

## WHAT ELIMINATORY ECO TEST OF MOTOR VEHICLES SHOULD BRING?

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### ABSTRACT

*In order to reduce the harmful effects of exhaust gases on the environment, as of January 1, 2017, at all stations for technical inspection of vehicles, during the regular technical inspection of vehicles, the contents of motor vehicle exhausts are also carried out - EKO test. According to the Rulebook on Exhaust Gas Testing of Motor Vehicles (ECO Test) at Vehicle Technical Inspection Stations, ECO Test of Motor Vehicles, until December 31<sup>st</sup> 2019 was obliged to do so, but from January 1<sup>st</sup>, 2020 it became eliminatory. This means that during this transitional period, each owner had the opportunity to remedy the deficiencies in his vehicle and bring the amount of harmful exhaust gases to permitted condition. However, how many vehicles will remain unacceptable to the environment and therefore defective remains to be seen in the coming period.*

### 1. INTRODUCTION

The ECO test cannot be considered as a special novelty. The exhaust gases were tested even before the introduction of the ECO test. The novelty is that the introduction of the ECO test aims to intensify the criteria so that the test itself is carried out in accordance with European directives, all with the aim of protecting our planet, that is, reducing global pollution.

According to the Law on Fundamentals of Road Traffic Safety in Bosnia and Herzegovina [1] and the Rulebook on Technical Inspections of Vehicles [2] each station of technical inspection of motor vehicles was obliged, even before the introduction of the ECO test, to have devices for testing the composition of exhaust gases. Also, the application and correctness of these devices were mandatory, so testing was done as an integral part of the vehicle technical inspection.

This means that until January 1<sup>st</sup>, 2009, the exhaust data were only recorded as part of a regular technical inspection of vehicles. With the adoption of the Rulebook on Amendments to the Rulebook on Technical Inspections [2] the measurement of exhaust gas started to be charged separately (KM 5.00) and recorded in more details. An overview of the number of exhaust gas measurements carried out during the technical inspection of vehicles from January 2009 to the end of 2016 is shown in Table 1.

Table 1. Number of exhaust gas measurements performed in the period from January 1<sup>st</sup>, 2009 to December 31<sup>st</sup>, 2016.

YEAR	NUMBER OF EXHAUST GAS MEASURES PERFORMED
2009.	362.856
2010.	512.115
2011.	512.656
2012.	518.156
2013.	530.799
2014.	549.732
2015.	573.171
2016.	594.348

On December 14<sup>th</sup>, 2016, at the level of the Federation of Bosnia and Herzegovina, was passed the Rulebook on Exhaust Gas Testing of Motor Vehicles (ECO Test) at the Stations for Technical Inspection of vehicles. [3] This Ordinance entered into force on January 1<sup>st</sup>, 2017.

Above mentioned Rulebook predicts two periods (Article 2):

- transitional period from January 1<sup>st</sup>, 2017 to December 31<sup>st</sup>, 2019 - when the ECO test was obligatory, but the results of the ECO test had no effect on the vehicle's passability at the technical inspection.
- the period from January 1<sup>st</sup>, 2020, when the ECO test becomes eliminatory, that is, a vehicle which, even after a repeated ECO test, does not meet the requirements, will not be able to undergo a technical inspection and therefore registration of such a motor vehicle will not be possible.

## 2. ECO TEST AS OBLIGATORY

The period of three years left before the introduction of the eliminatory ECO test was aimed at adapting to the new requirements, that is, the owners could also rectify the defects on their vehicles and harmonize them with the European requirements.

Article 3 of the Regulation on the Exhaust Gas Testing of Motor Vehicles (ECO Test) at the Stations for Technical Inspection of vehicles [3] provides that exhaust gas testing is mandatory for the following categories of motor vehicles:

- Passenger cars (M1),
- Buses (M2 and M3),
- Freight motor vehicles (N1, N2 and N3).

By way of derogation from the provisions of paragraph (1) of this Article, an ECO test *shall not be conducted* if:

- a motor vehicle is equipped with a two-stroke gasoline engine,
- a motor vehicle is equipped with a gasoline engine manufactured before 1970,
- a motor vehicle is equipped with a petrol engine and if its design speed does not exceed 50 km / h,
- a motor vehicle is equipped with a diesel engine manufactured before 1980,
- a vehicle is equipped with a diesel engine and its design speed does not exceed 30 km / h,
- a motor vehicle is equipped with an alternative source of energy such as a vehicle powered by electricity, a hybrid vehicle, a hydrogen or fuel cell vehicle.

