

GPS-based pass-by-noise testing

Environmental regulation regarding vehicle exterior noise has become one of the strictest areas in the vehicle development process. **m+p International's** pass-by-noise testing system can ensure OEMs meet the requirements

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■ Manufacturers have to certify that their vehicles comply with the international noise emission standards by performing outdoor pass-by-noise tests according to exactly defined procedures.

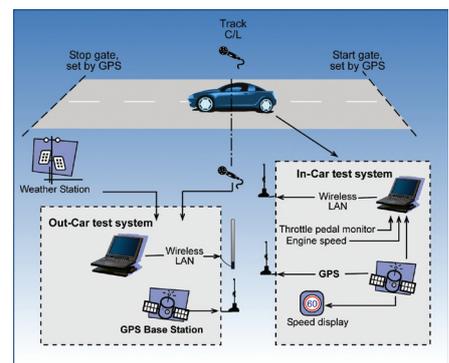
m+p International's single-person-operated pass-by-noise testing system uses GPS components for both position and velocity information. This enables the system to be reduced down to two PC-based measurement units without the need for radar, light beams, track position sensors, and of course all the set-up time involved with all those components. The old optical triggers and radar prevent flexible setup, and have many mechanical limitations. Different vehicles and tests often require moving the trigger point. This can be done in seconds with m+p International's pass-by-noise solution, which also features audible tones and indicators to help the operator adjust the throttle position for the on and off points, allowing quick tuning and repeatable results. Plus, the GPS technology means that positional accuracy and repeatability are within a few millimeters.

One of m+p's customers, Cooper Tire, operates several test tracks across the USA for research into tire design, and provides services to outside companies in areas such as pass-by-noise testing. Carson Miller, test track director, says, "We looked at every system on the market for our application, and m+p's GPS triggering, customization and single button export to our result format

was unmatched. The company's technical support was the key to getting us up and running quickly, as well as adding new features to streamline our process."

In m+p International's turnkey pass-by-noise system, the latest ISO 362 and ECE Reg. 51 revision 3, which adds new measurement requirements over and above the old procedures, have been implemented alongside the 1998 standards. This allows the direct comparison of data as required during the current transition period. Other features include easy calibration and storage of results to provide certification as per the new standard, as well as gathering track surface temperature along with weather variables at the beginning and end of runs.

The easy-to-use system is operated entirely from within the car and by just one person. The in-car system can be configured quickly prior to entering the test track, and the out-car system simply needs connection to the sound meters and the weather station. Every part of the system was planned and configured to minimize operation time and reduce test errors. A simple space bar arms the system for each run; an audible tone informs the operator that the system is ready so he can focus on the in-vehicle speed display as he approaches the noise pad; entry trigger and exit trigger tones tell the operator when exactly entry and exit happen; and a complete display indicates all parameters needed to accept or reject the run. The system can be instantly re-armed,



Specialty developed GPS systems increase test efficiency and flexibility levels as well as further reducing the overall manpower demands and the equipment inventory

ready to capture more data, and this feature along with the GPS ability to automatically sense reverse runs allows constant driving with no downtime to look into the vehicle.

The pass-by-noise system is portable, and can be used anywhere in the world. Based on m+p International's SO Analyzer software for dynamic signal analysis, it consists of two complete data acquisition systems, which can be used on other projects together or independently, multiplying the applications for this solution to other NVH, rotating, modal, or acoustics testing. ■

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