

# DOES EVOLUTIONARY IMPROVEMENT OF CARS IS SUFFICIENT TO NEUTRALISE THEIR IMPACT IN POLLUTION AND CLIMATE CHANGE OR DO WE NEED A JUMP TOWARD NEW TECHNOLOGIES?

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Pollution of the environment and climate change reached a dramatic point last years because of the increase of emissions of combustion gases, and mainly of CO<sub>2</sub>.

According to data published in the web page of OICA (International Organisation of Automobile Manufacturers) Road Transport (use of cars, trucks and buses) is responsible for the 15.9 % of total CO<sub>2</sub> emissions [1].

Public authorities as well as the automotive industry are trying to reduce the emissions coming from the use of vehicles. For this, regulations specifying the emission limits become stricter and an evolution technique is used in the production of newer models of cars: the new models have lower emissions, but are coming from the previous ones, without a revolution in the applied technology.

However, the effect of this (slow evolving) policy is partially neutralised:

a) By the increase of the fleet of road vehicles in use. Statistical data are given in the following References: passenger cars [2], commercial vehicles [3] and all vehicles [4]. We can notice that between 2005 and 2015 the number of vehicles in use has increased by more than 40% [4].

b) By the very low substitution rate of older vehicles by vehicles of lower emissions. The average age of vehicles in use is really disappointing for many EU countries [5].

In the present paper the author discusses the above problems and supports the opinion that we do not have anymore time to loose by applying policies that are facing the problem slowly. We need to take the following drastic measures:

a) Make a jump towards new technologies in order to design and produce non polluting cars.

b) Give attractive incentives in order to boost the substitution rate of all vehicles in use by vehicles designed on the basis of absolutely new technologies and not by evolutionary improvement of pre-existing cars.

A technological jump has already been made by the author and his team since 2005, when they have presented the prototype of a revolutionary car [6-11]: it is a very light solar/battery electric car that uses linear motors for its motion and which, with the exception of the body and the wheels, most of the other mechanical systems have been substituted by electronic ones. For example there are no transmission axes, no differential and no gear box, because they are substituted by the linear motors system and an electronic box that functions also as an electronic differential [12]. The steering can be realised by variation of the turning speed of the wheels: for example, to turn left, the right wheels are made to turn faster than the left ones. In the limit, we can even make the left wheels to turn backwards in order to turn on the spot and reach unthinkable levels of manoeuvring ability.

The car presented above uses existing technologies which have never been previously applied in cars. For example, linear motors are already in use in trains, and *on the spot turning* is used in belt driven vehicles since very long time. The electronic differential concept has been introduced by the author and his team already since 2001 [12].

## References

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