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Agricultural machinery problems on fuel consumption, exhaust emissions and their normative assessment

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The large quantities of fuel are consumed during production process which leads to large quantity emission of pollutants to atmosphere. The new built machines have been introduced with different fuel consumption and exhaust gas emission reduction control systems. Nevertheless, fuel consumption and air pollution fumes rising due to increasing engine power and quantity of the machines. Solving the problem requires a complex technical development and technical improvement at the production. Fuel consumption and exhaust emissions, including harmful components, can be reduced only by rationally use of the tractors engine power and speed. In most cases the load of the tractor units at agricultural process are irrational, used inappropriate power operating modes. In most cases tractors are partially loaded, big part of its working life tractors and their engines are working at an idle speed. Today, no data are collected about fuel used, exhaust emissions and their interaction in the real agricultural and transport activities.

It was found that the currently used emission control standards are suitable for testing all types of mobile machines, but the weighting factors are not applied for tractor engines working in real agricultural conditions. Engine emissions control cycles doesn't cover widely real field conditions of the corresponding operating modes. Reasonable that it is practically impossible to create a weighting factor to suit various working machines for proper evaluation of the various terms and conditions. Studies has shown that the specific fuel consumption and exhaust emissions during field applications can't be calculated without regard to the actual engine load and speed mode. As well, studies have found that the engine load, during typical field operations under different conditions, varies very much.

For resolving the issue expected to substantiate the tractor engine fuel consumption and exhaust emissions monitoring instruments. For tractor fuel consumption and exhaust emissions evaluation, during tractor's operational period, the information collected in integrated digital microprocessors, applied for engine, transmission and other tractor systems operation and control, will be used. Expected, theoretically and experimentally justify microprocessor data use, fuel consumption, exhaust emissions and their interaction assessment methods and tools.

Biography

Antanas Juostas. Dr. Service Development Manager in Baltics, at Konekesko Lietuva company in Lithuania. Doctor of Science, 2012. Dissertation prepared in Institute of Power and Transport Machinery Engineering, Aleksandras Stulginskis University (ASU). Publications: author of 20 scientific publications. Research interests: tractors parameters from dynamic, ecological and economical point of view.

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