

NEW TRENDS IN ENVIRONMENTAL SAFETY IN SERBIA

Dr Nataša Tomic-Petrovic, University of Belgrade, Serbia

Abstract: In the Republic of Serbia the air is the most polluted element of the environment. During the last few years in our country the concentration of sulphur-dioxide was increased.

During 2011. the Ministry of Environment, Mining and Space Planning allowed the subvention for purchasing hybrid cars in our country. As the final result all cars with emission of carbon dioxide less than 100 g per kilometer ran will have certain privileges i.e. there will be additional benefits for all those who drive "green" cars. However, they are not exempted from customs duties, as it was announced. Investment of "Fiat" is the biggest investment in the sector of auto industry in Serbia. Before arrival of the gigant from Torino in Kragujevac the investments of producers of parts have already started.

By the new environmental regulations of the European Union all types of trucks and buses produced in 2013, will emit considerably less harmful exhaust gases. By these provisions so-called Euro 6 the reduction of 80% for nitrogen-oxide emission and 66% for particules is predicted. It is interesting that in France Ministry of Ecology presented the number of measures directed on struggle against air pollution in large cities, among which is also the prohibition of entrance in the center of cities vehicles that are the biggest polluters. The question is how to provide for only "green" vehicles to enter in the center of cities? It is very important that the number of "green" vehicles constantly increases.

In March 2013 on the 83-rd Geneva International Auto Show the public found out that still only every tenth car's model exhibited can be lauded for its "green" qualities. It is necessary to stress in media to inform wider public on the importance of environmental aspects of traffic taking into consideration the well known fact that much cars reduce air quality by emission of harmful gases.

Key words: POLLUTION, ENVIRONMENT, SAFETY, HYBRID CAR, REGULATION, SERBIA

1. Introduction

Chaotic development of cities and industry was not followed by the corresponding measures of protection against pollution.

While every day in the world three to four plants disappear, experts claim that in our country the first to bear the brunt of climate changes will be conifer species with shallow root, like for example, spruce. Therefore.....traffic, as the main air polluter throughout the world should be controlled. Transport emissions rose by 24% between 1990 and 2008, amounting to 19.5% of total EU greenhouse gas emissions, according to the Commission's estimates. As a result, the transport sector will have to reduce emissions by at least 45-60% below 1990 levels if the EU is to keep up with its climate change objectives for 2050.

In the past, environmental measures have cleared up much of the visible pollution in urban areas, but smog, soot and haze persist in many cities. Today we use market-based strategies to promote new, less-polluting technologies.

2. Perspectives of Serbia

Between 1972 and 1977 several studies confirmed the hypothesis that air pollutants could travel several thousands of kilometers before deposition and damage occurred. The 1979 Geneva Convention on Long-range Trans-boundary Air Pollution, entered into force in 1983, has created the essential framework for controlling and reducing the damage to human health and the environment caused by trans-boundary air pollution.

In the Republic of Serbia the air is the most polluted element of the environment. During traffic jams the concentration of harmful substances is increased for 20%. Nitrogen dioxide is regularly growing, as well as polycyclic aromatic carbon hydrogens, whose level is raising during winter.

During the last few years in our country the concentration of sulphur-dioxide was increased. It is well known that in Serbia inhabitants in the city of Bor have the worst air quality because of sulfur dioxide presence.

On the list of the biggest polluters in Europe, Serbia is on the 5-th place with around 6,2 tons of carbon dioxide per capita, and one of the largest emitters of harmful gases is just transport sector.

By the new environmental regulations of the European Union, all types of trucks and buses produced in 2013, will emit considerably less harmful exhaust gases. By these provisions so-called Euro 6 the reduction of 80% for nitrogen-oxide emission and

66% for particules is predicted. New EU provisions are in accordance with limitations of harmful gases emissions that are already in force in USA.

During 2011. the Ministry of Environment, Mining and Space Planning allowed the subvention for purchasing hybrid cars in our country. As the final result all cars with emission of carbon dioxide less than 100 g per kilometer ran will have certain privileges i.e. there will be additional benefits for all those who drive "green" cars. Owners of the ecologically "suitable" cars get ECO Friendly licence in the form of certificate on the occasion of vehicle purchasing. In Serbia all owners of cars with CO2 emission less than 100 g per kilometer ran will enjoy certain privileges, like more favorable insurance package, provision of free parking, more favorable conditions of financing. However, they are not exempted from customs duties, as it was announced. Investment of "Fiat" is the biggest investment in the sector of auto industry in Serbia. Before arrival of the gigant from Torino in Kragujevac the investments of producers of parts have already started.

Our capital for 51-st Auto Show¹ and 7-th exhibition of motorcycles "Motopassion" with the most modern offer (from 22-nd to 31-st March 2013) for the first time presented 37 car brands and the host of the Show in Belgrade was "Fiat 500L" from Kragujevac, so called "šumadinac", whose tracking version has already been presented on the Show in Geneva. Remain models from "Fiat" (model 500, "punto", "bravo", "panda", "freemont") were also presented, as well as the third generation of "Skoda octavia" for the first time presented at the Show in Belgrade. It is well known that "Renault" is one of the favorite brands among our drivers, and on the Show this year was presented with mini SUV, "Clio grandtour" and "Xenic X mod".

