Volvo explores road-integrated magnets for autonomous cars

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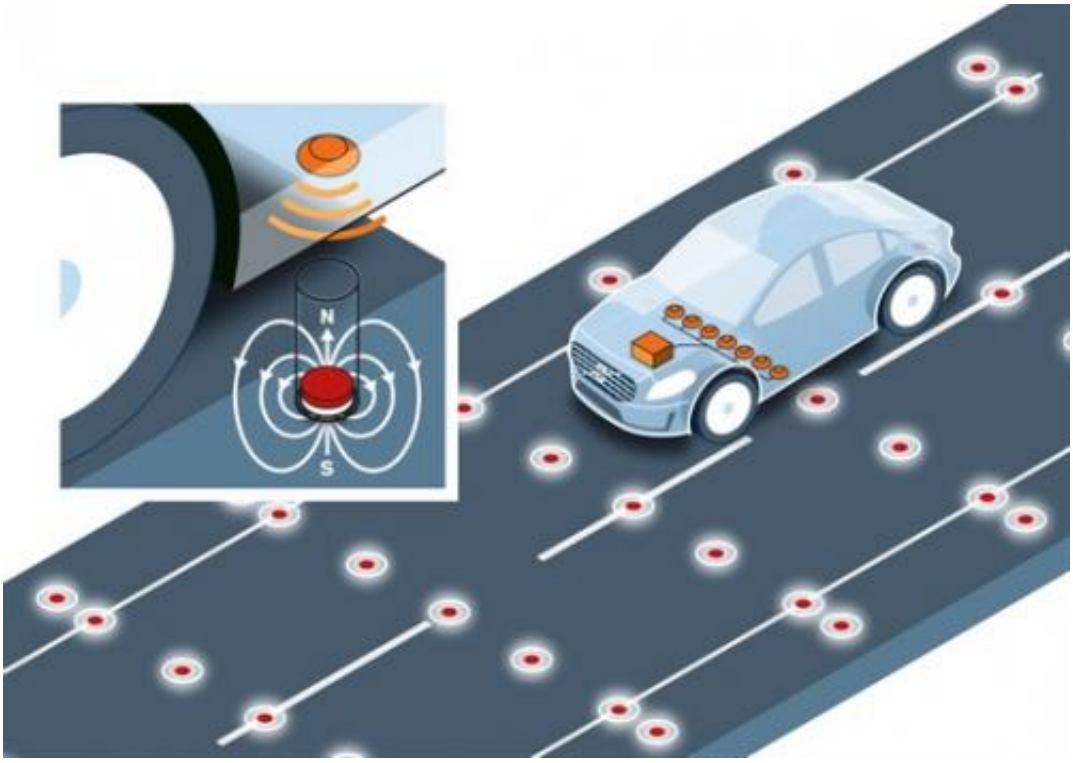

As a potential key to the implementation of self-driving vehicles, Volvo Car Group has completed a research project using magnets in the roadway to help the car determine its position. Incorporating the technology in preventive safety systems could also help prevent run-off road accidents. A pattern of round ferrite magnets (40x15 mm) was located 200 mm below the road surface. The test car was equipped with several magnetic field sensors.

(Phys.org) —Volvo has been testing the efficacy of magnets to keep self-

driving cars moving safely on the road. The idea is for magnets to help the cars identify where they need to be in lanes. The Volvo Car Group tested how well the road magnets in the roadway can actually support accurate positioning. Project leaders described the magnets as serving up an invisible railway for position accuracy. By detecting the magnets a car can constantly adjust its path.

"We have tested the technology at a variety of speeds and the results so far are promising," said Jonas Ekmark, preventive safety leader at Volvo Car Group. He said ferrite magnets showed they are an efficient, reliable and relatively cheap solution, "both when it comes to the infrastructure and on-board sensor technology. The next step is to conduct tests in real-life traffic." How they tested: The team created a 100-meter-long test track at Volvo's testing facilities in Sweden's Hällered, which is outside Gothenburg. The team used round ferrite magnets (40x15 mm) placed 200 mm below the road surface. Magnets were positioned at regular intervals, behaving as the so-called invisible railway for the self driving test car, equipped with magnetic field sensors.

Why focus on magnets? GPS positioning and camera technologies can be effective, but pose limitations in bad weather and with physical obstacles. Volvo Cars found magnets embedded in the road to be a reliable solution. They also said road-integrated magnets could contribute to more efficient use of road space, since accurate positioning could allow lanes to be narrower.

In the bigger picture, Volvo has its sights on a large scale experiment in future years, where the goal is to unleash 100 self-driving cars in Gothenburg in 2017. The automaker has been focusing on tests, tools and techniques that can ensure this can happen with success. Accurate positioning has been an important concern in advancing the development of self driving cars. Volvo's research has been in cooperation with the Swedish Transport Administration. They likewise spoke favorably about

the choice of magnets. "The test results are very interesting, especially when adding the potential for improved safety as well the advantages for the development of self-driving vehicles," said Claes Tingvall, traffic safety director at the Swedish Transport Administration. " A large-scale implementation of road magnets could very well be part of Sweden's aim to pioneer technology that contributes to sustainable mobility."

More information: www.media.volvocars.com/global … of-self-driving-cars