

Client: University of Warwick
Source: The Wall Street Journal (Europe) (Main)
Date: 05 July 2010
Page: 19
Reach: 78230
Size: 355cm2
Value: 9066.7



Cranking up car noise for safety's sake

BY DAVID PEARSON

PARIS—For decades, car designers and regulators have been trying to make vehicles quieter. Now, with the advent of near-silent electric and hybrid vehicles, the industry is shifting into reverse.

Experts at the Geneva-based United Nations Economic Commission for Europe—the body responsible for harmonizing global vehicle regulations—are working on a set of minimum noise standards designed to keep quiet vehicles from becoming a safety risk to pedestrians.

The push is especially critical for groups like the blind, who rely on being able to hear vehicles to avoid being hit.

But it could create friction with noise-abatement advocates, who have welcomed the development of quieter vehicles, thrilled by the possibility that bird song might one day replace engine noise as the soundtrack in some urban settings.

When the U.S. National Federation of the Blind went to UNECE's Working Group on Noise in 2008 to urge minimum noise standards for quiet vehicles, the technical experts from auto makers, nongovernmental organizations, multilateral institutions and governments who had been working to make vehicles quieter reacted with disbelief.

"They laughed at the idea of setting minimum noise levels," recalls Romain Hubert, the working group's secretary.

The idea is now being taken very seriously, Mr. Hubert says, though he adds that global guidelines for car makers are unlikely to be in place before 2013.

"There's probably going to be a trade-off" between noise-reduction advocates and those seeking minimum sound levels, says Oliver Hazimeh, a director of PRTM, a U.S.-based management-consulting firm. Blind people want electric cars to make distinctive, possibly motor-like, sounds that let them know a

car is coming, with minimum and maximum noise levels at certain speeds, he says.

So far, Japan is the only country to have come up with voluntary noise guidelines for makers of electric and hybrid vehicles, but the government is leaving it up to individual manufacturers to decide on the type of sound a vehicle will make.

The result is a wide variety of sounds that some industry watchers are already calling noise pollution.

U.S. lawmakers, working with car makers and other interest groups, are preparing to draw up rules on minimum noise levels that will be included in broader vehicle-safety legislation being drafted in Congress. Typically, though, national and regional governments adopt standards once they have been agreed on by UNECE's experts.

"We mustn't lose track of potential benefits from reduced traffic noise for our urban centers, and the link between noise and health. It would be a great shame to lose all the tremendous opportunities for

quieter city environments," says Paul Jennings, an expert in automotive-product perception and sound quality at Warwick University in Britain.

Car makers say noise-making equipment is really necessary only when quiet cars are traveling at speeds of 20 kilometers an hour or less. Any faster and car tires make enough noise on the road surface to be heard.

"The danger zone is when cars are starting up, reversing and maneuvering at relatively slow speeds," says Vincent Roussarie, a psycho-acoustician at French car maker **PSA Peugeot-Citroën SA**, who is study-

Please turn to page 23



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Continued from page 19

ing the interaction between sounds and humans and is working on creating sounds for future electric vehicles.

"We want to solve the safety issue without transforming the 30-kilometers-an-hour zone into urban cacophony," one of the reasons why global regulations are needed, says Mr. Roussarie.

Peugeot-Citroën, which plans to start selling its near-silent electric city cars, the Peugeot iOn and Citroën C-Zero, later this year, has teamed up with fellow French auto maker **Renault SA** to find ways to make electric vehicles more audible.

Mr. Roussarie is looking for sounds that let pedestrians know a car is approaching and where it is located. That means ensuring the sounds convey information, such as direction and speed, and whether the vehicle is accelerating or slow-

ing.

In addition, "we should be looking a little bit more carefully at character. Sound levels don't tell you everything. You can have a sound that's quite pleasant at a particular level, but you might not associate it with an oncoming vehicle," says Jennings of Warwick University.

The sounds should be more sophisticated than a steady buzzing or musical sound, the jarring beep-beep made by reversing trucks or the jangle of ice-cream-van bells. The noises will need to be loud and distinctive enough to alert pedestrians, but not so jarring as to jolt people awake when they are in bed, says Mr. Roussarie.

Sound regulations also may eventually apply to traditional internal combustion engines, which are getting smaller and quieter every year because of increasingly tough emis-

sions standards, Mr. Roussarie says. Mr. Hubert of UNECE says electric bicycles and mopeds also may be affected.

One challenge researchers have identified is to produce a sound that guide dogs for the blind can identify as an approaching car.

"Technically, it's not a problem to insert high-frequency sounds that only dogs can hear. The problem is to avoid a car waking up all the dogs in a neighborhood as it passes through," Mr. Roussarie says. The dog-audible frequency would be blended into the main sound, Mr. Roussarie explains.

Another challenge facing car makers is that conventional engines and their vibrations tend to cover up a car's other squeaks, rattles and thuds. "When you don't have an engine's noise, you hear everything that engine noise hid," Mr. Roussarie says.