In our country, it is clear that nautica - sailing is the chance for tourism development too, and especially after constructions of small marines and piers for charter ships. Today, in the season on the passenger dock in Karadjordjeva str. in the capital Belgrade, up to 300 yachts, passenger ships and smaller ships for excursions put ashore. Economic crisis is the reason why during 2008. there where 120, and now not even 15 new ships. However, there is a fleet of charter ships for renting mainly for weekend sailing.

Although noise can significantly pollute environment, American Governmental Agency for Road Traffic Safety requested that electrical and hybrid vehicles make more noise when going with smaller gears so that pedestrians might hear them coming and trucks on electrical drive are considerably more quiet from vehicles

¹ On the Belgrade Car Show 28 manufacturers presented their models. From the world premiere in Geneva on the Serbian market "series 3", i.e. "BMW series 3 GT" were presented. It is interesting that for each BMW car bought buyers got 4 benefits: a four-year guarantee, as well as four years of free regular maintenance, some more favourable conditions of financing and possibility of buying up vehicle old for new.

using oil products i. e. having internal combustion engine. National Administration for Road Traffic Safety reported that conventional vehicles are not noisy enough when going slower, so there is a risk for pedestrians, bicyclists and persons having problems with sight. It was offered 60 days to the public to give comments on the proposed rules, and Agency will use them during formation of final solution.

We should mention here the Directive on the assessment and management of environmental noise, in effect from July 2002, applies to environmental noise in built-up areas and public parks, and near schools, hospitals and other noise-sensitive buildings and areas. It does not apply to noise from domestic activities, from neighbors, at work, inside means of transport or from military activities in military areas.

Our plan in Serbia is achieving the long term objective of not exceeding critical ceilings and of protecting human health from the risks associated with atmospheric pollution.

3. World trends

For the long time Europe was heart of the modern world, and according to some indicators it is also today.

For a moment in the European Union Euro 5 standards in connection with limitation of harmful gases emissions are in effect. Restrictions mainly refer to nitrogen-oxides and harmful particles. Although regulation in connection with harmful gases emission, as far as passenger cars in EU are concerned, exists back from 70-ies of the last century. From then it was constantly tightened from Euro 1 norms from 1992, to Euro 6 rules that will go into effect in 2014.

It is interesting that in France Ministry of ecology² presented the number of measures directed on struggle against air pollution in large cities, among which is also the prohibition of entrance in the center of cities vehicles that are the biggest polluters. The question is how to provide for only "green" vehicles to enter in the center of cities?

According to data of the International Organization of Motor Vehicle Manufacturers (OICA) by indicators from year 2012³ the biggest manufacturer in European region is Germany, afterwards on the second place Russia as producer of 11% of cars, then follows France. For "Folkswagen group" Russia is the most important developing market in Europe. Now, with new engines factory in Kaluga, "Folkswagen" will remain promoter of the Russian auto industry and economy in the future.

Simultaneously the famous jeep producers ("Land Rover") on the Car Show in New York presented and promoted model "Range Rover Sport"⁴ made of aluminium.

It is interesting that "Volvo" car corporation increases production capacities for new "Volvo B60 plug-in hybrid"⁵ beginning series of 1000 copies for this year 2013, to even 4000-6000 for year 2014. This car owns sophisticated plug-in hybrid technology that includes two power options and strong rigidity which enables the autonomy of movement for 50 kilometers, exclusively using current.

And while there is intention and belief that group "Peugeot-Citroen" will launch on the market till 2016 first hybrid vehicle using air for propulsion (adapted transmission will have cylinders of compressed air that preserve and release energy), in Switzerland⁶ exactly do not accept vehicles with hybrid and electrical drive.

Last year "Toyota"⁷ sold over 1,2 million hybrid vehicles thanks to the success of its brand "Prius" in the world, as well as the new brand "Aqua" in Japan.

It is known that in 2003. newly established company "Tesla motors" in Fremont in California joined also to the great American automobile companies "General motors", "Ford" and "Craisler" from Detroit.⁸ The name **Tesla** was not taken accidentally, because the main electric engine on these cars was made on the principles of Nikola Tesla's invention from 1882. Deliveries of model "Tesla S" for American market began in the summer of 2012. with expected 5000 orders. During Exhibition of consumers' electronics in Las Vegas in 2012. the special attention provoked the instrument board of this elegant electric car, with dominant touch sensitive screen on the right side of the steering wheel by which all car functions are operated. We still do not know if model "Tesla S" succeeded in commercial sense, but it is interesting that this auto business started in the cradle of inventions that at the end of last and at beginning of this century have changed the civilization.

The newest reports on testing "Tesla", i.e. polemic on advantages and faults of this electric car from the factory named by "the most underestimated inventor in American history", show that injustice toward Nikola Tesla to a certain degree is corrected naming by him first electric car of the modern era. Along the strategic road corridors "Tesla motors" has started to open special charging stations where electricity is free. Till now this car model was reserved by 13 000 buyers and in December 2012. factory achieved production tempo of planned 400 cars weekly. This company also got credit from American Government in amount of 465 million dollars.