In the case of vehicles powered by alternative propellant (CNG, LPG), when conducting the ECO test, the fuel which gives a less favorable emission is used and the results of the exhaust gas test thus obtained are entered into the appropriate information system database.

The same Rulebook, in Article 1, stipulates that the ECO test shall be carried out only with regular technical inspection for the annual registration of motor vehicles.

Each technical inspection of motor vehicles is recorded in the aTEST information system, which means that every ECO test is also recorded. In the aTEST information system, in the transitional period, when the ECO test was only mandatory, the following data were recorded in Table 2:

*Table 2. Number of ECO tests in the period from January 1<sup>st</sup>, 2017 to December 31<sup>st</sup>, 2019*

<b>YEAR</b>	<b>NUMBER OF ECO TESTS</b>
2017. [4]	<b>593.726</b>
2018. [5]	<b>616.174</b>
2019. [6]	<b>636.228</b>

### **3. ECO TEST AS ELIMINATORY**

The Rulebook on Exhaust Gas Testing of Motor Vehicles (ECO Test) at the Stations for Technical Inspection of Vehicles[3]provides that the test must be carried out and the data recorded, but it also provides for a transitional period that, from January 2020, environmentally unacceptable road motor vehicles will be excluded from the traffic unless they eliminate the deficiencies, i.e. the technical inspection has become eliminatory.

From January 1<sup>st</sup>, 2020 each motor vehicle must meet the limit values in accordance with European Directives 3002/26 / EC, which are prescribed by Article 158 of the Regulation on the dimensions, total mass and axle load of vehicles, the devices and equipment that vehicles must have and the essential conditions that road traffic devices and equipment must fulfil [7]. Otherwise, the vehicle will be returned to correct the defects and if it does not eliminate the defects within 10 working days, the specified vehicle will not be able to undergo technical inspection and therefore will not be able to register [3].It should be noted here that in May 2019 a new Rulebook on the technical inspection of vehicles [2]was passed, which provided a 30-day deadline for correcting defects, but with a transitional period of one year from the entry into force of the Rulebook. Accordingly, the Regulation on the Exhaust Gas Testing of Motor Vehicles (ECO Test) at the Vehicle Inspection Stations [3]should be amended.

All measured and calculated results of each individual ECO test are printed on the exhaust gas analyzer printer and transcribed into a single information system for processing data from the ECO tests. The information system itself evaluates whether a vehicle undergoes an ECO test, based on the numerical test values entered, without the possibility of subsequent intervention by the controller or another person at the vehicle technical inspection station. Data on the total number of ECO tests performed in the first quarter of 2020 are given in Table 3.

*Table 3. Number of ECO tests in the period from January 1<sup>st</sup>, 2020 to March 31<sup>st</sup>, 2020*

<b>MJESEC/2020.</b>	<b>BROJ EKO TESTOVA</b>
JANUARY	<b>38.871</b>
FEBRUARY	<b>39.548</b>
MARCH	<b>46.597</b>
<b>Total:</b>	<b>125.016</b>

### **4. WHAT WILL THE ELIMINATORY ECO TEST OF ROAD MOTOR VEHICLES BRING TO US**

Although a short observation period, the first three months of 2020, in which the ECO eliminatory test was applied, the data obtained [8]may nevertheless be an indication of the

state, or direction, of the Federation of Bosnia and Herzegovina when it comes to vehicle exhaust gases.

Of the total number of ECO tests performed on motor vehicles (125.016), in the first quarter of 2020, 2.448 malfunctions were observed, as shown in Table 4.

*Table 4. Exhaust system malfunction for the first three months of 2020*

Motor vehicle exhaust system test	Exhaust system	405
	Suction system	5
	Ignition system	1
	Fuel system	7
	Switching mechanism	1
	Vehicles without catalytic converter - Carbon monoxide (CO) volumetric exhaust gas test at idle speed	95
	Catalytic converter vehicles – test the volume of carbon monoxide (CO) content of the exhaust gas at elevated rotational speed and at idle speed. Calculation of lambda air factor at....	1908
	DIESEL-Test of medium exhaust gas depletion,	26
	Total	2448

The number of malfunctions was the same as the number of vehicles (2.448), which means that each vehicle has one malfunction when it comes to the exhaust system. This also means that all of these vehicles had to be re-examined within 10 days. But it also means that the controllers, when inspecting a motor vehicle and performing the ECO test, out of a possible 8 malfunctions, selected only one in all 2.448 vehicles. This is a piece of information that could be discussed separately, because the negligent attitude of workers at the motor vehicle inspection stations does not record all exhaust system faults, but only one of them, which makes the statistics themselves poor and not accurate enough.

