

The Effect of Addition of Resonator Intake on 4-stroke Motor with Variation in Air Capacity to Exhaust Gas Emissions

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ABSTRACT

Exhaust gas emissions are the result of incomplete combustion reaction of motor vehicles which is one of the causes of increasing air pollution, when throttle valve vehicles are opened suddenly the resulting exhaust emissions tend to be poor, so researchers conducted an innovation in adding air supply during the combustion process with using resonator intakes. The addition of resonator intake aims to determine the effect on exhaust emissions produced by the vehicle. This study uses the Gas Analyzer T156D Didacta Italy by taking samples 12 times, each vehicle both standard and vehicle that uses 80 ml, 100 ml resonator intake, 120 ml is repeated three times during the data retrieval process. From the results obtained a 120 ml volume resonator intake was more effective at reducing CO exhaust emissions from 0.52 vol% to 0.51 vol% and the O₂ value from 13.72 vol% to 13.20 vol%, while the CO₂ value increased from 4.75 vol% to 5.02 vol% and HC value from 850 ppm to 1019 ppm. It can be concluded that the addition of the resonator intake is less effective in reducing the exhaust emissions of HC, because the large amount of air supply that enters the combustion chamber is still insufficient for combustion processes and produces rich mixtures which result in a lot of fuel that has not burnt out, thus increasing the HC emissions. After chi-square calculations, it was stated that there was no significant relationship between standard vehicles and vehicles using resonator intakes.

Keywords: Exhaust Emissions, Intake Resonator, and Throttle Valve