From Croatia came information that for the first time the car is exported and that is electric car from the company "Rimac automobiles". First world electric supercar was bought by one Spanish auto company.⁹

Perfection is in simplicity. However, on this year's Auto Show in Detroit 2013, vehicles on electricity, hybrids and small cars remained completely in the shade.

In Geneva on the 83 rd International Auto Show¹⁰ the most economical car¹¹, "the economical wonder" from Germany, the remarkable aerodynamic hybrid model XL1 was presented. This car following the principles of sports car design with two seats can cover a distance up to 50 kilometers in electrical drive regime and with zero emission of exhaust gases. It is interesting that in Geneva there were no signs on crisis in the world auto industry. In the city on Leman lake during March 2013. the strength and beauty were shown, without talking on recession, problems and decrease of sale and expensive fuel.

During two weeks in September 2012. (from 8-th till 24-th) 15 cars and tracks were driving rally throughout the Europe.

The rally of "Blue Corridor" was filled exclusively by natural gas, so in that way the availability of natural gas on transit ways between East and West was emphasized. The number of pumps with natural gas increased in the last 7 years and so around 4000 of

² According to their data 8 million old vehicles participate today with around 30% in emitting of polluting particles, „Auto world“, „Politika“, 25. February 2013.

³ Data show that on the territory of Europe more than 17 million of passenger cars were produced.

⁴ This model is for 420 kilograms lighter from previous models of this car, so understandably the consumption is smaller for 20%. It is expected that this model is available in 2 variants: one with gas and other with diesel engine. Another new variant of "rover" with diesel engine and hybrid propulsion (diesel/electricity) is also expected.

⁵ This version of car has 300 parts more comparing to the standard model.

⁶ There are only around 30.000 of such vehicles, however the sale of hybrid vehicles during the year 2012. grew for 27% and of electric vehicles even for 68%. In this country the number of cars comparing to year 1980. doubled till September 2012.

⁷ Hybrid vehicles represented 14% of total sale in 2012 from 1997. when first hybrid car "Prius", that much less pollutes environment was placed in market, they were sold in 80 countries in the world.

⁸ This company was established to promote exclusively cars on electric propulsion invented by our scientist whose name it bears. First car was "Tesla roadster" that made commercially debut in 2008. as sportsmanlike sedan with characteristics no one of competitors had (body was borrowed from British "Lotus"), but its production was anyway suspended in autumn 2011. Experience gained with production of this model was used for model "Tesla S" installed in engine room in Fremont (used before by "General motors" and „Toyota“) and there are 3 models differentiated by capacity of batteries (40, 60 and 85 kilowatt-hours). The weakest of these models with one charging covered distance of 260 kilometers, with average speed of 90 kilometers per hour. This is one futuristic product in which everything is chosen or adjusted by touch screen: music, navigation, ride indicators, air conditioning, even permanent internet connection. The question is do these interventions turn away attention from the road? Manufacturers answer that divers get used to them fast.

⁹ This sale to Spaniards will provide for resources for months of work for innovator and owner of the company "Rimac automobiles" from Samobor.

¹⁰ Distant 1905. the first exhibition of cars was held which developed into Show, that is today real spectacle of strength and elegance of more 700 models exhibited. ("Auto world", 11-th of March 2013, "Politika", Belgrade).

¹¹ Car is 115 centimeters high, 3,8 meters long and 1,6 meters wide, with consumption of 0,91 liters per 100 kilometers.

them in Europe (only 900 pumps in Germany) point out an significant growth of this network of pumps. In that way it was made possible that more than 1,5 million vehicles in Europe use gas.¹² In Russia the pumps with gas as the fuel are also rapidly built.¹³

4. Conclusion

Pollution of living environment is seen in different shapes. Undesirable consequences of human activities disrupt natural living frame, and air is most frequently under an impact of p uters.

Emissions will be the main factor to consider in desig ing the transport system of the future. One solution would be to use market-based instruments in particular fuel taxes, kilometer charges and cap-and-trade systems to make transport users pay for emissions, air pollution or noise.

It is necessary to stress in media and inform wider public on the importance of environmental aspects of traffic tak ng into consideration the well known fact how much cars reduce air quality by emission of harmful gases.

Increase of vehicles using natural gas happened because of economic benefit for consumers, but they were certainl urged also by ecological interests. Euro 6 Standard will be applied from year 2015 and in that way nitrogen-oxide emission will be limited and in such a way the quality of air we breathe improved.

It is very important that the number of "green" vehicles constantly increases. In March 2013 on the 83-rd Geneve International Auto Show the public found out that still only every tenth car's model exhibited can be lauded for its "green" qualities.

5. Literature:

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¹² During 2012. the price of gas on pumps was for (one) third lower than of gasoline, and the technology of filling vehicles with gas is widely available for new cars, buses and trucks. It is predicted that till year 2020. there will be 20 million vehicles using natural gas.

¹³ "For gas in transport by rally", from expose of A. Medvedev, general director of "Gasprom export", "Auto world", Belgrade, 5-th November 2012.