The paper deals with the problem of establishing the actual wear of a vehicle which is very important in the context of ecology and safety. The paper presents the actual data measured in vehicles from the secondary market which, directly or indirectly, indicate the actual wear of a vehicle and the distance it travelled. The authors of the paper perceive the problem of rolling back odometers as a huge threat for the road users, as during the tests they found a vehicle in which the actual odometer reading was twice as big as the one declared by the vehicle owner.

INTRODUCTION

The summary of the 2015 data concerning the secondary market of motor vehicles indicates that majority of Polish drivers still make decisions to buy used vehicles and, unfortunately, not the newer ones, but those which are several or more than a dozen years old. It is an undisputed fact that the Polish driver aware of the costs of servicing the popular diesel engine has changed his preferences and more and more often chooses cars with a spark ignition engine. Such a change has certainly resulted from almost equal prices of diesel and lead-free fuel at petrol stations and more technologically advanced, almost service free, LPG installations. However, regardless of the vehicle’s age and its engine type, one thing remains unchanged: the purchase of a used car is still a challenge, both from the technical and legal point of view and it reminds of a lottery. Although the choice seems wide the fact is that the more verified the car is, the more difficult the situation becomes. The observations gathered over the years and based on numerous experiences of buying cars in the Polish market, unfortunately, are not very optimistic. In the case of almost 90% of cars offered for sale in Polish internet portals, their actual condition is very different from what the advert and the seller claim. However, to remove any doubts it is advantageous to support opinions with data. While analysing actual parameters of the vehicle electronic systems, it is worthwhile to use such data and it is possible owing to the universal diagnostic equipment.

1. ANALYSIS OF VEHICLE ODOMETER READINGS – DIRECT METHOD

On many occasions appropriate interpretation of the information provided by selected control devices of a given system enables, both directly and indirectly, to identify the wear of the vehicle and its odometer reading. This is the case of the information provided by the BMW E90/91 320d engine control device (Fig.1) which gives the module production date. It is important for all modules in the vehicle to indicate the date compliant with the vehicle manufacture date. Otherwise, we can suspect the vehicle’s post-collision history or, in other words, unprofessional tampering with the vehicle electronics. A similar thing can happen in the case of reading data from control devices of the vehicles with the three-pointed star logo. An example here can be the GL-Klas 420CDI 4Matic model from 2010 (Fig.2). Another system which provides us directly with the odometer reading is a DSC module in the BMW, in our case the F01 model manufactured in 2011. It is possible to find the odometer reading while initiating the RUN FLAT system. The value given was 103 947 km, whereas several columns above it, we could learn that the initiation was accomplished 76 days ago and it equals 2 048 km (Fig.3). The sum of the above mentioned readings should be the same as the odometer reading. A similar situation is found in the case of the BMW E91 model, where a simpler version of the DSC module provides us with the information on the distance travelled by the vehicle on the initiation of the RUN FLAT system (Fig.4). Another direct indication of the distance travelled by the car with the use of a universal diagnostic scope is reading the engine parameters from the MED series control devices which serve the GDI engines, in our case the 2.0TFSI in the Audi A5 model. Among the diagnostic values for which we do not have to use any additional functions we can find the vehicle’s odometer reading (Fig.5).

Fig.1 Reading the component’s manufacture date – BMW 320d E90 engine control device

Fig.2 Reading the component’s manufacture date – MB GL-Klas 420CDI
Another direct indication of the distance travelled by the car with the use of a universal diagnoscope is reading the engine parameters from the MED series control devices which serve the GDI engines, in our case the 2.0TFSI in the Audi A5 model. Among the diagnostic values for which we do not have to use any additional functions we can find the vehicle’s odometer reading (Fig.5). This information is even more interesting as it contradicts the generally accepted opinion that the distance travelled by a vehicle from the VW group is recorded only in EDC control devices, i.e. in diesel vehicles only. Talking about diesel vehicles from the VW stable, it should be mentioned that reading the distance travelled recorded in, e.g. the EDC15XX or EDC 16XX is possible, among others, by means of the VCDS interface dedicated to this brand. However, the readings obtained must be treated with a large measure of tolerance as the market of “ODOMETER REPAIRS” offers a popular service of resetting the distance travelled on the dashboard and in the engine calculator.

