 911 GT3 and Lamborghini Huracan.

The Data Challenge

A critical part of the development of Forze’s cars is data acquisition. Without an effective method of capturing and analysing the Forze car’s performance data, it would be almost impossible to develop such a technically advanced and innovative vehicle.

This is where the Ixxat product family from HMS Networks comes into the Forze story.

Key requirements were:

- Communication with the car’s on-board systems via a data port
- USB to CAN Connectivity
- Access to each nodes data
- Option for CAN FD in the next gen car
- The ability to perform tests without software changes

How did Ixxat solutions solve the Forze data challenges?

- Connected via the car’s data port, an Ixxat USB-to-CAN FD interface is used to provide a compatible physical connection for a laptop.
- Ixxat CANopen Device Manager software is used to access the Object Dictionaries of each of the car’s CAN nodes.
- CANopen Device Manager allows data values to be changed and tested without software modifications, saving time and expense.
- The support of CAN FD in the Ixxat hardware in combination with the Ixxat canAnalyser 3 software tool was essential as the new car is to have its communications based on CAN FD.
- The USB-to-CAN FD interface and canAnalyser 3 software will be vital tools to enable the development team to understand how the car performs at each stage of development and testing.

The Result

Using Ixxat technology, the Forze team have been able to have quick, easy, and reliable access to the vital data that they need. HMS is proud to be a part of this project and to have helped Forze develop such a ground-breaking and successful hydrogen powered racing car.