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OPTIMIZATION OF CAR OPERATION AND REPAIR PROCESSES WITH USE OF REMOTE ELECTRONIC DIAGNOSTIC SYSTEMS

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The dynamic development of the automotive industry is leading to unificationmaintenance processes. This trend is due to several factors. Big parkmotor vehicles and significant runs of its individual units in short periods of time, removal to the firstthe plan of commercial component of operation of the car against the background of reduction of the pledged resource stock.However, the range of tasks that modern cars have to do is much wider than before, andtherefore, the performance required by the car may also be different. Another aspectdevelopment of the modern automotive industry, is the unification of maintenance processes withusing a planned maintenance and maintenance strategy. This is the conditionthings are driven by the desire to reduce the time to diagnose problems that have occurred in the processoperation, by preventing the replacement of certain parts in maintenance atestablished order. This maintenance and maintenance strategy is driven bythat the diagnosis of the modern car is in most cases possible only onspecialized station SRT. Performance characteristics of modern cars also representis a trade-off between performance and rolling stock maintenance costs. Allmore electronics controls engine processes such as fuel / air ratio, ignition and injection times, boost pressure, height and valve timing, andmany others, as well as being able to control the quality of these events through indirect indicatorsprocesses. Electronic units control the behavior of the car on the road its stability, dynamicsacceleration, gear shift moments in automatic gearboxes. Electronic controls also havebe able to collect and store vehicle performance data.

However, a significant drawbackmodern electronic control units (ECU) electronic systems of the car as a whole and the enginein particular, their low flexibility and adaptive capacity in real-world operating conditions. Another essential The disadvantage of modern ECU is that despite the ability to store operational information the car's parameters, the ECU's have the ability to quickly provide this data for their further analysis thatmay be useful for planning a maintenance and repair strategy or modifying the ECU management programs to optimize and adapt them to current ones operating conditions. And, as a consequence, it is more efficient to plan the maintenance and repair strategy or modifying process at the companies operating cars, reducing timedowntime, repairing the vehicle and resorting to an adaptive maintenance strategy instead of an outdated planned one, to prevent serious malfunctions by diagnosing them early on, based on operational data from the ECU, to develop more effective programs for them.

The availability of cars in a large number of differentelectronic control units allow you to use the performance of its systems that collect andprocess the information received during diagnosis. However, to be most effectiveto use this information, you need to adapt the process of car maintenanceunder the current level of development of automotive electronic systems and maintenance process.Recently, there has been ongoing research on the introduction of e-innovationdiagnostics of vehicle systems, units and assemblies.

Having considered the main tendencies of researches in the field of electronic diagnostics, having analyzedcapabilities for collecting and processing data using full-time e-nodes andvehicle units, provided that the onboard electronic vehicle network is completed with the systemremote transmission of diagnostic data, the authors proposed the following principle of operationcar, planning and carrying out its maintenance. It plugs into the car's diagnostic connectorspecial decoder transmitter (Fig. 1), which receives operational data from the ECU units and unitsengine, and transmits them in real time to a wireless technology collection and processing server.As a variant of the software implementation of the interaction, TEXA's system is used, which enables specialistsservice center to receive information about the state of the car in real time via GPRS, Wi-Fior 3G.

Fig. 1. TEXA Remote Diagnostic Block Transmitter

This system allows not only to read error codes, but also to make adjustments to programscontrol electronic vehicle units. Another feature of the remote deviceElectronic Diagnostics is the ability to remove error codes that block certain systemscar. This option will allow, for example, to remotely unlock the engine,locked by electronics after a slight impact if this does not interfere with safety conditions. Such the format of interaction allowed to expeditiously identify problems, to plan in advance the process ofmaintenance and repair,based on the operations required in this particular situation. The server, in turn, maintains statistics of the modescar operation, loads, fuel consumption, possible errors detected by regular ECU.Analyzing this performance data enables you to optimize the node management programs andunits, using adaptive multi-mode ECU, for optimal vehicle tuningunder current operating conditions. This allows the rolling stock to be used as efficiently as possible.Faults and error codes from standard EBCs that arrive at the server allowoptimize the maintenance process by preparing the repair sites in advanceproblems found in the car.