A direct indication of the distance travelled is revealed also by the 220 CDI power unit control device in the W211 model of the already mentioned MD brand. This parameter is displayed, among others, as “the odometer reading (in km) at adjusting the 230 bar calibration point” for the CR injection valves. These readings are also confirmed by reading the parameters from the “electronic key” control device. In the case examined it was a coherent value of 213 043 km (Figs.7 and 8).

In the MB vehicles, among the parameters which are crucial for the vehicle’s condition, we can also find information on the time which has passed and the distance travelled since the last oil change as well as the amount of oil which has been added since the last oil change. Unfortunately, this parameter must be treated with a great deal of caution, as programmers for odometer “clocking”
2. ANALYSIS OF VEHICLE ODOMETER READINGS – INDIRECT METHOD

Among many examples of indirect parameters which describe the vehicle’s condition, the I-generation Skoda Fabia is worth mentioning. The car lacks any sophisticated electronic systems (Fig.9), but it still offers a possibility of estimating the approximate distance travelled. It can be done through the actual parameter analysis of the electro-hydraulic power steering (EHPS). In the system we can find such parameters as the time of power steering. In our case it was the value of 1830 hours, which, when multiplied by the average speed of vehicles in Poland, i.e. ca. 45 to 50km/h, gives us the approximate distance travelled by the vehicle. The result obtained was 91 500 km, and our model’s odometer displayed 93 400 km, so we can accept the reading as probable.

CONCLUSIONS

The materials presented represent the 1st stage of work aiming at developing a computer program or a complex system which would make it impossible to change the odometer readings. While conducting the research work outlined above, the authors also wanted to draw attention to the legal aspect of the problem, namely the fact that in Poland changing the odometer readings is not penalized.

BIBLIOGRAFIA


An indirect method of identifying the approximate distance travelled and condition of a vehicle equipped with a compression-ignition engine is always value of one of the basic actual parameters of a control device which is “stabilization of fuel injection expenditure at idle speed”. Irrespective of the engine manufacturer this parameter must retain uniform adjustment and be maintained between the limit values – however, it must be borne in mind that the tests must be carried out at the engine’s operating temperature. One should not mix up a substantial adjustment of one injector with the general condition of the unit. In the example below we are dealing with a unit having a rather poor reputation, i.e. 1.9 TDI BLS engine (Fig.10) with a uniform and stable fuel dosage adjustment. The vehicle’s distance travelled is documented as 150 000 km. The values at which control devices notify of the problem is +/- 1.5mg.

Fig.9 Reading the number of hours which the EHPS system in the Skoda Fabia I worked.

Fig.10 Stabilization of the fuel injection expenditure – 1.9TDI BLS

Analiza parametrów rzeczywistych układów elektronicznych pojazdu w celu określania rzeczywistego przebiegu

Artikel porusza bardzo ważny w aspekcie ekologicznym oraz bezpieczeństwie problem ustalenia rzeczywistego stanu zużycia pojazdu. W materiale przedstawiono autentyczne dane zmierzone na pojazdach z rynku wtórnego, które mogą w sposób pośredni bądź też bezpośredni wskażywać na rzeczywisty przebieg pojazdu. Autorzy materiału dostrzegają w zagadnieniu zaniżania stanów liczników pojazdu ogromne niebezpieczeństwo dla użytkowników ruchu drogowego, gdyż w trakcie prowadzonych badań napotkano na egzemplarze z dwukrotnie wyższym przebiegiem, a niżeli deklarowany przez właściciela.

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