Mitsubishi Electric Introduces New In-Vehicle Noise Reduction System

Northville, Mich. – May 18, 2015 - Mitsubishi Electric, long active in reducing automotive in-cabin noise attributable to engines, is introducing an advanced Active Noise Control (ANC) system that cancels less predictable and harmonically unrelated road sounds.

Named FLEXConnect.ANC, the system uses cutting edge XSe®ANC™ technology developed by Mentor Graphics, minimizing engine and road noise to provide a quiet, comfortable environment in the cabin of the vehicle. FLEXConnect.ANC joins Mitsubishi Electric's existing Ethernet-enabled architectures: FLEXConnect.RSE and FLEXConnect.IVI.

"A precisely tuned audio experience, including advanced ANC, will continue to be a growing differentiator for OEMs – an experience not available from consumer devices or the aftermarket," said Mitsubishi Electric's Doug Ray, director of Sales, Quality and Engineering, Audio, Video & Communications. "The FLEXConnect.ANC development accelerates the pace that OEMs can refine that experience.

"FLEXConnect.ANC provides drivers and passengers a quieter environment, enabling them to hear phone calls, music and navigation commands by minimizing outside interference," Ray points out.

The new FLEXConnect.ANC with the Mentor Graphics electronic noise cancellation software also allows automakers to reduce cost by removing heavy, noise-dampening materials. In addition, it performs multiple functions running on fewer hardware components, resulting in less energy spent on tuning and calibrating compared to standard competing technologies.

The XSe ANC solution as part of the Mentor Automotive In-Car Experience is a new approach to in-vehicle ANC where inputs aren't limited to microphones and engine speed, but also include

accelerometers for engine order and road noise cancellation. The underlying algorithm is tunable in real time and the results are available instantaneously via the included software telemetry capabilities, facilitating dynamic configuration of the system.

“We deliver high quality, automotive solutions for a refined In-Car Experience, enabling our customers to differentiate their offerings. The XSe ANC system is an innovative approach to vehicle noise cancellation, and we are pleased that Mitsubishi Electric has chosen our technology for its latest infotainment system. Compared to traditional ANC systems, our solution tackles broadband noise while requiring reduced tuning and calibration effort, overall dramatically shortening our customers’ time to market,” said Rainer Oder, general manager, Mentor Automotive Business Unit.

In addition, the XSe ANC system uses advanced audio processing techniques and proprietary high-performance algorithms to deliver faster convergence than traditional options, adapting rapidly to varying noises from changing road conditions. The overall performance is delivered based on Mentor’s outstanding system design experience without sacrificing processor efficiency and system flexibility.

How Does Noise Cancellation Work?

Sound waves are initiated by pressure or force, which causes vibration resulting in noise. This sound is cancelled via an anti-noise signal. With FLEXConnect.ANC, the audio speakers generate a sound wave at the same amplitude as the originating noise, then adds an inverted wave to the original sound, which creates interference and thus cancels both sound waves.

How Do Accelerometers Come into Play?

This electromechanical device measures acceleration forces caused by movement or vibration as a result of the road surface. These are transformed into audio signals which are then processed to generate the desired anti-noise which is output via the audio speakers.

About Mitsubishi Electric FLEXConnect

The FLEXConnect architecture is a family of FLEXConnect.RSE, FLEXConnect.IVI, and FLEXConnect.ANC solutions that extend typical infotainment uses by allowing easy access across multiple devices over Ethernet and Wi-Fi. Mitsubishi Electric introduced the FLEXConnect series last year with FLEXConnect.RSE, (Rear Seat Entertainment). FLEXConnect.RSE is Mitsubishi Electric's original in-vehicle infotainment system that features two rear-seat screens that allow the user to stream multiple contents per individual preferences while operating as independent units controlled through the Ethernet AVB architecture.

About Mentor Graphics

Mentor Graphics Corporation is a world leader in electronic hardware and software design solutions, providing products, consulting services and award-winning support for the world's most successful electronic, semiconductor and systems companies. Established in 1981, the company reported revenues in the last fiscal year in excess of $1.24 billion. Corporate headquarters are located at 8005 S.W. Boeckman Road, Wilsonville, Oregon 97070-7777.

About Mitsubishi Electric Automotive America

Mitsubishi Electric Automotive America, Inc., a U.S. affiliate company of Mitsubishi Electric Corporation, was established in 1979 to serve the North American automotive, heavy-duty truck and coach business. Mitsubishi Electric Automotive America offers a wide range of products and services, including Passenger Entertainment Systems, Car Navigation Systems, Screens, Head Units, and Amplifiers. Additional information is available at: www.meaa-mea.com.

In addition to automotive electrical components, Mitsubishi Electric US group companies' principal businesses include semiconductor devices, factory automation products, heating and cooling products, elevators and escalators, solar modules, electric utility products, and large-scale video displays for stadiums and arenas. There are roughly 50 locations throughout North America with approximately 3,600 employees.

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