All of these vehicles within 10 working days had to retake the ECO test on the same technical inspection station of the vehicle where they found the exhaust system malfunction.

After repeated ECO tests of 2.448 motor vehicles, 14 of them or 0.572% did not satisfy, which means that these vehicles could not pass the technical inspection and therefore could not even be registered.

According to Article 11 of the Regulation on the Exhaust Gas Testing of Motor Vehicles (ECO Test) at the Stations for Technical Inspection of Vehicles [4] if the ECO test is found to be defective and the defect cannot be remedied at the Technical Inspection Station, repeated ECO test must be done within ten working days, at the same station and on the same device that showed the malfunction.

The system allows the technical inspection to be completed only if the vehicle meets certain criteria. Based on this, it was reported that 14 vehicles, after repeated technical inspection, were defective, that is, did not meet the criteria of the ECO test.

Although it is a small number of vehicles, the fact that environmentally defective vehicles are out of traffic is important, because every step is important to preserve the planet.

## 5. CONCLUSION

The eliminatory ECO test is a novelty that is slowly approaching the Federation of Bosnia and Herzegovina, and therefore Bosnia and Herzegovina itself, to the standards set by the European Union, at least when it comes to environmental protection, above all air. Taking into account the fact that [8] the average age of passenger motor vehicles in the Federation of Bosnia and Herzegovina is 16,13 years, for M2 buses it is 14,47 years, for M3 it is 16,67 years, for trucks it is 15,09 (N1 category = 12, 16, N2 category = 18.39 and N3 category = 14.72 years) then it can be concluded that the citizens took advantage of the transition period and remedied the defects on the vehicles.

Inspection authorities competent for control of the operation of the motor vehicle inspection stations should influence the inspection (controllers) workers, that is, the inspectors of the technical safety of the vehicles, in order to record all malfunctions on the vehicles. In this way, the information system itself would have more relevant and purposeful data. Another solution might be a better - automatic download of data from the measuring devices.

When talking about given data, it should be taken into account that the observation period is very short, only three months, but still sufficient to see in which direction we are going when it comes to eliminatory ECO test. After three months, 14 vehicles were completely excluded from traffic and 2.434 deficiencies eliminated on the exhaust systems are not some impressive data, but they are nevertheless indications of progress and attempts to comply with European standards and to try to protect the air and therefore the environment.

## 6. REFERENCE

- [1] Zakon o osnovama sigurnosti saobraćaja na putevima u Bosni i Hercegovini (Službeni glasnik BiH, broj 6/06, 44/07, 84/09, 48/10, 8/17, 89/17, 9/18);
- [2] Pravilnik o tehničkim pregledima vozila (Službeni glasnik BiH, broj 13/07, 72/07, 74/08, 3/09, 76/09, 29/11, 33/19);
- [3] Pravilnik o ispitivanju izduvnih gasova motornih vozila (EKO test) u stanicama za tehnički pregled vozila (Službeni novine Federacije BiH, broj 102/16);
- [4] Statistička analiza podataka o obavljenim tehničkim pregledima vozila u 2017. godini stručneteme / Statistical data analysis of the technical inspection of vehicles in 2017 and professional topics (Bilten IPI broj 41);
- [5] Statistička analiza podataka o obavljenim tehničkim pregledima vozila u 2018. godini stručneteme / Statistical data analysis of the technical inspection of vehicles in 2018 and professional topics (Bilten IPI broj 45);
- [6] Statistička analiza podataka o obavljenim tehničkim pregledima vozila u 2019. godini stručneteme / Statistical data analysis of the technical inspection of vehicles in 2019 and professional topics (Bilten IPI broj 49);
- [7] Pravilnik o dimenzijama, ukupnoj masi i osovinskom opterećenju vozila, o uređajima i opremi koja mora imati vozila i o osnovnim uslovima kojima se mora da

ispunjavaju uređaji i oprema u saobraćaju na putevima (Službeni glasnik BiH, broj 13/07, 54/07, 101/12 i 26/19);

[8] Data from a TEST Information System, Institut za privredni inženjering, d.o.o., Expert Institution for Supervision of Stations for Technical Inspection of Vehicles in the Federation of Bosnia and Herzegovina, 2020.