Measuring Fuel Consumption of Vehicles in Real Driving Conditions with CAN bus Technology

dQdt-report 201809

TROISDORF/KREFELD - The new measurement system dQ-road from dQdt is used to measure fuel consumption of production vehicles in real conditions on the road - regardless of the type of vehicle. Secure data processing is provided by the CAN bus technology from MicroControl.

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. Today, the dQdt flow measuring technology is in the first place with renowned manufacturers in the automotive industry as well as their suppliers. 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 an established measurement principle and designed a new precision sensor. "As I manufacture samples and prototypes myself, I save a lot of development time." Therefore the inventive engineer was able to react quickly to the current emissions affair in the automotive industry. "The measurement principle underlying my products helps my customers to quickly optimize their production."

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

Roland Czech: "To acquire the wide range of different types of raw signals and to process and output the values to the CAN-bus, I opted for the CAN bus technology of MicroControl - housed in compact, robust casings - which perfectly match my requirements." (Photo: dQ dt)

Measuring fuel consumption on the road

The new 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 explains. With its new µMIC.200 the CAN bus expert from Troisdorf has developed a compact control unit which perfectly suits the requirements of dQdt.

"The µMIC in connection with robust µCAN 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", says Roland Czech naming the decisive advantages of the MicroControl products.

In the dQdt system the µMIC.200 combines these raw signals:

- digital pulse signal (TTL)	-> µCAN-BOX module counter
- analogue voltage signal (0 ... 10 V)	->µCAN-BOX module analogue in
- PT100 resistor signal (50 ... 200 Ohms)	-> µCAN-BOX module PT100
- NTC resistor signal (50 ... 100,000 Ohms)	-> µCAN-BOX module NTC
- RS232 Text string (density measurement sensor)	-> µMIC.200 directly via RS232 interface

Robust, versatile and compact control unit with real-time Linux

With the Automation Controller µMIC.200 MicroControl offers a control system concept which offers more flexibility than common industrial compact controllers. Everything a user needs in day-to-day business has already been integrated. And industry 4.0 requirements have also been considered as the control unit may be integrated easily into existing IT structures.

The real-time Linux operating system facilitates flexible development of application programmes. The tool chain is included in the control unit as well as the necessary engineering tools such as compiler and debugger. Via the Ethernet interface the development environment of the µMIC.200 can be connected to any PC or notebook. Due to its secure Linux kernel and the VPN function programme designers may safely access the µMIC.200 from everywhere without additional costs.

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

The Linux-control system µMIC.200 excels due to its compact and robust design, a variety of different interfaces and memory options as well as its wide operating temperature range from -40°C...+85°C. And it includes a CPU board together with a customizable board. (Photo: MicroControl))

IP-66 casing protects the electronic components

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 aluminium casing (protection class IP66) protecting them reliably from dust and water. All modules are equipped with a high-speed CAN interface which supports both CAN 2.0A and CAN 2.0B, 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-bus which makes it ideally suitable for our application", Roland Czech points out. Analogue in- and outputs (0(4)..20 mA, +/-10 VDC), sensor inputs (Pt100, Pt1000, thermos-couples, strain gauge), 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 to +85 °C, a higher resolution of 16- to 24-bits and a wide power supply range from 9 to 36 V DC", says MicroControl CEO Frank Wielpütz.

Frank Wielpütz, chief executive officer of MicroControl points out: "Compared with common products in the market, our modules convince due to their enhanced temperature range from -40 to +85 °C, a higher resolution of 16- to 24-bits and a wide power supply range from 9 to 36 V DC". (Photo: PRservice)

Contact:
MicroControl GmbH & Co. KG
Junkersring 23, D-53844 Troisdorf
Fon: +49-2241-25 65 9 - 0
Mail: info@microcontrol.net
Web: www.microcontrol.net

Customer:
dQdt KG
Diessemer Straße 166, D-47799 Krefeld
Fon +49 (0)2151 / 56 89 364
Geschäftsführer Roland Czech
Mail: roland.czech@dqdt.de
Web: www.dqdt.de

Pressekontakt
MicroControl GmbH & Co. KG
Anja Rahn
Junkersring 23
D-53844 Troisdorf
www.microcontrol.net
anja.rahn@microcontrol.net

Please also send print copies to PRservice Walter Lutz
Gollwies 16, D-35708 Haiger
Or online articles and links to w.lutz@prservice-lutz.de