Automated tailgating cuts pollution

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An automated way of allowing cars to drive much closer to each other in heavy moving traffic, so-called platooning, could cut congestion, save fuel and cut greenhouse gas emissions, according to research published today in Inderscience's *International Journal of the Environment and Pollution*.

As populations grow and the number of vehicles on the roads in cities and motorways across Europe, North America and the developing world, rises, traditional ways of tackling the problem, such as simply building more roads or improving public transport are becoming less and less effective. "Automated highway systems are one of the many approaches that have been suggested to tackle the problems," says Mitra.

Traffic is a growing problem across the globe with the number of vehicles on the on the roads in Britain alone having risen from 26 million to almost 33 million in the last decade and that number set to rise by 25% over the next ten years. The problem is burgeoning in areas of enormous economic growth, such as China and India where countless new vehicles are pulling out and entering the traffic flow on newly built roads. With all that new traffic, of course, comes more pollution, and the need for ever more innovative approaches to tackling it.

Driving a lot closer than a safe stopping distance from the vehicle in front is not a sensible option. Learner drivers are taught from their first lesson on the road to keep their distance. According to Debojyoti Mitra and Asis Mazumdar in the Department of Mechanical Engineering at Jadavpur University, Kolkata, India, in heavy traffic these safe distances

mean more tailgate turbulence and increased drag on individual vehicles, which means lower fuel efficiency.

The researchers investigated the drag on platoons of four vehicles in Jadavpur University's vehicle test wind tunnel.

Cars moving in the same direction separated by a meter or so would reduce drag and so save fuel. Adding sensors and safety controls that allow vehicles to drive at such a small separation is possible. Now, Mitr and Mazumdar explain how car manufacturers and transport policy might work to allow such a platooning system to operate.

"The leading car in the platoon experiences the highest drag as you would expect but no more than if it were driving alone," explains Mitra, "The second car has a much lower drag coefficient than the first car in a two-car platoon. The middle car experiences the lowest drag in a three-car platoon and the third car in the platoon, starting from the front, experiences the least drag in a four-car platoon."

Reduced drag not only means lower average fuel consumption for a platoon, but also reduces the overall road noise heard by drivers and other road users.

Source: Inderscience Publishers