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Research Article

TEST RESEARCH METHOD OF DETERMINING THE BASIC NORM OF FUEL CONSUMPTION OF CARS

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ABSTRACT

One of the advantages of modern research technology is that the fuel economy of a car includes a variable mode from a fixed driving mode to a driving cycle. This acquisition significantly approximates the results of studies with operational observations, and the correlation of operational linear costs in the TK car is regulated while preventing the fuel consumption estimation.

KEYWORDS

Vehicle, calibration, driving cycle, fuel consumption, test, experience.

INTRODUCTION

Several indicators are used during the research to take into account the complications that arise during the car's movement and various external conditions for fuel economy. To fully study the features of the urban traffic cycle, the research tests conducted to determine the fuel consumption and its economy, including the driving conditions of each transmission at different speeds, are conducted according to the methodology of GOSt 20306-90 [1-4]. Fuel consumption measuring devices are based on the operation of the engine pistons in the cylinders with the help of a fuel pump under pressure due to the rapid burning of fuel. The pistons are

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connected to the connecting rods employing the central shaft cams. The diameters of the cylinders are set in such a way that 2 cm3 of fuel is compressed during one revolution. During their rotation, a permanent magnetic force is generated, and a light rotor with 20 shears is produced. An electrical impulse is generated at each flash of the photodiode. The interval between two pulses is equal to 0.1 cm3 of fuel consumption [5-9].

The main part

Depending on the type of engine, fuel consumption measuring devices have a different connection procedure to the engine. In the classification of fuel consumption measuring devices, their various connection methods are listed. According to the mentioned schemes, the devices in the carburettor engines are connected between the fuel pump and the carburettor. The volume of gasoline consumed is equal to the volume of gasoline that passes through the device [10-17]. The diesel fuel supply system is separate from the carburettor engine, so it has it is own characteristics. In diesel engines, devices are connected between low and high-pressure pumps, because firstly, under high pressure, they work incorrectly, and secondly, in a diesel engine, excess power is connected to YuBYoN. The scheme of connecting the fuel consumption measuring devices to the injection engine differs from the above because the fuel moves under pressure throughout the system. The speed of the car is determined using the speedometer and partly using the angular velocity of the engine shaft. An electronic tachometer is connected to the engine to measure the angular speed of the crankshaft, and it shows its revolutions in digital form. It connects to the positive wire of the ignition coil [18-23].

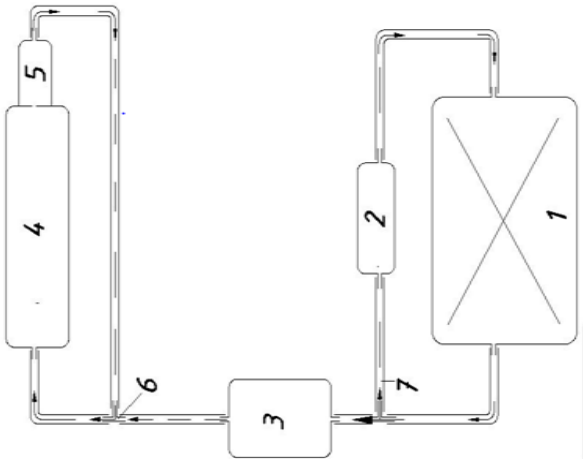

Figure 1. Connection scheme of the fuel consumption meter to the supply system of the Nexia car:

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1- fuel tank, 2- non-return valve, 3- ONO SOKKI consumption meter, 4- fuel ramp, 5- non-return valve, 6, 7- hose.

To measure the travelled distance, the distance meter installed on the car's speedometer is used during the research, and the following formula is used to determine the odometer.

$$\mu = \frac{S'_{Д}}{S_{к} - S_{н}},$$

There: μ - odometer correction factor; $S'_{Д}$ - the length of the measurement area, m; $S_{к}$ and $S_{н}$ - starting and ending indicators of the speedometer, m. The known distance travelled by the car during the research is calculated according to the following formula.

$$S_{Д} = \mu \cdot S_{сч},$$

$S_{сч}$ - the value of the distance covered by the meter.

The correction coefficient of the counter on the Tashkent public road was determined: for the selected Nexia car, it equals μ=1.006. The research test will be conducted 3 times in 3 different regions. In each area, the time to cross the measuring track, the distance travelled and the amount of fuel consumed were measured. Data on all outcomes of the study were entered into the report and average values are presented in Table 1.

Table 1. Traffic classifications of the Nexia car are given

V_a = km/h		
traffic 1	traffic 2	traffic 3
t =787 s	t =148 s	t = 448 s
Q = 391 gr	Q = 79,8 gr	Q = 215,89 gr
S=3361 m	S=771 m	S=1997 m

To determine the accuracy of the equation, the traffic classifications of the Nexia car are given. To determine each point, studies were carried out with the speeds given by the measurement areas. The method and conditions of the tests are very similar to the studies on the control of fuel consumption. To evaluate the results of research and determine the account books

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$$\Delta = \frac{|X_{ras} - X_{eks}|}{X_{ras}} \cdot 100\%$$

research indicators are determined using the formula. The results of the ledger are found using a developed mathematical model. Table 2 shows the calculation indicators of fuel classifications in percentage.

Table 2. Calculation indicators of fuel classifications

Motion cycle	traffic 1	traffic 2	traffic 3
The beaten path, m	3361	771	1997
Fuel consumption (feel), gr	382,23	76,95	227,23
Fuel consumption (syn.), gr	391	79,8	215,89
Catholic	2,294 %	3,704 %	4,991 %

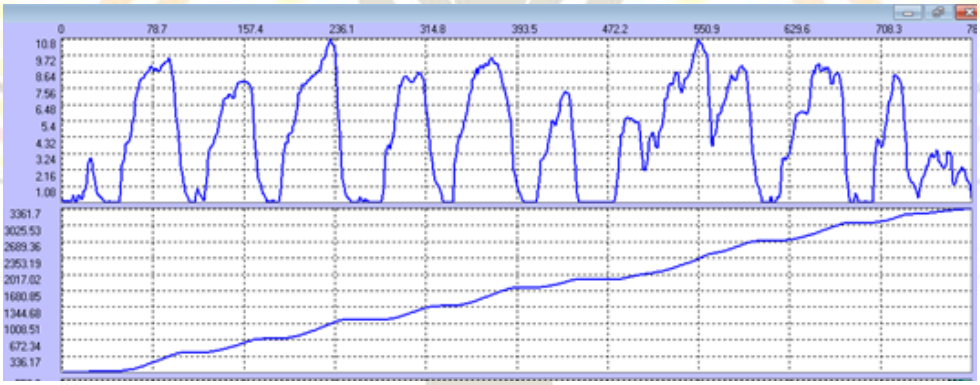

Figure 2. Action cycle for Experiment 1.

The maximum value of uncertainty is 4.991%, and the average uncertainty is 3.663% Because the uncertainty does not exceed 5%, the fuel economy of passenger cars is considered acceptable in urban conditions. The fuel consumption equation of the car was determined and a partial classification of the Nexia car was made.

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