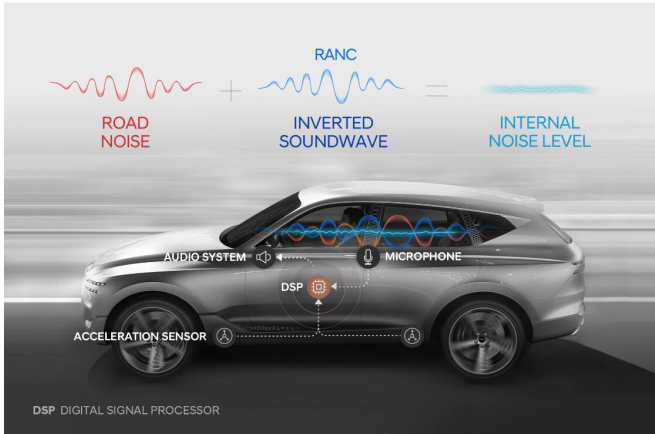


Hyundai technology will bring in-car quietness to the next level

15 November 2019, by Nancy Cohen



Credit: Hyundai

Hyundai has [unveiled](#) special noise cancellation technology addressing noise control.

"Hyundai Motor Group recently announced its new Road Active Noise Control (RANC), which improves on old tech (ANC) to reduce road [noise](#) by up to an additional 3dB, giving the Korean automaker an industry-best interior [noise cancellation](#) system," [reported](#) Coleman Molnar in *Driving*.

"Noise cancellation has become commonplace in modern cars," wrote Byron Hurd in [Green Car Reports](#), especially hybrids and vehicles with [internal combustion engines](#) that utilize unconventional firing sequences, but Hyundai is looking to tackle yet another form of unwanted noise: the type that comes from outside."

One might pause and consider the attention paid toward outside noise as important. Loz Blain in [New Atlas](#): "Hyundai sees active noise cancellation (ANC) as an essential technology in the transition to electric motoring; without engine noise, road and wind noise are even more noticeable."

Tony Markovich in *Autoblog*: "The concept of active noise control or cancelation is nothing new." To be sure, Hyundai is not the first to consider [noise control](#) but reports said that its technology stands apart. *Autoblog* [said](#) that the "announcement claims Hyundai has the world's first Road Noise Active Noise Control (RANC) with reductions up to three decibels."

Hyundai said that three-decibel number was based on tests evaluating [road surface](#), vehicle speed and different seating positions, showing a reduction in in-cabin noise by 3dB, which "is roughly half the [noise level](#) as compared without RANC."

In-cabin noise cancellation had been confined to persistent noise generally from the engine. Now, though, the technology behind the RANC system addressed what [Digital Trends](#) called the "buzzing infrasound" of road noise.

Hyundai said there were different types of road noises that the new technology could process, such as resonant sounds created between tires and wheels or rumble sounds coming up from the road.



Credit: Hyundai

Wade noted how RANC responds rapidly to fluctuations in low-frequency noise. This, he said, was the result of Hyundai's "six-year path to production-readiness."

[The Engineer](#) wrote about components and how it works: The technology makes use of (1) velocity sensors, (2) amplifiers and (3) microphones to calculate vibration and noise from the road, and (4) a digital signal processor (DSP) to produce an inverted soundwave to mitigate that noise.

Hyundai's news release talked about noise reduction by emitting soundwaves inverted to incoming noise. It noted its software-driven technology analyzing the in-cabin sound to decrease both engine and road noise, versus a passive method of blocking noise through sound insulation.

Interestingly, RANC can analyze different types of noises, said John Elkin in *Digital Trends*.

Markovich in *Autoblog* said that Hyundai's new technology was so quick "that it can identify and quell multiple types of noises in less time than it previously took to cancel one."

Hyundai presented the working principle of RANC:

"Using an acceleration sensor, RANC calculates the vibration from the road to the car and the control computer analyzes road noise. As its computation and signal transfer speeds are optimized, it only takes 0.002 second to analyze the noise and produce an inverted soundwave, generated by the DSP (Digital Signal Processor)." Meanwhile, the microphone constantly monitors [road](#) noise cancelation status, and sends the information to the DSP.

Blain commented in *New Atlas* that "The system aims to make things optimally quiet not only at the driver's seat, but the passenger seat and the back seats as well; it's clearly a complex algorithm."

What's next: Hyundai said the technology "will begin to be applied to an upcoming Genesis model."

More information:

www.hyundai.com/worldwide/en/n...group-develops-world%27s-first-road-noise-active-noise-control-technology-0000016342

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