

Measuring fuel consumption of vehicles in real driving conditions

The measurement system dQ-road from dQdt is used to measure fuel consumption of production vehicles in real conditions on the road. Secure data processing is provided by the CAN technology from Microcontrol.



In the robust casing of the dQ-road, Roland Czech has placed the entire measurement and CAN technology which is controlled by the Linux control unit μ MIC.200 (Photo: dQdt)

Diesel emissions scandal and driving bans, manipulated consumption and emission values - these subjects require immediate solutions. Roland Czech is one of the troubleshooters. About eight years ago, the engineer for technical chemistry started to build the first prototypes in his garage in Krefeld. The priorities of dQdt's business activities are measurement of fuel consumption of vehicles and additive contents in the "Adblue" technology as well as leakage detection in hydraulic components.

For this purpose, Czech has refined a measurement principle and designed a precision sensor. "As I manufacture samples and prototypes myself, I save a lot of development time." Therefore the engineer was able to react to the current emissions affair in the automotive industry. "The measurement principle underlying my products helps my customers to quickly optimize their production."

Measuring fuel consumption on the road

The measurement system dQ-road is used to measure fuel consumption of production vehicles in real conditions on the road - regardless of the type of vehicle. RDC (real drive consumption) or RDE (real drive emission) are the technical terms for this procedure. "To acquire and process the signals of a variety of additional pressure and temperature sensors as well as different types of raw signals and - finally - output them to the CAN bus I came across Microcontrol", Roland Czech explained. With its μ MIC.200 the company from Troisdorf has developed a control unit which suits the requirements of dQdt.

"The μ MIC in connection with robust μ CAN sensor modules perfectly meet my high quality requirements. And due to the compactness of the Microcontrol components, I was able to integrate the complete hardware into the existing system housing", said Roland Czech naming the decisive advantages of the Microcontrol products.

With the automation controller μ MIC.200 Microcontrol offers a control system concept. The unit may be integrated into existing IT structures. The real-time Linux operating system facilitates development of application programs. The tool chain is included in the control unit as well as the necessary engineering tools such as compiler and debugger. Due to its secure Linux kernel and the VPN function program designers may access the μ MIC.200 from everywhere without additional costs.

"Compared with common mini-control systems our μ MIC.200 works reliably in a higher temperature range, with an extended power supply range and higher flexibility due to its customizable electronics", explained Microcontrol's CEO Frank Wielpuetz. „Its metal casing is robust enough to withstand harshest operating conditions. And all that is offered at a very economic price".



The control unit μMIC.200 (Photo: Microcontrol)

The Linux-control system excels due to its design, a variety of different interfaces such as CAN and memory options as well as its wide operating temperature range from -40 °C to +85 °C. And it includes a CPU board together with a customizable board.

Microcontrol also plays it safe with its μCAN-BOX and users such as Roland Czech are very pleased with it. The electronic components are equipped with a rugged aluminum casing (protection class IP66) protecting them from dust and water. All modules are equipped with a high-speed CAN interface which supports the 11-bit identifier base frame format and the 29-bit identifier extended frame format, thus supporting the layer 7 protocols CANopen, SAE J1939, and a multitude of vendor-specific variants. For mobile applications, the electrical features are specified within a temperature range from -40 °C to +85 °C.

"The μCAN-BOX can be used to interconnect a variety of sensors and actors via the CAN which makes it ideally suitable for our application", Roland Czech pointed out. Analog in- and outputs, sensor inputs, digital in- and outputs, PWM outputs and fast counters as well as frequency measurements are possible. "In addition, compared with common products in the market, our modules convince due to their enhanced temperature range from -40 °C to +85 °C, a higher resolution of 16-bit to 24-bit and a power supply range from 9 V_{DC} to 36 V_{DC}", said Microcontrol CEO Frank Wielpuetz.

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