

Analysis of the Effect of Camshaft Valve Open-Close Duration Variations and Ignition Points on 4-Step Motorcycle Performance

by

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ABSTRACT

Modification of motorcycle can be done by replacing a standard component with a racing component. Component replacement to improve motorcycle performance, especially 4-stroke engines, is the replacement of standard camshafts with racing camshafts. The main difference between a standard camshaft and a racing camshaft is in the size of the cam lift height (protrusion) and duration. This study aims to determine the effect of variations in camshaft valve open-close duration and ignition timing on specific torque, power and fuel consumption values. The method this study is a qualitative method, namely by varying the duration of opening and closing of the camshaft valve 228° , 234° , 238° with ignition timing of 15° and 18° , using 4000 to 6000 RPM for 3x running torque and power and 5000 RPM for 1x running SFC. The results showed that the highest torque, power and SFC values for the valve camshaft variation were obtained by the 238° variation, namely 14.35 Nm, 12.5 Hp and 0.115 Kg/kWh, increasing the duration of opening and closing the camshaft valve can increase the volume of air and fuel consumed. into the combustion chamber with more leverage, so that it can increase torque and use fuel to be more wasteful. While the highest torque, power and SFC values were found in the variation of the ignition timing, the highest torque, power and SFC values were obtained by the 18° variation, namely 13.92 Nm, 11.4 Hp and 0.108 Kg/kWh. When using the 18° variation the torque and power values increase as a result of the combustion process with the right timing which makes maximum combustion. But the use of fuel to be more

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