Industry benchmark results tripled with Qorivva microcontrollers

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Freescale Semiconductor announced today that one of its Power Architecture based Qorivva microcontrollers (MCUs) reached unprecedented levels of performance in an industry-standard automotive benchmark test. The Qorivva 32-bit MPC5674F achieved a benchmark score of 305 Automarks in the Embedded Microprocessor Benchmark Consortium's AutoBench suite of tests, demonstrating more than three times the performance of the previous highest score set by a competitor. Additionally, Freescale's MPC564xA and MPC5566 MCUs scored 150 and 121 Automarks, respectively.

The benchmark assesses an MCU's performance by first performing a set of typical automotive processes, such as controller area network, tooth-to-spark (locating the engine's cog when the spark is ignited) and road speed calculation, and then adding complex signal processing algorithms used in engine control or vehicle safety applications. The benchmark is used to help automotive engineers assess relative performance between embedded MCUs for automotive applications.

"Confirming such outstanding performance by our Qorivva MCUs is great news," said Ray Cornyn, director of Freescale's Automotive MCU business. "Developed from the original Power Architecture technology, we have been enhancing and focusing the Qorivva Architecture to provide exceptional real time embedded processing capabilities and the excellent results shown from these latest implementations illustrates why Power Architecture technology remains the automotive market standard."

The performance of the MPC5674F, which was designed specifically for electronic engine control, enables automotive engineering teams to bring cost-effective, clean-engine technology to the broad market for today's combustion engines. Due to its extensive computing power and advanced motor control capability, the MPC5674F can also power the next generation of hybrid and electric vehicles. The computing capability of the engine controller enables precision electronic control of today's direct injection fuel systems, which typically saves 10-20 percent in fuel consumption over traditional systems, according to the US Dept. of Energy. In terms of global fuel consumption, the savings from electronic control has the potential to reach 100 million gallons of fuel per year.

Direct injection fuel systems need a high level of computing performance to precisely control when to inject fuel and the duration that the injector remains open, while simultaneously monitoring multiple external events such as oxygen levels, air temperature, road speed and exhaust gas composition in order to optimize the delivery of fuel for clean burning and optimal engine efficiency.

The Qorivva MPC5674F MCU is designed to run at higher central processing unit frequencies compared to early engine computers. This means it can execute individual tasks faster than other comparable devices. It is also engineered to run several processes in parallel, so it can execute dual instructions and compute complex signal processing algorithms simultaneously. This gives automotive developers a unique performance opportunity with which to optimize today's combustion engines as well as hybrids and electric vehicles. This performance is delivered within the framework of Freescale's zero-defect design and manufacturing process, which enables auto makers to offer extensive powertrain warranties.

The next generation of Qorivva MCUs, based on Power Architecture® technology, is built using an advanced 55 nanometer (nm) non-volatile

memory (NVM) process for improved power efficiency and cost effectiveness and features an innovative, multicore architecture. Qorivva MCUs include leading-edge integration and performance capabilities, including configurable peripheral sets such as flexible timers and motor control systems. Digital signal processing capabilities provide additional functionality. With these features, Qorivva MCUs provide the freedom to architect the ideal solution for a particular application.

The Qorivva MPC5674F is currently sampling and is expected to be auto qualified in mid-2011.

Source: Freescale Semiconductor